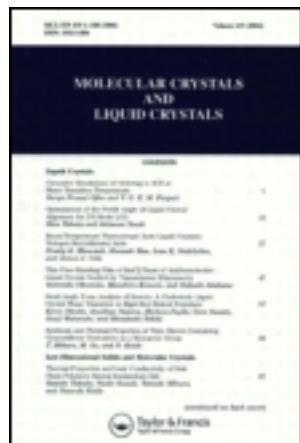




Molecular Crystals and Liquid Crystals

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/gmcl16>

Spectroscopy of Molecular Crystals: A Bibliography for 1981

E. F. Sheka^a, V. S. Makarova^a, T. A. Krivenko^a & E. F. Sheka^a

^a Institute of Solid State Physics Academy of Sciences of the U.S.S.R., Chernogolovka, 142432, U.S.S.R.

Version of record first published: 20 Apr 2011.

To cite this article: E. F. Sheka, V. S. Makarova, T. A. Krivenko & E. F. Sheka (1984): Spectroscopy of Molecular Crystals: A Bibliography for 1981, *Molecular Crystals and Liquid Crystals*, 104:1-2, 1-94

To link to this article: <http://dx.doi.org/10.1080/00268948408070400>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.tandfonline.com/page/terms-and-conditions>

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae, and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand, or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

Mol. Cryst. Liq. Cryst., 1984, Vol. 104, pp. 1-94
 0026-8941/84/1042-0001/\$18.50/0
 © 1984 Gordon and Breach, Science Publishers, Inc.
 Printed in the United States of America

Spectroscopy of Molecular Crystals

A Bibliography for 1981

Compiled by E. F. SHEKA, V. S. MAKAROVA, and T. A. KRIVENKO

Edited by E. F. SHEKA

*Institute of Solid State Physics
 Academy of Sciences of the U.S.S.R.,
 Chernogolovka, 142432 U.S.S.R.*

(Received July 13, 1983)

Contents

1. Introduction	2
2. Books and Reports of Meetings	2
3. Spectra of Aromatic Molecules in Gaseous and Condensed States	4
1. Electronic states	4
2. Singlet absorption spectra	9
3. Triplet absorption spectra and ESR spectra	11
4. Electronic-vibrational interaction and vibronic spectra	12
5. Vibrational spectra	17
6. Fluorescence	21
7. Phosphorescence	24
8. Dissipation and migration of molecular excitation energy, time constants	25
9. Laser excitation, stimulated emission and light generation	30
10. Spectroscopy of photochemical reactions	37
4. Absorption and Luminescence Spectra of Intermolecular Complexes	40
1. Charge-transfer complexes	40
2. Excimers, dimers and other homomolecular complexes	41
5. Spectra of Pure Molecular Crystals	43
1. Phonon spectra	43
2. Electronic and vibronic states and absorption spectra	46
3. Fluorescence and phosphorescence	47
6. Spectra of Impurity and Disordered Molecular Crystals	49
7. Exciton Problem of Molecular Crystals	54
1. Lattice dynamics and phonon spectra	54
2. Singlet exciton and cooperative effects	57
3. Triplet excitons	59
4. Exciton-phonon interaction (shape of bands, energy dissipation, vibronic spectra)	59
5. Excitons in mixed crystals	61
6. Excitonic mechanism of energy migration	62

8. Photoconductivity of Molecular Crystals. Photoelectronic Emission	63
9. Effects of High Exciton Concentration in Non-metallic Crystals	66
10. Molecular Crystal Structure. Thermodynamic Data	66
11. Neutron Spectroscopy of Crystals	71
12. Author Index	73

1. INTRODUCTION

The 1981 Bibliography continues the series of annual issues of Bibliographies Spectroscopy of Molecular Crystals. The full list of these issues from 1957–1968 may be found in *Molecular Crystals and Liquid Crystals*, **6**, 175, 1969. The issues for 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979 and 1980 are published *ibid.* **14**, 329(1971), **17**, 55(1972), **19**, 331(1973), **26**, 87(1974), **30**, 239(1975), **33**, 261(1976), **39**, 259(1977), **46**, 25(1978), **54**, 59(1979), **61**, 251(1980), **73**, 105(1981) and **91**, 197 (1983).

As all previous issues, the 1981 Bibliography is established on the basis of scientific-bibliography work carried out in the Institute of Solid State Physics in Chernogolovka.

2. BOOKS AND REPORTS OF MEETINGS

1. Akhmanov, S. A., and Koroteev, N. I., *Methods of nonlinear optics in the light scattering spectroscopy. Active spectroscopy of light scattering*. Moscow, Nauka, 544 p. (1981) (Russ).
2. Aleksandrov, Yu. A., Sharapov, E. I., and Cher, L., *Diffraction methods in neutron physics*. Moscow, Energoizdat, 216 p. (1981) (Russ).
3. Bobrov, A. V., and Muldakhmetov, Z. M., *Spectroscopy of Raman scattering of light*. Alma-Ata, Nauka, Kaz. SSR, 153 p. (1981) (Russ).
4. Bratos, S., and Pick, R. M., Ed., *Vibrational spectroscopy of molecular liquids and solids*. New York and London: Plenum Press, 464 p. (1980) (Eng).
5. Broude, V. L., Rashba, E. I., and Sheka, E. F., *Spectroscopy of molecular excitons*. Moscow, Energoizdat, 248 p. (1981) (Russ).
6. Bunker, P. R., *Molecular symmetry and spectroscopy*. New York, San Francisco, London (1979) (Eng).
7. Burfoot, J. C., and Taylor, G. W., *Polar dielectrics and their applications*. The Macmillan Press LTD (1979) (Eng).
8. Drago, R. S., *Physical methods in chemistry*. Philadelphia, London, Toronto: W. B. Saunders Company (1977) (Eng).
9. European conference on the dynamics of excited states, *Nuovo Cimento B* **63B**, ser. 2, No. 1 (1981) (Eng) (*P.A.* **84**: 85063).
10. Goodman, C. H. L., Ed., *Crystal growth. Theory and techniques*. Vol. 2. New York and London, Plenum Press (1978) (Eng).
11. Gribov, L. A., and Dement'ev, V. A., *Methods and algorithms of calculations in the theory of vibrational spectra of molecules*. Moscow, Nauka, 356 p. (1981) (Russ).

12. Helfrich, W., and Heppke, G., Ed., Liquid crystals of one- and two-dimensional order. Proc. of the conference on liquid crystals of one- and two-dimensional order and their applications. Garmisch-Partenkirchen, Fed. Rep. of Germany, January 21–25, 1980. Berlin, Heidelberg, New York: Springer-Verlag, 418 p. (1980) (Eng) (Springer Series in Chemical Physics. Vol. 11).
13. International conference on phonon physics, *J. Phys. Colloq.* **42**, No. C-6 (1981) (Eng) (*P.A.* **85**: 53414).
14. Kalanov, T. Z., Osipov, A. I., Panchenko, V. Ya., and Khabibullaev, P. K., Vibrational relaxation in gas systems with sources of vibrationally-excited molecules. Tashkent, *FAN*, 112 p. (1981) (Russ).
15. Koptyug, V. A., Ed., Spectral atlas of aromatics and heterocyclics. Vyp. 17. Absorption spectra of substituted stable nitroxyl radicals of imidazoline and imidazolidine and their predecessors in infrared, ultraviolet and visible regions. *Novosibirsk*, 155 p. (1979) (Russ).
16. Koptyug, V. A., Ed., Spectral atlas of aromatics and heterocyclics. Vyp. 18. IR, UV and Raman scattering spectra of polyfluorinearomatic compounds. *Novosibirsk*, 198 p. (1980) (Russ).
17. Kosevich, A. M., Physical mechanics of real crystals. Kiev, *Nauk. dumka*, 328 p. (1981) (Russ).
18. Krivenko, T. A., and Makarova, V. S., Spectroscopy of molecular crystals. A bibliography for 1979, *Mol. Cryst. and Liquid Cryst.* **73**, No. 1–2, 105–157 (1981) (Eng).
19. McGowan, J. Wm., Ed., The excited state in chemical physics. Pt. 2. New York etc.: John Wiley and Sons, 609 p. (1981) (Eng) (Advances in chemical physics. Vol. 45).
20. Modern crystallography. Vol. 4. Physical properties of crystals. Moscow, Nauka, 496 p. (1981) (Russ).
21. Proceedings of the Eighth International Liquid Crystal Conference. Part B. Kyoto, July, 1980, *Mol. Cryst. and Liquid Cryst.* **66**, No. 1–4, 1–336 (1981) (Eng).
22. Proceedings of the Eighth International Liquid Crystal Conference. Part C. Kyoto, July, 1980, *Mol. Cryst. and Liquid Cryst.* **67**, No. 1–4, 1–292 (1981) (Eng).
23. Proceedings of the Eighth International Liquid Crystal Conference. Part D. Kyoto, July, 1980, *Mol. Cryst. and Liquid Cryst.* **68**, No. 1–4, 1–330 (1981) (Eng).
24. Proceedings of the Eighth International Liquid Crystal Conference. Part E. Kyoto, July, 1980, *Mol. Cryst. and Liquid Cryst.* **70**, No. 1–4, 1–322 (1981) (Eng).
25. Proceedings of the Eighth International Liquid Crystal Conference. Part F. Kyoto, July, 1980, *Mol. Cryst. and Liquid Cryst.* **74**, No. 1–4, 1–298 (1981) (Eng).
26. Proceedings of the 1981 International Conference on Luminescence. Berlin (West), July 20–24, 1981, *J. Lumin.* **24/25**, pt. 1, 2, xxvii, 1–971 (1981) (Eng) (*P.A.* **85**: 42779).
27. Pullman, B., Ed., Intermolecular interactions: from diatomic to biopolymers. Chichester etc., John Wiley and Sons (1978) (Eng).
28. Spectroscopy of molecules and crystals. Pt. 1. Materials of IV republican school — seminar. Kiev, *Nauk. dumka*, 252 p. (1981) (Russ).
29. Spectroscopy of molecules and crystals. Pt. 2. Materials of IV republican school — seminar. Kiev, *Nauk. dumka*, 316 p. (1980) (Russ).
30. Tuchkevich, V. M., and Shvarts, K. K., Ed., Defects in insulating crystals. Proceedings of the International Conference. Riga, May 18–23, 1981. Riga, Ziņatne, Berlin, Heidelberg, New York, Springer-Verlag, 774 p. (1981) (Eng).
31. Ustynyuk, Yu. A., Ed., Quantum chemical methods for molecule calculations. Moscow, Khimiya, 256 p. (1980) (Russ).

3. SPECTRA OF AROMATIC MOLECULES IN GASEOUS AND CONDENSED STATES

3.1. Electronic states

32. Abu-Eittah, R., Hilal, R., and Hamed, M. M., Molecular orbital treatment of phenylfurans and bifurans, *Int. J. Quantum Chem.* **19**, No. 3, 383–399 (1981) (Eng) (*P. A.* **84**: 63957).
33. Aihara, J.-i., Unified theory of aromaticity and London diamagnetism, *J. Amer. Chem. Soc.* **103**, No. 19, 5704–5706 (1981) (Eng) (*P. A.* **85**: 49256).
34. Allam, S. H., Electron-impact study of nitrobenzene and nitromethane, *Int. J. Mass Spectrom. and Ion Phys.* **39**, No. 1, 117–122 (1981) (Eng) (*P. A.* **84**: 81095).
35. Amirav, A., Even, U., and Jortner, J., Microscopic solvation effects on excited-state energetics and dynamics of aromatic molecules in large van der Waals complexes, *J. Chem. Phys.* **75**, No. 6, 2489–2512 (1981) (Eng) (*P. A.* **85**: 34472).
36. Antonov, V. S., Letokhov, V. S., and Shibano, A. N., Laser photoionization and mass-spectral detection of single naphthalene molecules, *Opt. Commun.* **38**, No. 3, 182–184 (1981) (Eng) (*P. A.* **84**: 99845).
37. Avouris, Ph., and Demuth, J. E., Electronic excitations of benzene, pyridine, and pyrazine adsorbed on Ag(111), *J. Chem. Phys.* **75**, No. 10, 4783–4794 (1981) (Eng) (*P. A.* **85**: 30945).
38. Baldo, M., Grassi, A., Pucci, R., and Tomasello, P., Semi-empirical SCF RPA calculations of benzene and naphthalene oscillator strengths, *Chem. Phys. Lett.* **83**, No. 2, 309–311 (1981) (Eng).
39. Basilevsky, M. V., Weinberg, N. N., Zhulin, V. M., Semiempirical quantum chemical calculations of molecular π -complexes, *Theor. chim. acta* **59**, No. 4, 373–385 (1981) (Eng) (*P. A.* **85**: 24613).
40. Bastiansen, O., Interaction of various methods for solving molecular structure problems, *Kristallografiya* **26**, No. 5, 935–941 (1981) (Russ).
41. Battaglia, M. R., Buckingham, A. D., and Williams J. H., The electric quadrupole moments of benzene and hexafluorobenzene, *Chem. Phys. Lett.* **78**, No. 3, 421–423 (1981) (Eng).
42. Berges, J., and Perrin, H., Theoretical conformational analyses of benzyldiene-aniline, stilbene and azobenzene molecules. 2. Results of the PCILO method and an adjustment of the empirical potential, *THEOCHEM* **1**, No. 4, 375–387 (1981) (Fr) (*P. A.* **84**: 85040).
43. Berges, J., and Perrin, H., Theoretical conformational study of the anisole molecule, *J. chim. phys. et phys.-chim. biol.* **78**, No. 7–8, 573–576 (1981) (Fr) (*P. A.* **85**: 19969).
44. Bernstein, J., Engel, Y. M., and Hagler, A. T., An ab initio study of the conformational energetics of *N*-benzyldieneaniline, *J. Chem. Phys.* **75**, No. 5, 2346–2353 (1981) (Eng).
45. Bertholon, G., Thozet, A., Perrin, M., and Decoret, C., Conformational analysis of the four 3-methyl-isopropylphenol isomers (thymols) by molecular orbital calculations and X-ray crystal structure determination, *THEOCHEM* **1**, No. 3, 313–321 (1981) (Eng) (*P. A.* **84**: 76717).
46. Bigelow, R. W., Weagley, R. J., Freund, H.-J., Intense core-hole satellite structure in aromatic donor/acceptor molecules, *Chem. Phys. Lett.* **82**, No. 2, 305–310 (1981) (Eng).
47. Boldeskul, I. E., and Kutshero, A. P., The differential moments in spectroscopy, *Spectrosc. Lett.* **14**, No. 8–9, 597–601 (1981) (Eng).
48. Bouscasse, L., Bouin-Roubaud, D., Avignon, T., and Jaffe, H. H., Direct energy minimization of excited singlet states, *J. Chem. Phys.* **75**, No. 12, 5759–5763 (1981) (Eng) (*P. A.* **85**: 24627).

49. Brenner, K., Ruziewicz, Z., Suter, G., and Wild, U. P., The structure of low-temperature electronic spectra of benzo[a]phenazine, *Chem. Phys.* **59**, No. 1, 2, 157–167 (1981) (Eng) (*P. A.* **84**: 90586).
50. Bykov, A. D., Makushkin, Yu. S., and Ulenikov, O. N., On isotope effects in polyatomic molecules—some comments on the method, *J. Mol. Spectrosc.* **85**, No. 2, 462–479 (1981) (Eng) (*P. A.* **84**: 59427).
51. Campbell, J. C., Hillier, I. H., and Saunders, V. R., A systematic classification of atomic integrals in ab initio molecular orbital calculations. I. The core valence approximation molecular orbital method, *J. Chem. Phys.* **74**, No. 7, 3971–3976 (1981) (Eng) (*P. A.* **84**: 63959).
52. Chablo, A., Cruickshank, D. W. J., Hinchliffe, A., and Munn, R. W., Quadrupole moment calculations for some aromatic hydrocarbons, *Chem. Phys. Lett.* **78**, No. 3, 424–428 (1981) (Eng) (*P. A.* **84**: 59431).
53. Duke, B. J., and Collins, M. P. S., Comparison of SAMO and ab initio model calculations for pyrazine, *J. Chem. Phys.* **74**, No. 8, 4746–4747 (1981) (Eng) (*P. A.* **84**: 72330).
54. Evans, F. E., Fu, P. P., Cairns, T., and Yang, S. K., Long-range coupling constants for structural analysis of complex polycyclic aromatic hydrocarbons by high-field proton magnetic resonance spectrometry, *Anal. Chem.* **53**, No. 3, 558–560 (1981) (Eng) (*P. A.* **84**: 99794).
55. Faure, R., Mahamoud, A., Galy, J.-P., Vincent, E.-J., Galy, A.-M., and Barbe, J., ¹³C-NMR study of some substituted 9-acridanone derivatives, *Spectrosc. Lett.* **14**, No. 3, 223–238 (1981) (Eng).
56. Fuss, I., McCarthy, I. E., Minchinton, A., Weigold, E., and Larkins, F. P., Momentum distributions and ionization potentials for the valence orbitals of benzene, *Chem. Phys.* **63**, No. 1, 2, 19–30 (1981) (Eng) (*P. A.* **85**: 29723).
57. Galuza, A. I., and Kirichenko, A. P., Splitting of optical spectra into components in the classic oscillator model approximation, *Zh. Prikl. Spektrosk.* **35**, No. 1, 108–113 (1981) (Russ).
58. Griffiths, A. M., and Freedman, P. A., Tetracene-argon van der Waals molecules, *Chem. Phys.* **63**, No. 3, 469–474 (1981) (Eng) (*P. A.* **85**: 34470).
59. Gundermann, K.-D., Lohberger, C., and Zander, M., Topological indices of alternant polycyclic hydrocarbons and their correlations with electronic properties, *Z. Naturforsch.* **36A**, No. 11, 1217–1221 (1981) (Ger) (*P. A.* **85**: 19944).
60. Gyl'maliev, A. M., Effective Hamiltonian for the calculation of π -electronic structure of conjugated molecules, *Zh. Fiz. Khim.* **55**, No. 9, 2330–2335 (1981) (Russ).
61. Ha, T.-K., Ab initio CI calculation of the molecular quadrupole moment of benzene, *Chem. Phys. Lett.* **79**, No. 2, 313–316 (1981) (Eng) (*P. A.* **84**: 68111).
62. Hering, P., Maaswinkel, A. G. M., and Kompa, K. L., Picosecond UV laser-induced multiphoton ionization and fragmentation of benzene, *Chem. Phys. Lett.* **83**, No. 2, 222–225 (1981) (Eng).
63. Hetherington, W. M. III, Korenowski, G. M. and Eisenthal, K. B., Picosecond CARS as a probe of the multiphoton photofragmentation of benzene, *Chem. Phys. Lett.* **77**, No. 2, 275–279 (1981) (Eng).
64. Holak, T. A., and Aksnes, D. W., Paramagnetic relaxation reagents as a probe for structure of alkyl and alkylbenzene hydrocarbons, *J. Magn. Resonance* **45**, No. 1, 1–7 (1981) (Eng) (*P. A.* **85**: 24743).
65. Hopkins, J. B., Powers, D. E., and Smalley, R. E., Mass-selective two-color photoionization of benzene clusters, *J. Phys. Chem.* **85**, No. 25, 3739–3742 (1981) (Eng) (*P. A.* **85**: 75486).
66. Huang, T.-H., Rieckhoff, K. E., and Voight, E. M., New singlets in the phthalocyanines, *J. Phys. Chem.* **85**, No. 22, 3322–3326 (1981) (Eng).
67. Hutchison, C. A., Jr., and Kemple, M. D., EPR and ENDOR of triplet state diphenyl-h₁₀ in diphenyl-d₁₀ single crystals. Molecule conformation and spin distribution, *J. Chem. Phys.* **74**, No. 1, 192–199 (1981) (Eng).

68. Jacques, P., Faure, J., Chalvet, O., and Jaffe, H. H., A reexamination of the oxygen parameters in the CNDO/S method, *J. Phys. Chem.* **85**, No. 5, 473–479 (1981) (Eng) (*P. A.* **84**: 85057).
69. Kataev, V. E., Timosheva, A. P., Vulfson, S. G., and Vereshchagin, A. N., The determination of anisotropy of organic compound polarizability in solutions, *Dokl. Akad. Nauk SSSR* **261**, No. 4, 911–914 (1981) (Russ).
70. Kosugi, N., and Kuroda, H., Semi-empirical calculation on core ionizations and simultaneous excitations by use of the π -electron and equivalent core approximations. The theoretical foundations of the method and the application to some π -conjugated molecules, *Chem. Phys.* **61**, No. 3, 431–442 (1981) (Eng).
71. Kuroda, Y., and Fujiwara, Y., Determination of relative signs and INDO-MO calculations of ^{13}C - ^{15}N spin-spin coupling constants of trans- and cis-azobenzene and benzo[c]cinnoline, *J. Phys. Chem.* **85**, No. 18, 2655–2659 (1981) (Eng) (*P. A.* **85**: 29631).
72. Kuwajima, S., A new self-consistent-field valence bond method. 1. Method for conjugated systems, *J. Chem. Phys.* **74**, No. 11, 6342–6348 (1981) (Eng) (*P. A.* **84**: 76705).
73. Lange, A., Tavan, P., Schroder, D., and Baumgartel, H., The electronic spectra of aminophenazines, *Ber. Bunsenges. Phys. Chem.* **85**, No. 1, 78–85 (1981) (Eng) (*P. A.* **84**: 64086).
74. Lazzeretti, P., and Zanasi, R., Theoretical studies on the benzene molecule: Magnetic susceptibility and nuclear shielding constants, *J. Chem. Phys.* **75**, No. 10, 5019–5027 (1981) (Eng) (*P. A.* **85**: 20084).
75. Lichtin, D. A., Bernstein, R. B., and Newton, K. R., Experimental appraisal of the maximal-entropy theory of multiphoton ionization-fragmentation: the alternative ionization pathway test, *J. Chem. Phys.* **75**, No. 12, 5728–5734 (1981) (Eng) (*P. A.* **85**: 24797).
76. Long, S. A. T., and Memory, J. D., Calculations of spin-spin coupling constants in aromatic nitrogen heterocyclics, *J. Magn. Resonance* **44**, No. 2, 355–360 (1981) (Eng) (*P. A.* **85**: 24610).
77. Lubman, D. M., Comparison of multiphoton ionization fragmentation patterns for the azulene and naphthalene isomers. A test of the maximal-entropy theory, *J. Phys. Chem.* **85**, No. 25, 3752–3754 (1981) (Eng) (*P. A.* **85**: 75360).
78. Maciel, G. E., Severson, M., and Gil, V. M. S., A pseudoatom molecular orbital approach to substituent effects in organic compounds. 3. H-H coupling constants in substituted ethylenes, ethanes, and benzenes, *J. Magn. Resonance* **44**, No. 2, 314–329 (1981) (Eng) (*P. A.* **85**: 24609).
79. Maksic, Z. B., Construction of optimal basis sets in approximate theories of the electronic structure of molecules. Weighted Lowdin orthogonalization, *Z. Naturforsch.* **36A**, No. 4, 373–377 (1981) (Eng) (*P. A.* **84**: 63942).
80. Martin, R. L., Localized excitations in pyrazine and p-benzoquinone. A valence bond model, *J. Chem. Phys.* **74**, No. 3, 1852–1854 (1981) (Eng).
81. Monti, S., Gardini, E., Bortolus, P., and Amouyal, E., The triplet state of azobenzene, *Chem. Phys. Lett.* **77**, No. 1, 115–119 (1981) (Eng) (*P. A.* **84**: 29016).
82. Mortensen, O. S., and Svendsen, E. N., Initial and final molecular states as 'virtual states' in two-photon processes, *J. Chem. Phys.* **74**, No. 6, 3185–3189 (1981) (Eng) (*P. A.* **84**: 59598).
83. Motten, A. G., Davidson, E. R., and Kwiram, A. L., Calculations of zero-field splittings in pyridine derivatives, *J. Chem. Phys.* **75**, No. 6, 2603–2607 (1981) (Eng) (*P. A.* **84**: 103735, **85**: 655).
84. Neisius, D., and Verhaegen, G., Bond functions for ab initio calculations on polyatomic molecules. Molecules containing C, N, O and H, *Chem. Phys. Lett.* **78**, No. 1, 147–152 (1981) (Eng) (*P. A.* **84**: 45807).
85. Pankratov, A. A., Method of determination of dipole moments of excited organic molecules, *Zh. Prikl. Spektrosk.* **34**, No. 3, 540–543 (1981) (Russ).

86. Pasternak, R., and Wagniere, G., Semiempirical spin-orbit coupling calculations. 1. Theory and method. Benzophenone as a test case, *J. Comput. Chem.* **2**, No. 3, 347–355 (1981) (Eng) (*P. A.* **85**: 20118).
87. Pedersen, P. B., Thulstrup, E. W., and Michl, J., Magnetic circular dichroism of cyclic π -electron systems. 24. Polarizations and assignments in some pentacyclic and hexacyclic benzenoid hydrocarbons, *Chem. Phys.* **60**, No. 2, 187–198 (1981) (Eng) (*P. A.* **85**: 20074).
88. Perrin, H., and Berges, J., Conformational analysis theory of molecules of benzylidene-anilene, stilbene, and azobenzene. 2. Results of INDO and MNDO methods; critical study of their application to conjugated molecules, *THEOCHEM* **1**, No. 3, 299–311 (1981) (Fr) (*P. A.* **84**: 76716).
89. Philis, J., Bolovinos, A., Andritsopoulos, G., Pantos, E., and Hamilton, T. D. S., Comment on confirmation of the 3s Rydberg assignment of fluorobenzene, *Chem. Phys. Lett.* **77**, No. 3, 627–629 (1981) (Eng) (*P. A.* **84**: 41388).
90. Philis, J., Pantos, E., Andritsopoulos, G., Bolovinos, A., and Ioannidou, A., Detection of the $\pi\pi^*E_{2g}$ state in sym-tetrafluorobenzene, *Chem. Phys. Lett.* **77**, No. 3, 623–626 (1981) (Eng) (*P. A.* **84**: 41392).
91. Pietrzycki, W., Tomasik, P., and Sucharda-Sobczyk, A., Monoexcited singlet states and conformation of some acylpyridines, *J. Mol. Struct.* **73**, 49–61 (1981) (Eng) (*P. A.* **84**: 64076).
92. Plantenga, T. M., Bulsink, H., Maclean, C., and Lohman, J. A. B., About the concentration dependence of the anisotropy in the magnetic susceptibility of some aromatic compounds in the liquid phase, studied by NMR, *Chem. Phys.* **61**, No. 3, 271–280 (1981) (Eng).
93. Popov, K. R., Ivanova, S. Yu., Platonova, N. V., Shtyagina, L. M., and Shamolina, I. I., Studying of the covalent bond of 2-aminoanthraquinone with polyvinyl alcohol using the linear dichroism spectra, *Zh. Prikl. Spektrosk.* **34**, No. 2, 319–324 (1981) (Russ).
94. Purkait, A. R., and Majumdar, D. K., Calculation of physical properties of simple classical fluids: methane and benzene, *Indian J. Pure and Appl. Phys.* **19**, No. 3, 227–231 (1981) (Eng).
95. Radeaglia, R., On the semiempirical theoretical interpretation of the anisotropy of ^{13}C NMR chemical shifts of ethylene and benzene, *Z. Naturforsch.* **36A**, No. 7, 763–767 (1981) (Eng) (*P. A.* **84**: 90466).
96. Rebane, V. N., Rebane, T. K., and Sherstyuk, A. I., On the possibility to observe higher-polarization-moment relaxation in electric quadrupole radiation, *Opt. and Spektrosk.* **51**, No. 5, 753–755 (1981) (Russ).
97. Rebentrost, F., and Ben-Shaul, A., On the fragmentation of benzene by multiphoton ionization, *J. Chem. Phys.* **74**, No. 6, 3255–3264 (1981) (Eng).
98. Rebentrost, F., Kompa, K. L., and Ben-Shaul, A., A statistical model for the fragmentation of benzene by multiphoton ionization, *Chem. Phys. Lett.* **77**, No. 2, 394–398 (1981) (Eng).
99. Rodionova, G. N., Partalla, N. A., and Rodionov, A. N., Study of anthraquinone derivatives structure in gas phase by electronic spectroscopy method, *Zh. Fiz. Khim.* **55**, No. 11, 2858–2861 (1981) (Russ).
100. Schaefer, T., Sebastian, R., and Salman, S. R., The σ - π transmitted coupling over five and six bonds in pyridine-borane complexes. MO calculations on structure and spin-spin couplings, *Can. J. Chem.* **59**, No. 21, 3026–3029 (1981) (Eng) (*P. A.* **85**: 49457).
101. Seguin, J. P., Nadjo, L., Uzan, R., and Doucet, J. P., Phenolsmethylbenzenes associations: a general treatment relating $\Delta\nu_{\text{OH}}$ to the distribution of charges on the electron donors and acceptors, *Spectrochim. acta* **37A**, No. 3, 205–210 (1981) (Eng).
102. Sekino, H., and Kobayashi, H., A screened potential molecular-orbital calculation of the π -electron system of porphyrin, *J. Chem. Phys.* **75**, No. 7, 3477–3484 (1981) (Eng) (*P. A.* **85**: 641).

103. Sharma, K. K., and Goyal, M. L., Two-photon excitation in some organic compounds and a few metal complexes, *Indian J. Pure and Appl. Phys.* **19**, No. 8, 731–735 (1981) (Eng).
104. Silberstein, J. and Levine, R. D., Statistical fragmentation patterns in multiphoton ionization: a comparison with experiment, *J. Chem. Phys.* **75**, No. 12, 5735–5743 (1981) (Eng) (*P.A.* **85**: 24798).
105. Singh, R. A., and Thakur, S. N., Electronic transition moments in the spectra of substituted naphthalenes, *J. Cryst. and Mol. Struct.* **11**, No. 5/6, 197–201 (1981) (Eng).
106. Snyder, P. A., Lund, P. A., Schatz, P. N., and Rowe, E. M., Magnetic circular dichroism (MCD) of the Rydberg transitions in benzene using synchrotron radiation, *Chem. Phys. Lett.* **82**, No. 3, 546–551 (1981) (Eng) (*P.A.* **85**: 742).
107. Spartakov, A. A., and Tolstoi, N. A., Magneto-optical methods of evidence of constant-magnetic-moment existence in aromatic-compound crystals in water suspensions, *Opt. and Spektrosk.* **51**, No. 3, 391–394 (1981) (Russ).
108. Srivastava, S. P., Bhatnagar, A. K., and Joshi, G. C., NMR study of some mono- and di-tert-butyl-naphthalenes, *Spectrochim. acta* **37A**, No. 9, 797–800 (1981) (Eng) (*P.A.* **85**: 738).
109. Ston, M., Dipole moments and polarizabilities of benzophenones estimated from spectroscopic measurements, *Z. Naturforsch.* **36A**, No. 8, 909–912 (1981) (Eng) (*P.A.* **84**: 101135).
110. Strokach, N. S., Brivina, L. P., Shigorin, D. N., and Shcheglova, N. A., Emission electronic-vibrational transitions at 4.2 K and electronic structure of 6,13-pentacenequinone, *Zh. Fiz. Khim.* **55**, No. 10, 2548–2553 (1981) (Russ).
111. Suhnel, J., Kempka, U., and Gustav, K., Molecular geometry and excited electronic states. 4. Theoretical study on molecular geometries and spectral properties of bipyrimidine compounds, *THEOCHEM* **1**, No. 2, 213–218 (1981) (Eng) (*P.A.* **84**: 63955).
112. Szentpaly, L. B., 3L_a excitation energies of polycyclic aromatic hydrocarbons obtained by a quantum chemical pencil and paper PMO:F method, *J. Photochem.* **17**, No. 1/2, 112–113 (1981) (Eng).
113. Tajiri, A., Hatano, M., Morita, T., Saito, M., and Takase, K., Magnetic circular dichroism of 3H-cyclohept[a]azulen-3-one, *Chem. Phys. Lett.* **83**, No. 1, 101–105 (1981) (Eng).
114. Tantardini, G. F., and Simonetta, M., Ab initio valence bond calculations. 11. Pyridine: ground and ionized states, *Int. J. Quantum Chem.* **20**, No. 3, 705–715 (1981) (Eng) (*P.A.* **85**: 657).
115. Tegeler, E., Wiech, G., and Faessler, A., Carbon K-emission spectra and electronic structure of solid naphthalene and anthracene, *J. Phys. B: Atom. and Mol. Phys.* **14**, No. 8, 1273–1282 (1981) (Eng).
116. Terent'ev, V. A., Multiplicativity of chemical bond energy and intermolecular interaction and equilibrium constants. Nature of hydrogen bond. In: Structure and properties of molecules. *Kuibyshev*, 3–23 (1980) (Russ).
117. Testa, A. C., and Wild, U. P., Inversion of close lying $^1n\pi^*$ and $^1\pi\pi^*$ states in 2-aminopyridine by protonation, *J. Phys. Chem.* **85**, No. 18, 2637–2639 (1981) (Eng) (*P.A.* **85**: 22432).
118. Underwood, G. R., Clyde, W. C., and Zitter, M. S., Effect of substituents on the nickel-induced contact shifts in aromatic amines. Comparison with spin delocalization in phenyl, benzyl, and related radicals, *J. Phys. Chem.* **85**, No. 11, 1540–1545 (1981) (Eng).
119. Van der Velden, G. P. M., De Boer, E., and Veeman, W. S., Optical and magnetic properties of disubstituted benzophenones with lowest $^3n\pi^*$ states, *Chem. Phys.* **56**, No. 2, 181–188 (1981) (Eng) (*P.A.* **84**: 61382).
120. Van Pelt, J. F. J. M., Brondijk, J. J., Claessen, V. W. M., and Biemond, J., Electric reaction field of a molecular quadrupole and solvent chemical shift, *J.*

- Chem. Soc. Faraday Trans. II* **77**, No. 10, 1789–1794 (1981) (Eng) (*P.A.* **85**: 29632).
121. Van Velzen, P. N. T., and Van der Hart, W. J., An ICR study of sequential two-photon dissociation of benzene, cyanobenzene and bromobenzene molecular ions, *Chem. Phys.* **61**, No. 3, 325–334 (1981) (Eng).
 122. Webster, F., Huang, M.-J., and Wolfsberg, M., The complete wave equation of a nonlinear polyatomic molecule, *J. Chem. Phys.* **75**, No. 5, 2306–2313 (1981) (Eng) (*P.A.* **84**: 99745).
 123. Weinzierl, G., and Friedrich, J., Selective external heavy atom effect on the dynamics of the isolated triplet sublevels of naphthalene x-traps, *Chem. Phys. Lett.* **80**, No. 1, 55–59 (1981) (Eng) (*P.A.* **84**: 72357).
 124. Winkler, I. C., and Hanson, D. M., Anomalous dipole moments of photoreactive triplet states, *J. Amer. Chem. Soc.* **103**, No. 20, 6264–6265 (1981) (Eng).
 125. Yamabe, S., Minato, T., and Kimura, M., Theoretical interpretation of the standard redox potential of benzene-1,2-diol and its derivatives, *J. Phys. Chem.* **85**, No. 23, 3510–3513 (1981) (Eng).

3.2. Singlet absorption spectra

126. Amirav, A., Even, U., and Jortner, J., Absorption spectroscopy of ultracold large molecules in planar supersonic expansions, *Chem. Phys. Lett.* **83**, No. 1, 1–4 (1981) (Eng) (*P.A.* **85**: 24719).
127. Amirav, A., Even, U., and Jortner, J., Two-photon spectroscopy of ultracold large molecules in planar supersonic expansions, *J. Chem. Phys.* **75**, No. 6, 3151–3152 (1981) (Eng) (*P.A.* **84**: 103767).
128. Ar'ev, I. A., Dyadyusha, G. G., Klimusheva, G. V., and Soroka, G. M., Effect of spin-orbit coupling in para-dihalogenobenzenes on the environment-induced frequency changes in their $S_1 \leftarrow S_0$ spectra, *Chem. Phys. Lett.* **79**, No. 1, 6–8 (1981) (Eng) (*P.A.* **84**: 64027).
129. Arkhangel'skii, V. V., Matveev, V. D., Farafonov, V. G., and Shchekochikhin, Yu. M., Development of the possibilities of computers application to improvement of the obtained spectra characteristics. In: Spectroscopy of molecules and crystals. Pt. 2. *Kiev*, 263–275 (1980) (Russ).
130. Artemova, L. K., Klimenko, V. G., Rudovskaya, K. A., and Shalavina, T. I., Spectral properties of amino-substituted benzophenone, *Zh. Prikl. Spektrosk.* **34**, No. 6, 1065–1070 (1981) (Russ) (*P.A.* **85**: 75306).
131. Avouris, Ph., and Demuth, J. E., Spectroscopy and photophysical dynamics of aromatics adsorbed on a clean Ag(111) surface, *J. Photochem.* **17**, No. 1/2, 111–112 (1981) (Eng).
132. Bendig, J., Kreysig, D., and Kawski, A., The interpretation of absorption spectra of aza- and azinium-substituted anthracenes, *Z. Naturforsch.* **36A**, No. 1, 30–33 (1981) (Eng) (*P.A.* **84**: 41389).
133. Bernstein, E. R., and Lee, J., Absorption spectrum of the 2600 Å transition of benzene in cryogenic liquids, *J. Chem. Phys.* **74**, No. 6, 3159–3163 (1981) (Eng) (*P.A.* **84**: 59535).
134. Bolovinos, A., Philis, J., Pantos, E., Tsekeris, P., and Andritsopoulos, G., The methylbenzenes vis-a-vis benzene. Comparison of their spectra in the Rydberg series region, *J. Chem. Phys.* **75**, No. 9, 4343–4349 (1981) (Eng).
135. Deshpande, D. K., Shashidbar, M. A., and Suryanarayana Rao, K., Solvent effect in the ultra violet absorption spectra of some trisubstituted benzenes, *Z. phys. Chem., Leipzig* **262**, No. 4, 588–592 (1981) (Eng).
136. Dick, B., and Hohlneicher, G., Two-photon spectroscopy of dipole-forbidden transitions. The low-lying singlet states of anthracene, *Chem. Phys. Lett.* **83**, No. 3, 615–621 (1981) (Eng) (*P.A.* **85**: 20147).

137. Dick, B. and Hohlneicher, G., Two-photon spectroscopy of the low-lying singlet states of naphthalene and acenaphthene, *Chem. Phys. Lett.* **84**, No. 3, 471–478 (1981) (Eng) (*P. A.* **85**: 70363).
138. Dubrovkin, I. M., On the variation of information content in the spectrum during its differentiation, *Zh. Prikl. Spektrosk.* **35**, No. 4, 699–704 (1981) (Russ).
139. Eesley, G. L., and Burkstrand, J. M., X-ray-photoemission and Raman spectroscopy investigation of pyridine on Ag, *Phys. Rev B* **24**, No. 2, 582–585 (1981) (Eng).
140. Fischer, G., and Ross, I. G., Electronic spectrum of 1,5-naphthyridine: vapor spectra, *J. Mol. Spectrosc.* **87**, No. 2, 331–344 (1981) (Eng) (*P. A.* **85**: 730).
141. Friedrich, D. M., Van Alsten, J., Walters, M. A., and Schultz, N. L., Concentration-dependent two-photon excitation in α -chloronaphthalene, *J. Phys. Chem.* **85**, No. 10, 1297–1301 (1981) (Eng).
142. Fujimura, Y., and Lin, S. H., Resonance effects on two photon absorption processes of molecules, *J. Chem. Phys.* **74**, No. 7, 3726–3734 (1981) (Eng).
143. Fytas, G., Wang, C. H., Lilge, D., and Dorfmueller, Th., Homodyne light beating spectroscopy of o-terphenyl in the supercooled liquid state, *J. Chem. Phys.* **75**, No. 9, 4247–4255 (1981) (*P. A.* **85**: 31521).
144. Goel, R. K., Gupta, S. K., and Jaiswal, R. M. P., Electronic absorption spectra of 2,4-dichloro-6-methylpyrimidine in vapour phase, *Acta phys. pol.* **A59**, No. 5, 665–668 (1981) (Eng) (*P. A.* **84**: 72434).
145. Goimann, E., Kapp, I., Rench, S., and Tribel', V., Polarization-dependent picosecond spectra of two-photon absorption of diphenyl and chloronaphthalene solutions, *Zh. Prikl. Spektrosk.* **34**, No. 3, 481–486 (1981) (Russ).
146. Goncharuk, V. V., Grebenyuk, A. G., Savransky, L. I., Gorchev, V. F., and Chernega, A. N., Electron spectra of azobenzene and *n*-dimethylaminoazobenzene adsorbed on the surface of aluminosilicate catalyzers and their quantum chemistry interpretation, *Zh. Prikl. Spektrosk.* **35**, No. 1, 74–78 (1981) (Russ).
147. Goodman, L., and Rava, R. P., Allowed and forbidden character in the two-photon spectra of perturbed benzenes and naphthalenes, *J. Photochem.* **17**, No. 1/2, 159 (1981) (Eng).
148. Goodman, L., and Rava, R. P., Two-photon spectra of substituted benzenes, *J. Chem. Phys.* **74**, No. 9, 4826–4831 (1981) (Eng) (*P. A.* **84**: 72467).
149. Grunwald, E., Temperature dependence of absorption spectra for orbitally allowed electronic transitions of polyatomic molecules, *J. Phys. Chem.* **85**, No. 23, 3409–3415 (1981) (Eng) (*P. A.* **85**: 43933).
150. Heumann, E., Kapp, I., Rentsch, S., and Tribel', V., Polarization-dependent picosecond two-photon absorption spectra of diphenyl and chloronaphthalene in solution, *Zh. Prikl. Spektrosk.* **34**, No. 3, 481–486 (1981) (Russ) (*P. A.* **85**: 49449).
151. Khallyak, Zh., Baradit, E., Nizhegorodov, N. I., Zvolinskii, V. P., Soldatenkov, A. T., Pleshakov, V. G., and Prostakov, N. S., Study of ultraviolet absorption spectra of fluorene monoazaanalogs, *Zh. Fiz. Khim.* **55**, No. 7, 1835–1838 (1981) (Russ).
152. Kranitzky, W., Reiser, D., and Seilmeier, A., Temperature dependent solvent shift of polyatomic molecules observed by ultrashort two-pulse spectroscopy, *Opt. Commun.* **39**, No. 5, 321–324 (1981) (Eng) (*P. A.* **85**: 24702).
153. Leopold, D. G., Hemley, R. J., Vaida, V., and Roebber, J. L., Direct absorption spectra of higher excited states of jet-cooled monosubstituted benzenes: Phenylacetylene, styrene, benzaldehyde, and acetophenone, *J. Chem. Phys.* **75**, No. 10, 4758–4769 (1981) (Eng) (*P. A.* **85**: 20071).
154. Lipp, E. D., and Seliskar, C. J., The 2644-Å band system of fluorobenzene. The cold band spectrum, *J. Mol. Spectrosc.* **87**, No. 1, 242–254 (1981) (Eng) (*P. A.* **84**: 90551).
155. Lipp, E. D., and Seliskar, C. J., The 2644-Å band system of fluorobenzene. The

- hot-band spectrum, *J. Mol. Spectrosc.* **87**, No. 1, 255–267 (1981) (Eng) (*P.A.* **84**: 90552).
156. Medhi, K. C., The electronic absorption spectrum of 2,5-dichloropyridine, *Indian J. Phys.* **B 55**, No. 6, 469–476 (1981) (Eng) (*P.A.* **85**: 54861).
 157. Millefiori, S., and Millefiori, A., Spectroscopic and electrochemical properties of intramolecularly hydrogen-bonded compounds, *Can. J. Chem.* **59**, No. 5, 821–827 (1981) (Eng) (*P.A.* **84**: 85199).
 158. Murakami, J.-i., Ito, M., and Kaya, K., Electronic absorption spectra of biphenyl as studied by multiphoton ionization-supersonic beam technique, *J. Chem. Phys.* **74**, No. 11, 6505–6506 (1981) (Eng) (*P.A.* **84**: 76896).
 159. Preobrazhensky, N. G., and Sedelnikov, A. I., Optimization of spectroscopic measurements on the basis of regularization techniques, *Zh. Prikl. Spektrosk.* **35**, No. 4, 592–599 (1981) (Russ).
 160. Ryzhikov, B. D., and Senatorov, P. K., On the influence of fluctuations of close environment of molecules in solvents on their absorption spectra, *Vestn. Moskov. Univ. Fiz., astron.* **22**, No. 5, 68–70 (1981) (Russ).
 161. Seki, H. SERS of pyridine on Ag island films prepared on a sapphire substrate, *J. Vac. Sci. and Technol.* **18**, No. 2, 633–637 (1981) (Eng) (*P.A.* **84**: 97573).
 162. Shyldkrot, H., and Scharf, B., Loss of mirror symmetry in the electronic spectra of substituted benzenes, *Chem. Phys.* **60**, No. 2, 249–255 (1981) (Eng) (*P.A.* **85**: 20053).
 163. Tomin, V. I., and Rubinov, A. N., Spectroscopy of inhomogeneous configurational broadening in dye solutions, *Zh. Prikl. Spektrosk.* **35**, No. 2, 237–251 (1981) (Russ).
 164. Yamaguchi, H., and Ninomiya, K., Circular dichroism spectra of fluorene, carbazole, dibenzofuran and dibenzothiophene included in β -cyclodextrin, *Spectrochim. acta* **37A**, No. 2, 119–122 (1981) (Eng).
 165. Zelikina, G. Ya., Meister, T. G., and Mamchenko, T. B., Study of $n\pi^*$ absorption bands of pyridine, pyrazine and pyrimidine dissolved in liquefied gases, *Opt. and Spektrosk.* **51**, No. 3, 469–473 (1981) (Russ).

3.3 Triplet absorption spectra and ESR spectra

166. Brauchle, Chr. and Voigtlander, J., Correlations between the ground state and the triplet state character orders of benzenoid hydrocarbons, *Z. Naturforsch.* **36A**, No. 6, 651–653 (1981) (Eng) (*P.A.* **84**: 85069).
167. Busse, R., and Zachariasse, K. A., Triplet excimer formation with phenanthrene: the importance or relative chromophore configuration, *J. Photochem.* **17**, No. 1/2, 47–48 (1981) (Eng).
168. Dinse, K.-P., and Pratt, D. W., Orbital rotation in triplet state benzophenone, *J. Photochem.* **17**, No. 1/2, 113 (1981) (Eng).
169. Fischer, G., The triplet ${}^3B_{3u}(n) \leftarrow {}^1A_g(X)$ absorption spectrum of pyrazine vapour, *Chem. Phys. Lett.* **79**, No. 3, 573–577 (1981) (Eng) (*P.A.* **84**: 68172).
170. Fröhling, W., Winscom, C. J., and Mobius, K., High-resolution ODMR- and ODNQR spectroscopy of acridine- d_9 in its lowest excited triplet state, *Chem. Phys.* **60**, No. 3, 301–315 (1981) (Eng).
171. Furrer, R., Thurnauer, M. C., Nanosecond time resolution in EPR transient nutation spectroscopy of triplet states, *Chem. Phys. Lett.* **79**, No. 1, 28–33 (1981) (Eng).
172. Glagolev, V. L., Pomazan, Yu. V., and Shamshev, V. N., Nature of triplet-triplet transitions in some many-fragment molecules, *Opt. and Spektrosk.* **50**, No. 1, 165–170 (1981) (Russ).
173. Görner, H., and Schulte-Frohlinde, D., Observation of a triplet state of azulene generated by energy transfer in solution, *J. Photochem.* **16**, No. 3, 169–177 (1981) (Eng).

174. Görner, H., and Schulte-Frohlinde, D., Observation of the triplet state of stilbene in fluid solution. Determination of the equilibrium constant (${}^3t^* \rightleftharpoons {}^3p^*$) and of the rate constant for intersystem crossing (${}^3p^* \rightarrow {}^1p$), *J. Phys. Chem.* **85**, No. 13, 1835–1841 (1981) (Eng).
175. Herkstroeter, W. G., and Merkel, P. B., The triplet state energies of burrene and diphenylisobenzofuran, *J. Photochem.* **16**, No. 4, 331–342 (1981) (Eng).
176. Jain, K. M., and Misra, T. N., Lowest triplet state in 1,4-dinitronaphthalene, *Spectrosc. Lett.* **14**, No. 3, 157–162 (1981) (Eng) (*P. A.* **85**: 24789).
177. Kessler, R. W., and Wilkinson, F., Diffuse reflectance triplet-triplet absorption spectroscopy of aromatic hydrocarbons chemisorbed on γ -alumina, *J. Chem. Soc. Faraday Trans. I* **77**, No. 2, 309–320 (1981) (Eng) (*P. A.* **84**: 78559).
178. Kray, H.-J., and Nickel, B., Optical detection of the lowest triplet state of azulene, *J. Lumin.* **24/25**, pt. 1, 487–490 (1981) (Eng) (*P. A.* **85**: 46703).
179. Levinsky, H. B., and Brenner, H. C., Direct measurement of spectral diffusion rates in localized photoexcited triplet states: optically detected stimulated spin echoes in zero field, *Chem. Phys. Lett.* **78**, No. 1, 177–183 (1981) (Eng).
180. Mitchell, M. B., Smith, G. R., and Guilory, W. A., Matrix-isolation triplet (T_1) state IR spectroscopy of acridine and phenazine, *J. Chem. Phys.* **75**, No. 1, 44–48 (1981) (Eng) (*P. A.* **84**: 80964).
181. Motten, A. G., and Kwiram, A. L., Triplet state properties of pyridine derivatives, *J. Chem. Phys.* **75**, No. 6, 2608–2615 (1981) (Eng).
182. Pineault, R. L., Morgante, C. G., and Struve, W. S., Picosecond triplet state dynamics and photodissociation in 2- and 9-iodoanthracene, *J. Photochem.* **17**, No. 3/4, 435–449 (1981) (Eng).
183. Schmidt, H., Rodder, H. D., Dietzel, U., ESR investigations on the triplet states of cyanine dyes and the structure of their aggregates, *Photogr. Sci. and Eng.* **25**, No. 1, 21–28 (1981) (Eng) (*P. A.* **84**: 68216).
184. Schwoerer, M., Huber, R. A., and Hartl, R. A., Quintet state of organic molecules: magnetic energies, spin-states and ESR-selection rules, *Chem. Phys.* **55**, No. 1, 97–102 (1981) (Eng) (*P. A.* **84**: 45996).
185. Smith, J. P., and Trifunac, A. D., Optically detected time-resolved electron paramagnetic resonance. Excited states and radical ion kinetics in pulse radiolysis of aromatics in cyclohexane solutions, *J. Phys. Chem.* **85**, No. 12, 1645–1653 (1981) (Eng).
186. Stafast, H., Opitz, J., and Huber, J. R., Multiphoton TEA CO₂ laser excitation of the triplet state of propynal, *Chem. Phys.* **56**, No. 1, 63–72 (1981) (Eng) (*P. A.* **84**: 59560).
187. Vogler, H., Calculation of the zero-field splitting parameters D of benzenoid hydrocarbons and their dependence upon the molecular structure, *Mol. Phys.* **43**, No. 1, 83–96 (1981) (Eng) (*P. A.* **84**: 80904).
188. Von Borczyskowski, C., Van Strien, A. J., Schmidt, J., and Van der Waals, J. H., ODMR in zero field of the photoexcited triplet state of naphthalene and quinoxaline dissolved in argon matrices, *Chem. Phys. Lett.* **82**, No. 3, 414–420 (1981) (Eng) (*P. A.* **85**: 741).
189. Wäckerle, G., and Dinse, K. P., Detection of deuterium quadrupole splittings by ODENDOR in the excited triplet state of benzophenone, *Chem. Phys. Lett.* **78**, No. 3, 598–602 (1981) (Eng) (*P. A.* **84**: 59553).

3.4. Electronic-vibrational interaction and vibronic spectra

190. Angelelli, J. M., Chouteau, J., Guiliano, M., and Mille, G., Evaluation of electronic interactions of heterocyclic series by measurement of integrated areas of infrared bands: derivatives of benzothiazole substituted in position 2, *Spectrochim. acta* **37A**, No. 11, 973–976 (1981) (Fr) (*P. A.* **85**: 24705).
191. Anoshin, A. N., Gastilovich, E. A., Gorelik, M. V., Titova, S. P., and Shigorin,

- D. N., A study of vibrational structure of fluorescence spectra of 5,12-dioxy-6,11-tetracenequinone and other quinone oxy-derivatives, *Zh. Fiz. Khim.* **55**, No. 11, 2849–2852 (1981) (Russ).
192. Ar'ev, I. A., and Makhlinets, N. V., Accounting for electron-vibration interaction in benzene molecules when investigating the structure of its solutions by the spectral shift method, *Zh. Prikl. Spektrosk.* **35**, No. 5, 839–843 (1981) (Russ).
 193. Bancewicz, T., and Kielich, S., Isotropic Raman scattering for non-totally symmetric vibrations of correlated molecules with intrinsic optical anisotropy, *J. Chem. Phys.* **75**, No. 1, 107–109 (1981) (Eng) (*P.A.* **84**: 80976).
 194. Baranov, V. I., Gribov, L. A., and Novosadov, B. K., Calculation of vibronic spectra of polyatomic molecules in the Franck-Condon and Herzberg-Teller approximations. 1. Methods for calculating matrix elements, *J. Mol. Struct.* **70**, 1–29 (1981) (Eng) (*P.A.* **84**: 28957).
 195. Baranov, V. I., and Gribov, L. A., Calculation of vibronic-spectra of polyatomic molecules in the Franck-Condon and Herzberg-Teller approximations. 2. Spectral distribution curves of absorption coefficients, *J. Mol. Struct.* **70**, 31–47 (1981) (Eng) (*P.A.* **84**: 28958).
 196. Beck, S. M., Hopkins, J. B., Powers, D. E., and Smalley, R. E., Jet-cooled naphthalene. 2. Single vibronic level fluorescence spectra, *J. Chem. Phys.* **74**, No. 1, 43–52 (1981) (Eng) (*P.A.* **84**: 37239).
 197. Berens, P. H., White, S. R., and Wilson, K. R., Molecular dynamics and spectra. 2. Diatomic Raman, *J. Chem. Phys.* **75**, No. 2, 515–529 (1981) (Eng) (*P.A.* **84**: 99772).
 198. Bonch-Bruevich, A. M., Vartanyan, T. A., and Khromova, V. V., Spectral-kinetic manifestations of nonadiabatic binding of molecular states under conditions of rapid vibrational relaxation, *Zh. Eksp. and Teor. Fiz.* **82**, No. 1, 101–108 (1982) (Russ) (*P.A.* **85**: 49561).
 199. Brumbaugh, D. V., and Innes, K. K., Single vibronic level fluorescence and relaxation spectra of *s*-tetrazine- d_0 and d_2 vapors, *Chem. Phys.* **59**, No. 3, 413–437 (1981) (Eng) (*P.A.* **84**: 99789).
 200. Bukatin, A. F., Derbov, V. L., Kovner, M. A., and Potapov, S. K., Raman scattering on vibration levels of ground and excited electron states of molecules under high-power resonant pumping, *Opt. and Spektrosk.* **50**, No. 6, 1107–1112 (1981) (Russ) (*P.A.* **85**: 49440).
 201. Coveleskie, R. A., and Parmenter, C. S., Single vibronic level fluorescence spectra from the $S_1(^1B_{2u})$ state of *p*-difluorobenzene vapor, *J. Mol. Spectrosc.* **86**, No. 1, 86–114 (1981) (Eng) (*P.A.* **84**: 64091).
 202. Coveleskie, R., Dolson, D. A., Parmenter, C. S., and Stone, B. M., Vibrational redistribution in S_1 aromatics, *J. Photochem.* **17**, No. 1/2, 165 (1981) (Eng).
 203. D'Hooge, L., Vigoureux, J. M., and Menu, C., General theory of the Raman scattering close to a plane surface. Evanescent Raman spectra, *J. Chem. Phys.* **74**, No. 7, 3639–3659 (1981) (Eng).
 204. Eesley, G. L., and Simon, D. L., Enhanced adsorbate Raman scattering from pyridine on silver in ultrahigh vacuum, *J. Vac. Sci. and Technol.* **18**, No. 2, 629–632 (1981) (Eng) (*P.A.* **84**: 97572).
 205. Eesley, G. L., and Burkstrand, J. M., X-ray-photoemission and Raman spectroscopy investigation of pyridine on Ag, *Phys. Rev. B* **24**, No. 2, 582–585 (1981) (Eng).
 206. El'kin, M. D., Gavva, S. P., and Sverdlov, L. M., On the computational formulas for the intensities of combination bands and overtones in Raman and IR spectra, *Opt. and Spektrosk.* **51**, No. 4, 728–730 (1981) (Russ).
 207. Fainberg, B. D., Theory of electron-vibrational spectra in non-Condon approximation, *Opt. and Spektrosk.* **51**, No. 3, 453–461 (1981) (Russ).
 208. Fischer, G., Reimers, J. R., and Ross I. G., CNDO-calculation of second order vibronic coupling in the $^1B_{2u} \rightarrow ^1A_{1g}$ transition of benzene, *Chem. Phys.* **62**, No. 1, 2, 187–193 (1981) (*P.A.* **85**: 24608).

209. Fischer, S. F., and Köppel, H., Analytic treatment of the vibronic coupling problem, *Chem. Phys.* **59**, No. 3, 279–287 (1981) (Eng) (*P. A.* **84**: 99665).
210. Fujimura, Y., Kono, H., Nakajima, T., and Lin, S. H., A theoretical study of resonance Raman scattering from molecules. 3. Resonance Raman scattering and resonance fluorescence. *J. Chem. Phys.* **75**, No. 1, 99–106 (1981) (Eng) (*P. A.* **84**: 80975).
211. Gastilovich, E. A., Mikhailova, K. V., and Shigorin, D. N., Influence of intramolecular interactions on the probability and polarization of vibronic transitions, *Dokl. Akad. Nauk SSR* **257**, No. 2, 389–392 (1981) (Russ).
212. Gastilovich, E. A., and Anoshin, A. N., On the relation between the orbital nature of an electronic transition and the vibrational structure of vibronic spectrum of polyatomics. π l, π^* -fluorescence of molecules with OH groups, *Opt. and Spektrosk.* **51**, No. 2, 255–260 (1981) (Russ) (*P. A.* **85**: 70215).
213. Gastilovich, E. A., Shigorin, D. N., Anoshin, A. N., Klimenko, V. G., and Tskhai, K. V., On the selective character of electron-vibration interaction in polyatomic molecule fine-structure electronic spectra at 4.2 K, *Dokl Akad. Nauk SSSR* **257**, No. 1, 143–147 (1981) (Russ).
214. Gorobei, N. N., Ipatova, I. P., and Subashiev, A. V., Electromagnetic theory of gigantic amplification of Raman light scattering by adsorbed molecules, *Pis'ma v Zh. Eksp. and Teor. Fiz.* **34**, No. 4, 157–161 (1981) (Russ).
215. Gribov, L. A., and Prokofieva, N. I., The method of superposition of electron-vibration configurations in the theory of multiatomic molecule spectra, *Zh. Prikl. Spektrosk.* **35**, No. 5, 827–833 (1981) (Russ).
216. Griesser, H. J., and Bramley, R., The relative importance of vibronic and spin-orbit couplings in aromatic carbonyl compounds, *J. Lumin.* **24/25**, pt. 2, 531–534 (1981) (Eng) (*P. A.* **85**: 49500).
217. Hassing, S., and Sonnich Mortensen, O., The roles of vibronic coupling and the Duschinsky effect in resonance Raman scattering, *J. Mol. Spectrosc.* **87**, No. 1, 1–17 (1981) (Eng) (*P. A.* **84**: 90580).
218. Henneker, W. H., Siebrand, W., and Zgierski, M. Z., Theory of resonance Raman scattering beyond the Condon approximation for a system with two modes of different symmetry, *J. Chem. Phys.* **74**, No. 12, 6560–6579 (1981) (Eng) (*P. A.* **84**: 76817).
219. Hizhnjakov, V., and Rozman, M., On the theory of surface enhanced Raman scattering, *Eesti NSV Tead. Akad. Toim., Füüs. Mat.* **30**, No. 4, 349–356 (1981) (Eng).
220. Innes, K. K., Brumbaugh, D. V., and Franks, L. A., Franck-Condon analysis of visible absorption of s-tetrazine vapor, *Chem. Phys.* **59**, No. 3, 439–442 (1981) (Eng) (*P. A.* **84**: 99790).
221. Joshi, U. C., Joshi, M., and Singh, R. N., Polarized laser Raman and i.e. spectra of dibenzyl sulphide, *Spectrochim. acta* **37A**, No. 8, 591–592 (1981) (Eng).
222. Kircheva, P. P., and Keskinova, E. N., On the spectra of stimulated Raman scattering at resonance and preresonance (comment), *Bulg. J. Phys.* **8**, No. 3, 257–266 (1981) (Eng).
223. Klochkov, V. P., Broadening of vibronic bands in the spectra of complex organic molecules (review), *Zh. Prikl. Spektrosk.* **34**, No. 3, 389–399 (1981) (Russ).
224. Kobeissi, H., Dagher, M., and Alameddine, M. A., Explicit expression of the Franck-Condon factors in terms of the potentials of the two states, *Int. J. Quantum Chem.* **20**, No. 3, 633–644 (1981) (Eng) (*P. A.* **85**: 757).
225. Koningstein, J. A., On the relevance of the vibro-electronic and electronic Raman effect to selection rules of normal modes of molecules having an electronically degenerate ground state. In: *Vibrational spectra and structure. A series of advances*. Vol. 9. Durig, J.R., Ed., Amsterdam, Netherlands: North-Holland, 115–142 (1981) (Eng) (*P. A.* **84**: 80988).
226. Lau, A., Pfeiffer, M., Lenz, K., and Weigmann, H.-J., Influence of resonant

- electronic background susceptibility of the line shapes of CARS signals, *Opt. Commun.* **38**, No. 2, 139–142 (1981) (Eng) (*P.A.* **84**: 103705).
227. Loo, B. H. Surface enhanced Raman scattering from pyridine adsorbed on cadmium, *J. Chem. Phys.* **75**, No. 12, 5955–5956 (1981) (Eng) (*P.A.* **85**: 34420).
 228. Lukashin, A. V., and Frank-Kamenetskii, M. D., Inverse problem of vibronic spectroscopy, *Dokl. Akad. Nauk SSSR* **259**, No. 3, 633–636 (1981) (Russ).
 229. Lukashin, A. V., and Frank-Kamenetskii, M. D., Inverse problem of vibronic spectroscopy. A solution for β -carotene, *Chem. Phys. Lett.* **80**, No. 1, 119–123 (1981) (Eng) (*P.A.* **84**: 72318).
 230. McDonald, D. B., and Rice, S. A., Single vibronic level fluorescence from $^1B_{3u}$ pyrazine: The role of Fermi Resonance and Duschinski rotation, *J. Chem. Phys.* **74**, No. 9, 4893–4906 (1981) (Eng) (*P.A.* **84**: 76853).
 231. Madzgalla, I., Paerschke, H., Susse, K.-E., and Welsch, D.-G., On the validity of several methods of calculation of vibronic energy relaxation rates, *Ann. Phys.* **38**, No. 6, 434–450 (1981) (Eng) (*P.A.* **85**: 49359).
 232. Mal'shukov, A. G., Theory of inelastic light scattering by a molecule adsorbed at the metal surface, *Solid State Commun.* **38**, No. 10, 907–913 (1981) (Eng) (*P.A.* **84**: 92763).
 233. Marconi, G., Orlandi, G., Palmieri, P., and Vrbancich, J., Theoretical evaluation of the vibronic intensity distribution in the phosphorescence of benzene, *Chem. Phys.* **61**, No. 1, 2, 43–51 (1981) (Eng) (*P.A.* **85**: 29648).
 234. Marconi, G., and Orlandi, G., Vibronic activity of b_{2u} modes in the two-photon spectrum of naphthalene, *J. Photochem.* **17**, No. 1/2, 158 (1981) (Eng).
 235. Marconi, G., Vibronic coupling calculation of the pre-resonance Raman intensities of naphthalene, *Chem. Phys.* **57**, No. 3, 311–318 (1981) (Eng) (*P.A.* **84**: 76720).
 236. Mazurenko, Yu. T., Udalt'sov, V. S., Makarova, E. G., and Cherkasov, A. S., Vibronic structure dynamics of electronic spectrum of molecules in solution, *Opt. and Spektrosk.* **51**, No. 3, 462–468 (1981) (Russ).
 237. Merlin, J. C., Lorriaux, J. L., Dupaix, A., and Thomas, E. W., Resonance Raman spectra of aminoazobenzene derivatives in acid solution, *J. Raman Spectrosc.* **11**, No. 2, 131–137 (1981) (Eng) (*P.A.* **84**: 68192).
 238. Merlin, J. C., Lorriaux, J. L., Thomas, E. W., and Dupaix, A., Resonance Raman spectra of substituted derivatives of hydroxyazobenzene in strong acid solution, *J. Raman Spectrosc.* **11**, No. 3, 209–214 (1981) (Fr) (*P.A.* **84**: 80984).
 239. Nafie, L. A., and Freedman, T. B., A unified approach to the determination of infrared and Raman vibrational optical activity intensities using localized molecular orbitals, *J. Chem. Phys.* **75**, No. 10, 4847–4851 (1981) (Eng).
 240. Narva, D. L., and McClure, D. S., Vibrational analyses, vibronic coupling and identification of electronic origins in the lower $^1n\pi^*$ and $^1\pi\pi^*$ states of phenazine and acridine in a biphenyl host at 2 K, *Chem. Phys.* **56**, No. 2, 167–180 (1981) (Eng) (*P.A.* **84**: 59494).
 241. Nicholas, J. V., Vibrational mode interactions with the photoexcited triplet state of naphthalene, *Chem. Phys. Lett.* **82**, No. 2, 225–228 (1981) (Eng) (*P.A.* **84**: 100612).
 242. Nicholls, R. W., Approximate formulas for Franck-Condon factors, *J. Chem. Phys.* **74**, No. 12, 6980–6981 (1981) (Eng) (*P.A.* **84**: 81039).
 243. Pawlikowski, M., Effect of quadratic interactions on the resonance Raman scattering of $T \times t_2$ Jahn-Teller systems, *Chem. Phys. Lett.* **80**, No. 1, 168–171 (1981) (Eng) (*P.A.* **84**: 72358).
 244. Persson, B. N. J., On the theory of surface-enhanced Raman scattering, *Chem. Phys. Lett.* **82**, No. 3, 561–565 (1981) (Eng).
 245. Petrov, V. I., Recording of vibrations inactive in infrared and Raman spectra by the method of stimulated Raman scattering, *Opt. and Spektrosk.* **51**, No. 5, 745–746 (1981) (Russ).

246. Pockrand, I., and Otto, A., Surface enhanced and disorder induced Raman scattering from silver films, *Solid State Commun.* **37**, No. 2, 109–112 (1981) (Eng) (*P.A.* **84**: 43127).
247. Priyutov, M. V., Approximate treatment of nonadiabaticity in the calculations of vibrational structure intensities in vibronic spectra of polyatomics, *Opt. and Spektrosk.* **51**, No. 1, 90–96 (1981) (Russ) (*P.A.* **85**: 59779).
248. Rashev, S. S., On the method of moments in the theory of electron-vibrational spectra of multiatomic molecules, *Zh. Prik. Spektrosk.* **35**, No. 4, 660–663 (1981) (Russ).
249. Rava, R. P., Goodman, L., and Krogh-Jespersen, K., Vibronic mechanisms in the two-photon spectrum of benzene, *J. Chem. Phys.* **74**, No. 1, 273–281 (1981) (Eng) (*P.A.* **84**: 41449).
250. Riedle, E., Neusser, H. J., and Schlag, E. W., Electronic spectra of polyatomic molecules with resolved individual rotational transitions: Benzene, *J. Chem. Phys.* **75**, No. 9, 4231–4240 (1981) (Eng) (*P.A.* **85**: 20149).
251. Robinson, G. W., and Auerbach, R. A., The origin of off-resonance Raman intensity, *J. Chem. Phys.* **74**, No. 4, 2083–2090 (1981) (Eng).
252. Rowell, N. L., Lockwood, D. J., and Grant, P., Microprocessors: Applications to Raman and Brillouin spectroscopy, *J. Raman Spectrosc.* **10**, 119–125 (1981) (Eng).
253. Sanche, L., and Michaud, M., Electron energy-loss vibronic spectroscopy of matrix-isolated benzene and multilayer benzene films, *Chem. Phys. Lett.* **80**, No. 1, 184–187 (1981) (Eng) (*P.A.* **84**: 72552).
254. Sanchez, L. A., Birke, R. L., and Lombardi, J. R., The surface enhanced Raman spectrum from pyridine on mercury, *Chem. Phys. Lett.* **79**, No. 2, 219–223 (1981) (Eng) (*P.A.* **84**: 70139).
255. Schmid, E. D., and Topsom, R. D., Raman intensity and conjugation. 5. A quantitative relationship between Raman intensity and the length of conjugation and an analysis of the Raman intensities of some substituted benzenes and biphenyls, *J. Amer. Chem. Soc.* **103**, No. 7, 1628–1632 (1981) (Eng) (*P.A.* **85**: 24711).
256. Schulman, J. M., and Lee, W. S., A polarizability theory of the resonance Raman effect, *J. Chem. Phys.* **74**, No. 9, 4930–4935 (1981) (Eng) (*P.A.* **84**: 72431).
257. Siebrand, W., and Zgierski, M. Z., Radiationless decay of vibronically coupled electronic states. 3. Strong coupling and its effect on triplet decay in aromatic hydrocarbons, *J. Chem. Phys.* **75**, No. 3, 1230–1238 (1981) (Eng) (*P.A.* **84**: 90607).
258. Strokach, N. S., Brivina, L. P., Shigorin, D. N., and Gorelik, M. V., Electronic-vibrational transitions and electronic structure of 1,4-naphthoquinone. Emission spectrum at 4.2 K, *Zh. Fiz. Khim.* **55**, No. 5, 1211–1215 (1981) (Russ).
259. Strokach, N. S., Shigorin, D. N., and Kolokolov, B. N., Internal heavy atom in polyatomic molecule. Vibronic emission spectrum of 2-Br-9,10-anthraquinone, *Zh. Fiz. Khim.* **55**, No. 8, 2019–2024 (1981) (Russ).
260. Strokach, N. S., Shigorin, D. N., and Kolokolov, B. N., Internal heavy atom in polyatomic molecule. Vibronic emission spectrum of 2-Cl-9,10-anthraquinone, *Zh. Fiz. Khim.* **55**, No. 8, 2013–2018 (1981) (Russ).
261. Strokach, N. S., Shigorin, D. N., and Kolokolov, B. N., Internal heavy atom in polyatomic molecule. Vibronic emission spectrum of 2-I-9,10-anthraquinone, *Zh. Fiz. Khim.* **55**, No. 9, 2346–2352 (1981) (Russ).
262. Takagi, Y., and Shigenari, T., Characteristics of a generalized susceptibility for the analysis of lineshapes of Raman spectra, *J. Raman Spectrosc.* **10**, 158–160 (1981) (Eng) (*P.A.* **84**: 61332).
263. Teichler, H., Theory of multi-phonon transitions beyond the Condon approximation, *Phys. status solidi (b)* **104**, No. 1, 239–251 (1981) (Eng) (*P.A.* **84**: 60547).

264. Udagawa, M., Chou, C.-C., Hemminger, J. C., and Ushioda, S., Raman scattering cross section of adsorbed pyridine molecules on a smooth silver surface, *Phys. Rev. B* **23**, No. 12, 6843–6846 (1981) (Eng) (*P.A.* **84**: 92762).
265. Ueba, H., and Ichimura, S., Raman scattering of adsorbed molecules, *J. Chem. Phys.* **74**, No. 5, 3070–3075 (1981) (Eng) (*P.A.* **84**: 68190).
266. Wilson, H. W., MacNamee, R. W., and Doring, J. R., Raman spectra of gases, *J. Raman Spectrosc.* **11**, No. 4, 252–255 (1981) (Eng) (*P.A.* **84**: 103702).
267. Wood, T. H., Zwemer, D. A., Shank, C. V., and Rowe, J. E., The dependence of surface-enhanced Raman scattering on surface preparation: evidence for an electromagnetic mechanism, *Chem. Phys. Lett.* **82**, No. 1, 5–8 (1981) (Eng).
268. Yamada, H., Resonance Raman spectroscopy of adsorbed species on solid surfaces, *Appl. Spectrosc. Revs.* **17**, No. 2, 227–277 (1981) (Eng).
269. Ziegler, L. D., and Hudson, B., Resonance Raman scattering of benzene and benzene- d_6 with 212.8 nm excitation, *J. Chem. Phys.* **74**, No. 2, 982–992 (1981) (Eng) (*P.A.* **84**: 45971).

3.5. Vibrational spectra

270. Akhmanov, S. A., Dzhidzhoev, M. S., Zhdanov, B. V., Zheludev, N. I., Kovrigin, A. I., Kuznetsov, V. I., Markov, V. N., Platonenko, V. T., and Kholodnykh, A. I., Multiquantum excitation of molecules in intensive infrared field; the role of intermode intramolecular interactions, *Izv. Akad. Nauk SSSR. Ser. Fiz.* **45**, No. 8, 1544–1556 (1981) (Russ).
271. Aliev, M. R., and Mikhailov, V. M., Intensities of vibration-rotational transitions in the fundamental infrared absorption bands of polyatomics, *Opt. and Spektrosk.* **51**, No. 4, 633–639 (1981) (Russ).
272. Amirav, A., Even, U., and Jortner, J., Excited-state dynamics of the isolated ultracold ovalene molecule, *J. Chem. Phys.* **74**, No. 7, 3745–3756 (1981) (Eng) (*P.A.* **84**: 68226).
273. Amirav, A., Even, U., and Jortner, J., Excited-state energetics and dynamics of pentacene-rare gas complexes, *J. Phys. Chem.* **85**, No. 4, 309–312 (1981) (Eng) (*P.A.* **84**: 85234).
274. Andrews, J. R., Hochstrasser, R. M., and Trommsdorff, H. P., Vibrational transitions in excited states of molecules using coherent stokes Raman spectroscopy: application to ferrocyclochrome-C, *Chem. Phys.* **62**, No. 1, 2, 87–101 (1981) (Eng).
275. Arya, K., and Zeyher, R., Theory of surface-enhanced Raman scattering from molecules adsorbed at metal surfaces, *Phys. Rev. B* **24**, No. 4, 1852–1865 (1981) (Eng).
276. Arzamanova, I. G., Naiman, M. I., Romm, I. P., Tovbin, Yu. K., Guryanova, E. N., Gurvich, Ya. A., and Logvinenko, R. M., Infrared spectra and reactivity of 2,2'-methylene-bis-phenols, *Zh. Fiz. Khim.* **55**, No. 6, 1554–1555 (1981) (Russ).
277. Avouris, Ph., and Demuth, J. E., Vibrational overtone spectroscopy of benzene and pyridine on Ag(111), *J. Chem. Phys.* **75**, No. 12, 5953–5954 (1981) (Eng) (*P.A.* **85**: 34377).
278. Baranov, A. V., and Bobovich, Ya. S., Modern equipment and techniques for investigation of spontaneous Raman scattering spectra (review), *Zh. Prikl. Spektrosk.* **34**, No. 1, 5–44 (1981) (Russ).
279. Bingel, W. A., The symmetry group of vibrationally distorted molecules, *Acta. phys. Acad. sci. hung.* **51**, No. 1–2, 13–20 (1981) (Eng).
280. Blazejic, J., and Colombo, L., The vibrational spectrum of the benzophenone molecule, *J. Raman Spectrosc.* **11**, No. 3, 143–149 (1981) (Eng) (*P.A.* **84**: 80978).
281. Bogatyryova, I. K., Interpretation of vibration spectra of phenol, phenol ^{18}O

- and phenol OD, *Zh. Prikl. Spektrosk.* **34**, No. 4, 677–680 (1981) (Russ) (*P. A.* **85**: 64952).
282. Brazdil, J. F. and Yeager, E. B., Resonance Raman spectra of adsorbed species at solid-gas interfaces. 2. *p*-nitrosodimethylaniline and *p*-dimethylaminoazobenzene adsorbed on semiconductor oxide surfaces, *J. Phys. Chem.* **85**, No. 8, 1005–1014 (1981) (Eng) (*P. A.* **85**: 34422).
 283. Bree, A., and Edelson, M., Raman-active low-frequency torsions of trans-stilbene. In: Proceedings of the VIIth International Conference on Raman Spectroscopy. Linear and Non Linear Processes, Ottawa, Canada, 1980. Amsterdam, Netherlands: North-Holland, 114–115 (1980) (Eng) (*P. A.* **85**: 24714).
 284. Brunvoll, J., Cyvin, B. N., and Cyvin, S. J., Condensed aromatics. Part XI. In-plane vibrations of polycenes, *Spectrosc. Lett.* **14**, No. 1, 27–36 (1981) (Eng).
 285. Bueno, W. A., Blaz, N. A., and Santos, M. J. M., Infrared absorption spectra of pyridine N-oxide and benzoic acid complexes, *Spectrochim. acta* **37A**, No. 11, 935–938 (1981) (Eng).
 286. Bukatin, A. F., Derbov, V. L., Kovner, M. A., and Potapov, S. K., Raman scattering on vibration levels of ground and excited electron states of molecules under high-power resonant pumping, *Opt. and Spektrosk.* **50**, No. 6, 1107–1112 (1981) (Russ) (*P. A.* **85**: 49440).
 287. Chapuisat, X., Nauts, A., and Durand, G., A method to obtain the Eckart Hamiltonian and the equations of motion of a highly deformable polyatomic system in terms of generalized coordinates, *Chem. Phys.* **56**, No. 1, 91–105 (1981) (Eng) (*P. A.* **84**: 59609).
 288. Cyvin, S. J., Neerland, G., Brunvoll, J., and Cyvin, B. N., Condensed aromatics. Part XII. Phenanthrene, *Spectrosc. Lett.* **14**, No. 1, 37–45 (1981) (Eng).
 289. Cyvin, S. J., and Cyvin, B. N., Condensed aromatics. Part 16. Supplementary mean amplitudes for nonbonded CC distances, *Spectrosc. Lett.* **14**, No. 4, 287–292 (1981) (Eng).
 290. Danchinov, K. M., Rodionov, A. N., and Shigorin, D. N., Calculation of dibenzofuran and dibenzothiophene planar vibration frequencies and forms, *Zh. Fiz. Khim.* **55**, No. 10, 2554–2557 (1981) (Russ).
 291. Danchinov, K. M., Rodionov, A. N., and Shigorin, D. N., Vibrational spectra of fluorene elementoorganic derivatives, *Zh. Fiz. Khim.* **55**, No. 10, 2558–2561 (1981) (Russ).
 292. Deguchi, K., Sado, A., Nishikawa, K., and Aono, S., Comment on “Theory of vibrational overtone line shapes of polyatomic molecules”, *J. Chem. Phys.* **75**, No. 11, 5584–5585 (1981) (Eng).
 293. El'kin, M. D., Kredentser, E. I., Popov, A. F., Tomashevsky, Yu. B., and Sverdlov, L. M., Calculation of anharmonic vibrational energy levels of polyatomic molecules with the variational method, *Zh. Prikl. Spektrosk.* **35**, No. 5, 875–878 (1981) (Russ).
 294. El'kin, M. D., Popov, A. F., and Sverdlov, L. M., On the calculation of relation coefficients between exact and approximate natural vibrational coordinates, *Opt. and Spektrosk.* **51**, No. 2, 358–361 (1981) (Russ).
 295. El'kin, M. D., Gavva, S. P., and Sverdlov, L. M., On the computative formulas for the intensities of combination bands and overtones in Raman and IR spectra, *Opt. and Spektrosk.* **51**, No. 4, 728–730 (1981) (Russ).
 296. Evans, G. J., Reid, C. J., Ferrario, M., and Evans, M. W., A spectrometer for far i.r. hot broad band fluorescence in gases, *Spectrochim. acta* **37A**, No. 2, 123–127 (1981) (Eng).
 297. Gelbart, W. M., Beswick, J. A., Delgado-Barrio, G., Vibrational dephasing in liquids: analogy with molecular electronic lineshapes, *Can. J. Phys.* **59**, No. 10, 1514–1531 (1981) (Eng) (*P. A.* **85**: 31464).
 298. Goel, R. K., Gupta, S. K., Agarwal, M. L., and Sharma, S. N., Infrared spectra of some *N*-heterocyclic molecules of biological interest, *Indian J. Pure and Appl. Phys.* **19**, No. 5, 501–504 (1981) (Eng) (*P. A.* **84**: 76791).

299. Goel, R. K., and Gupta, S. K., Laser Raman spectrum of 2,6-dibromophenol, *Acta phys. pol.* **A59**, No. 4, 549–553 (1981) (Eng).
300. Goethals, G., Nadjio, L., and Uzan, R., Infrared study of polysubstitution effects in benzophenones and acetophenones: contribution of inter and intracycle interaction mechanisms, *Spectrochim. acta* **37A**, No. 3, 199–204 (1981) (Eng) (*P. A.* **84**: 68185).
301. Gribov, L. A., and Rasovsky, M. R., Variational method of solving the problem of arbitrary internal motions in a polyatomic molecules. Internal rotation and anharmonic vibrations, *Opt. and Spektrosk.* **51**, No. 5, 794–797 (1981) (Russ).
302. Gribov, L. A., and Rasovsky, M. R., Variational method of solving the problem of arbitrary internal motions in a polyatomic molecule. Internal rotation and harmonic vibrations, *Opt. and Spektrosk.* **51**, No. 4, 627–632 (1981) (Russ).
303. Higashigaki, Y., and Wang, C. H., Rayleigh-Brillouin scattering studies of liquid and supercooled liquid o-terphenyl, *J. Chem. Phys.* **74**, No. 6, 3175–3184 (1981) (Eng) (*P. A.* **84**: 61366).
304. Hill, I. R., Steele, D., and Tindle, J., Vibrational band contours. 5. The interaction between benzene and polar solvents, *Spectrochim. acta* **37A**, No. 8, 667–676 (1981) (Eng).
305. Joshi, U. C., Joshi, M., and Singh, R. N., Polarized laser Raman and i.r. spectra of dibenzyl sulphide, *Spectrochim. acta* **37A**, No. 8, 591–592 (1981) (Eng).
306. Keiderling, T. A., Observation of magnetic vibrational circular dichroism, *J. Chem. Phys.* **75**, No. 7, 3639–3641 (1981) (Eng) (*P. A.* **85**: 743).
307. Keiderling, T. A., Vibrational circular dichroism, *Appl. Spectrosc. Revs.* **17**, No. 2, 189–226 (1981) (Eng).
308. Kim, S. K., A new method of constructing the symmetry coordinates of molecular vibrations based on the correspondence theorem, *J. Math. Phys.* **22**, No. 10, 2303–2306 (1981) (Eng) (*P. A.* **85**: 24669).
309. Klæboe, P., Cyvin, S. J., Asbjørnsen, A. P., and Cyvin, B. N., Condensed aromatics. XIV. Fluoranthene, *Spectrochim. acta* **37A**, No. 8, 655–661 (1981) (Eng).
310. Konarski, J., On the rotation-vibration energy levels of a molecule. Perturbation approach to the semirigid model, *J. Mol. Spectrosc.* **90**, No. 1, 1–14 (1981) (Eng).
311. Kondo, S., and Saeki, S., Coriolis interactions and infrared intensities in fluoroform, *J. Chem. Phys.* **74**, No. 12, 6603–6611 (1981) (Eng).
312. Konschin, H., Tylli, H., and Grundfelt-Forsius, C., An experimental and theoretical investigation of the internal rotation in anisole, *J. Mol. Struct.* **77**, No. 1–2, 51–64 (1981) (Eng) (*P. A.* **85**: 31487).
313. Korppi-Tommola, J., Shurvell, H. F., Daunt, S. J., and Steele, D., The gas phase Raman band contours of 1,3,5-trifluorobenzene and the infrared and Raman band contours of 1,3,5-trifluorobenzene-d₃, *J. Mol. Spectrosc.* **87**, No. 2, 382–392 (1981) (Eng) (*P. A.* **85**: 715).
314. Letokhov, V. S., and Makarov, A. A., Polyatomic molecules is a strong infrared field, *Usp. Fiz. Nauk* **134**, No. 1, 45–92 (1981) (Russ) (*P. A.* **85**: 49526).
315. Marcott, C., Ferber, S. D., Havel, H. A., Moscovitz, A., and Overend, J., A computer algorithm for the convenient normal-coordinate analysis of molecules with redundant coordinates, *Spectrochim. acta* **37A**, No. 4, 241–245 (1981) (Eng) (*P. A.* **84**: 76776).
316. Medhi, K. C., The vapour-phase infrared spectrum and thermodynamic functions of 2,5-dichloropyridine, *Indian J. Phys. B* **55**, No. 5, 386–396 (1981) (Eng) (*P. A.* **85**: 54839).
317. Nafie, L. A., and Freedman, T. B., A unified approach to the determination of infrared and Raman vibrational optical activity intensities using localized molecular orbitals, *J. Chem. Phys.* **75**, No. 10, 4847–4851 (1981) (Eng).
318. Nyquist, R. A., Loy, B. R., and Chrisman, R. W., Infrared and Raman spectra of bromodichlorobenzenes, *Spectrochim. acta* **37A**, No. 5, 319–336 (1981) (Eng).

- (*P. A.* **84**: 90577).
319. Paliani, G., and Cataliotti, R., Vibrational spectra and assignments for 2-chloro and 2-bromo derivatives of thiophene, selenophene and tellurophene, *Spectrochim. acta* **37A**, No. 8, 707–710 (1981) (Eng).
 320. Pavlyuchko, A. I., Lozenko, G. F., and Gribov, L. A., Interpretation of states and analysis of variations of geometry of molecules in case of anharmonic vibrational excitations, *Opt. and Spektrosk.* **50**, No. 3, 450–457 (1981) (Russ) (*P. A.* **85**: 34381).
 321. Perelygin, I. S., Mel'nichenko, V. Ya., and Polushkin, V. G., Manifestation of ion-molecular and intermolecular hydrogen bonds formed by hydroxyl-containing compounds on the absorption bands of first overtones of O-H groups stretching modes, *Zh. Prikl. Spektrosk.* **35**, No. 2, 312–315 (1981) (Russ).
 322. Perevalov, V. I., and Tyuterev, V. G., Centrifugal distortion of asymmetric-top molecules with Fermi resonance (contact transformations in a quasi-degenerate case), *Opt. and Spektrosk.* **51**, No. 4, 640–647 (1981) (Russ).
 323. Perry, J. W., and Zewail, A. H., Observation of large splittings, narrow resonances, and polarization extinction in the high-energy overtone spectra of large molecules. Experimental tests of locality of excitation in bonds, *J. Phys. Chem.* **85**, No. 8, 934–936 (1981) (Eng) (*P. A.* **85**: 728).
 324. Petrov, V. I., Recording of vibrations inactive in infrared and Raman spectra by the method of stimulated Raman scattering, *Opt. and Spektrosk.* **51**, No. 5, 745–746 (1981) (Russ).
 325. Pinan-Lucarre, J. P., Loisel, J., and Vincent-Geisse, J., IR and Raman study of rotational relaxation of furan and thiophene. 1. Bandwidths. Comparison of the rotations about the principal axes of inertia, *Chem. Phys.* **62**, No. 3, 251–263 (1981) (Eng).
 326. Pinan-Lucarre, J. P., and Nguyen-Tan, T., IR and Raman study of rotational relaxation of furan and thiophene. 2. Correlation functions. Interpretation according to models, *Chem. Phys.* **62**, No. 3, 265–274 (1981) (Eng).
 327. Plakhtinsky, V. V., Ustinov, V. A., Mironov, G. S., Filippova, T. P., Ryabukhina, N. S., and Krasovskaya, G. G., Carbonyl absorption in IR spectra of benziloxycenaphthenequinones, *Zh. Prikl. Spektrosk.* **35**, No. 2, 740–741 (1981) (Russ).
 328. Polavarapu, P. L., and Chandrasekhar, J., An efficient molecular orbital approach for a simultaneous evaluation of the vibrational circular dichroism and absorption intensities, *Chem. Phys. Lett.* **84**, No. 3, 587–592 (1981) (Eng) (*P. A.* **85**: 29500).
 329. Pulay, P., Fogarasi, G., and Boggs, J. E., Force field, dipole moment derivatives, and vibronic constants of benzene from a combination of experimental and ab initio quantum chemical information, *J. Chem. Phys.* **74**, No. 7, 3999–4014 (1981) (*P. A.* **85**: 64181).
 330. Radziszewski, J. G., and Michl, J., Infrared linear dichroism of solutes in stretched polyethylene using Fourier-transform spectroscopy. Pyrene, *J. Phys.* **85**, No. 20, 2934–2937 (1981) (Eng) (*P. A.* **85**: 49470).
 331. Rangacharyulu, M., and Premaswarup, D., Vibrational spectra of substituted benzenes: bromonitroanisoles, *Indian J. Pure and Appl. Phys.* **19**, No. 2, 166–168 (1981) (Eng) (*P. A.* **84**: 45949).
 332. Remizov, A. B., Vakhrusheva, N. N., and Pominov, I. S., Study of CH₃-groups rotation in molecular crystals using band widths in IR absorption spectra, *Zh. Prikl. Spektrosk.* **35**, No. 2, 299–302 (1981) (Russ).
 333. Rodionova, G. N., and Partalla, N. A., Spectral study of intramolecular interactions in gas phase, *Zh. Fiz. Khim.* **55**, No. 5, 1190–1194 (1981) (Russ).
 334. Rzanny, R., Oehme, K.-L., Rudakoff, G., Carius, W., Schroter, O., and Reklat, A., Analysis of the rotary motion of the furane molecule in the liquid phase, *Z. phys. Chem. Leipzig* **262**, No. 2, 377–381 (1981) (Ger) (*P. A.* **84**: 64025).
 335. Sage, M. L., and Jortner, J., Cooperative excitations of bond modes, *Chem. Phys. Lett.* **79**, No. 1, 9–14 (1981) (Eng).

336. Sanyal, N. K., Goel, R. K., Sharma, S. D., Sharma, S. N., and Kansal, K. P., Infrared absorption spectra of 2,5-dibromo- and 2-fluoro-6-chloro-toluenes, *Indian J. Phys.* **55B**, No. 1, 67–73 (1981) (Eng).
337. Sanyal, N. K., Goel, R. K., and Agarwal, M. L., Laser Raman spectrum of 2,4-dimethoxybenzaldehyde, *Indian J. Pure and Appl. Phys.* **19**, No. 5, 480–483 (1981) (Eng).
338. Singh, R. N., and Singh, S. K., Infrared and Raman spectra of 1-bromo-2,6-dichloro-benzene, *Indian J. Pure and Appl. Phys.* **19**, No. 6, 599–602 (1981) (Eng) (*P. A.* **84**: 85140).
339. Skaložub, A. S., and Tsaune, A. Ya. Vibration-rotation hamiltonian of polyatomic nonrigid molecules. Selection of rotation, *Opt. and Spektrosk.* **50**, No. 5, 995–998 (1981) (Russ) (*P. A.* **85**: 43885).
340. Srivastava, S. L., and Pande, V. S., Vibrational spectra of 2-amino-4,6-dimethyl and 4-amino-2,6-dimethylpyrimidine, *Indian J. Phys.* **55B**, No. 1, 83–86 (1981) (Eng).
341. Srivastava, S. L., and Rohitashava, Vibrational spectra of 4,5-diaminopyrimidine, *Indian J. Phys.* **55B**, No. 6, 455–460 (1981) (Eng) (*P. A.* **85**: 54841).
342. Stannard, P. R., and Gelbart, W. M., Intramolecular vibrational energy redistribution, *J. Phys. Chem.* **85**, No. 24, 3592–3599 (1981) (Eng) (*P. A.* **85**: 49558).
343. Tanabe, K., Raman linewidth study of vibrational relaxation of benzonitrile in solution, *Chem. Phys.* **63**, No. 1, 2, 135–142 (1981) (Eng) (*P. A.* **85**: 29604).
344. Tonks, D. L., and Page, J. B., General theory of vibrational mode mixing and frequency shifts in resonance Raman scattering, *Chem. Phys. Lett.* **79**, No. 2, 247–252 (1981) (Eng).
345. Vavra, J., and Rosenbergerova, A., Light scattering in pyridine-*n*-hexane and pyridine-methanol mixtures, *Z. phys. Chem. Leipzig* **262**, No. 6, 1040–1056 (1981) (Eng).
346. Wilson, H. W., MacNamee, R. W., and Durig, J. R., Raman spectra of gases. 24-Phenol, *J. Raman Spectrosc.* **11**, No. 4, 252–255 (1981) (Eng).
347. Zaitsev, N. M., Density of vibration-rotation states of polyatomic molecules with internal rotation, *Opt. and Spektrosk.* **50**, No. 3, 467–470 (1981) (Russ) (*P. A.* **85**: 34383).
348. Zhukovskii, V. Ya., Pirig, Ya. N., and Makitra, R. G., Solvents influence on the valent vibrations displacement of hydrogenous complexes of cumene hydroperoxide, *Zh. Fiz. Khim.* **55**, No. 7, 1833–1835 (1981) (Russ).

3.6. Fluorescence

349. Anderson, R. W., and Knox, W., Time resolved fluorescence decay measurements in phthalazine, *J. Lumin.* **24/25**, pt. 2, 647–650 (1981) (Eng) (*P. A.* **85**: 46710).
350. Asano, M., and Koningstein, J. A., Probing of chlorophyll a with a pulsed tunable laser: monomer and dimer excited state lifetimes and their time resolved fluorescence spectra, *Chem. Phys.* **57**, No. 1, 2, 1–10 (1981) (Eng) (*P. A.* **84**: 76847).
351. Azarov, V. Yu., Nurmukhametov, R. N., and Stechkina, I. B., Direction of the electronic transition moment and the polarization of the fluorescence of partially oriented molecules, *Dokl. Akad. Nauk SSSR* **259**, No. 2, 336–340 (1981) (Russ).
352. Becker, H.-D., Sandros, K., Skelton, B. W., and White, A. H., Relationship between fluorescence and molecular geometry. Excimer luminescence of crystalline spiroanthronyl-substituted dihydrobenzanthracenes, *J. Phys. Chem.* **85**, No. 20, 2923–2926 (1981) (Eng) (*P. A.* **85**: 49489).
353. Becker, H.-D., Sandros, K., Skelton, B. W., and White, A. H., Relationship between fluorescence and molecular geometry. Proximity effects in fluorescence quenching by the anthrone-anthracene interaction, *J. Phys. Chem.* **85**, No. 20, 2927–2939 (1981) (Eng) (*P. A.* **85**: 49490).

354. Beddard, G. S., Doust, T., Meech, S. R., and Phillips, D., Synchronously pumped dye lasers in fluorescence decay measurements of molecular motion, *J. Photochem.* **17**, No. 3/4, 427–433 (1981) (Eng).
355. Behlen, F. M., McDonald, D. B., Sethuraman, V., and Rice, S. A., Fluorescence spectroscopy of cold and warm naphthalene molecules: Some new vibrational assignments, *J. Chem. Phys.* **75**, No. 12, 5685–5693 (1981) (Eng) (*P.A.* **85**: 24784).
356. Belous, V. M., and Tolstobrov, V. I., Effect of antisensitization in case of excitation of luminescence of the “organic dye-impurity cluster” system, *Opt. and Spektrosk.* **50**, No. 4, 682–687 (1981) (Russ) (*P.A.* **85**: 34485).
357. Bendig, J., and Siegmund, M., The influence of the fluorescence in the absorption of absorption spectra, *Z. phys. Chem., Leipzig* **262**, No. 2, 209–224 (1981) (Ger) (*P.A.* **84**: 103744).
358. Blokhin, A. P., and Tolkachev, V. A., Polarization of fluorescence of free polyatomics, *Opt. and Spektrosk.* **51**, No. 2, 278–284 (1981) (Russ) (*P.A.* **85**: 70327).
359. Bogdanov, V. L., and Klochkov, V. P., Intensification of luminescence from relaxing states in light quenching, *Opt. and Spektrosk.* **50**, No. 6, 1100–1106 (1981) (Russ) (*P.A.* **85**: 49508).
360. Bogdanov, V. L., and Klochkov, V. P., Secondary emission of coronene molecules under the excitation of upper electron states, *Opt. and Spektrosk.* **50**, No. 5, 875–882 (1981) (Russ) (*P.A.* **85**: 43989).
361. Borisevich, N. A., Pliska, S. P., and Tolkachev, V. A., Polarization spectra of the fluorescence of complex molecules in gas phase, *Dokl. Akad. Nauk SSSR* **261**, No. 5, 1109–1113 (1981) (Russ).
362. Brumbaugh, D. V., and Innes, K. K., Single vibronic level fluorescence and relaxation spectra of s-tetrazine-d₀ and d₂ vapors, *Chem. Phys.* **59**, No. 3, 413–437 (1981) (Eng) (*P.A.* **84**: 99789).
363. Bush, T. E., and Scott, G. W., Fluorescence of distyrylbenzenes, *J. Phys. Chem.* **85**, No. 2, 144–146 (1981) (Eng) (*P.A.* **84**: 81034).
364. Callis, P. R., Scott, T. W., and Albrecht, A. C., Polarized two-photon fluorescence excitation studies of pyrimidine, *J. Chem. Phys.* **75**, No. 12, 5640–5646 (1981) (Eng) (*P.A.* **85**: 34473).
365. Castellucci, E., Foggi, P., and Salvi, P. R., The two-photon fluorescence excitation spectrum of dibenzothiophene, *Chem. Phys.* **63**, No. 3, 437–443 (1981) (Eng).
366. Choi, K.-J., Boczar, B. P., and Topp, M. R., Picosecond time-evolution of the fluorescence spectrum of a large aromatic hydrocarbon molecule in solution at 300 K, *Chem. Phys.* **57**, No. 3, 415–423 (1981) (Eng) (*P.A.* **84**: 76850).
367. Coveleskie, R. A., and Parmenter, C. S., Single vibronic level fluorescence spectra from the S₁(¹B_{2u}) state of *p*-difluorobenzene vapor, *J. Mol. Spectrosc.* **86**, No. 1, 86–114 (1981) (Eng) (*P.A.* **84**: 64091).
368. Demchuk, Yu. S., and Mirumyants, S. O., Transformation of diffuse bands of luminescence spectra of multiatomic molecules vapours in the quasi-line depending on the exciting radiation spectral composition, *Zh. Prikl. Spektrosk.* **35**, No. 4, 641–646 (1981) (Russ).
369. Eremenko, A. M., Luminescence of chemisorbed aromatic molecules. In: Spectroscopy of molecules and crystals. Pt. 2. *Kiev*, 137–145 (1980) (Russ).
370. Evans, G. J., Reid, C. J., Ferrario, M., and Evans, M. W., A spectrometer for far i.r. hot broad band fluorescence in gases, *Spectrochim. acta* **37A**, No. 2, 123–127 (1981) (Eng).
371. Fischer, E., Variation of fluorescence quantum yield of naphthylethylenes with the frequency of the exciting light, *J. Phys. Chem.* **85**, No. 12, 1770 (1981) (Eng).
372. Fujimura, Y., Kono, H., Nakajima, T., and Lin, S. H., A theoretical study of resonance Raman scattering from molecules. 3. Resonance Raman scattering

- and resonance fluorescence, *J. Chem. Phys.* **75**, No. 1, 99–106 (1981) (Eng) (*P.A.* **84**: 80975).
373. Güsten, H., and Meisner, R., Influence of restricted intramolecular motions on the fluorescence quantum yield, *J. Photochem.* **17**, No. 1/2, 18 (1981) (Eng).
 374. Hack, W., and Langel, W., KrF-laser-induced fluorescence of benzene and its fluorinated derivatives in the gas phase, *Nuovo Cimento B* **63B**, ser. 2, No. 1, 207–220 (1981) (Eng) (*P.A.* **84**: 85185).
 375. Heaven, M., Sears, T., Bondybey, V. E., and Miller, T. A., The free jet cooled, laser induced fluorescence spectrum of sym-triazine, *J. Chem. Phys.* **75**, No. 11, 5271–5279 (1981) (Eng) (*P.A.* **85**: 20114).
 376. Jain, K. M., and Misra, T. N., On the luminescence of 1,4-dinitronaphthalene, *Chem. Phys. Lett.* **80**, No. 2, 320–322 (1981) (Eng) (*P.A.* **84**: 76844).
 377. Kessler, R. W., Uhl, S., Honner, W., and Oelkrug, D., Fluorescence decay of aromatic hydrocarbons on a γ -alumina surface, *J. Lumin.* **24/25**, pt. 2, 551–554 (1981) (Eng) (*P.A.* **85**: 51674).
 378. Ketsle, G. A., Levshin, L. V., and Mel'nikov, G. V., The effect of an external heavy atom and of a magnetic field on delayed anthracene fluorescence, *Zh. Prikl. Spektrosk.* **35**, No. 3, 443–449 (1981) (Russ).
 379. Kikuchi, K., Ozaki, M., Kokubun, H., Kikuchi, M., and Usui, Y., Determination of the S^*-T transition probabilities of some acridine dyes and of thiopyronine by the method of sensitized delayed fluorescence, *J. Photochem.* **16**, No. 1, 19–29 (1981) (Eng).
 380. Lai, T.-i., and Lim, E. C., Time-resolved fluorescence spectra and energy-resolved decays of vibronically coupled electronic states: effects of solvent relaxation on the excited-state dynamics of thioxanthone, *Chem. Phys. Lett.* **84**, No. 2, 303–307 (1981) (Eng).
 381. Lishan, D. G., Hammond, G. S., and Yee, W. A., Amine quenching of fluorescence of phenylated anthracenes, *J. Phys. Chem.* **85**, No. 23, 3435–3440 (1981) (Eng) (*P.A.* **85**: 43979).
 382. McDonald, D. B., and Rice, S. A., Single vibronic level fluorescence from $^1B_{3u}$ pyrazine: The role of Fermi resonance and Duschinski rotation, *J. Chem. Phys.* **74**, No. 9, 4893–4906 (1981) (Eng) (*P.A.* **84**: 76853).
 383. Maslov, V. G., Study on the upper excited states of tetrabenzoporphin by hole-burning and luminescence methods, *Opt. and Spektrosk.* **50**, No. 6, 1091–1099 (1981) (Russ) (*P.A.* **85**: 49507).
 384. Mochihzuki, Y., Kaya, K., and Ito, M., SVL fluorescence and Duschinskii effect in the S_1 state of pyridine, *Chem. Phys.* **54**, No. 3, 375–382 (1981) (Eng) (*P.A.* **84**: 37233).
 385. Personov, R. I., Site selection spectroscopy of organic molecules in solutions and its applications, *J. Lumin.* **24/25**, pt. 1, 475–482 (1981) (Eng) (*P.A.* **85**: 46701).
 386. Politis, T. G., and Drickamer, H. G., High pressure luminescence of indole and substituted indoles in liquid solution, *J. Chem. Phys.* **75**, No. 7, 3203–3210 (1981) (Eng).
 387. Rashev, S., On the problem of the dependence of molecular luminescent properties on excitation light wavelength, *J. Lumin.* **23**, No. 3, 4, 305–313 (1981) (Eng) (*P.A.* **85**: 24787).
 388. Romanovsky, Yu. V., Fine-structure luminescence of acridine, 9-aminoacridine and their ionic forms, *Opt. and Spektrosk.* **51**, No. 3, 388–391 (1981) (Russ).
 389. Ryzhikov, B. D., Lyovshin, L. V., Senatorov, P. K., and Senatorova, N. R., On the possible mechanism of temperature quenching of molecular luminescence, *Opt. and Spektrosk.* **50**, No. 4, 688–694 (1981) (Russ) (*P.A.* **85**: 34486).
 390. Sato, H., Kawasaki, M., and Kasatani, K., Fluorescence and energy transfer of dye-detergent systems in the premicellar region, *J. Photochem.* **17**, No. 3/4, 243–248 (1981) (Eng).
 391. Sharma, A., and Machwe, M. K., Influence of the solvent on the fluorescent

- state of pyronin-B, *Acta phys. pol.* **A59**, No. 6, 831–837 (1981) (Eng).
392. Shchanov, M. F., and Pavlovich, V. S., Spectrum shift and fluorescence-intensity variation in isobutyl-alcohol solutions of phthalimides at pressures up to 40 kbar, *Opt. and Spektrosk.* **51**, No. 5, 828–832 (1981) (Russ).
 393. Shimura, H., and Ohba, Y., Time-resolved reabsorption effect on the fluorescence decay of anthracene crystal and solution, *Jap. J. Appl. Phys.* **20**, No. 9, 1683–1690 (1981) (Eng) (*P. A.* **84**: 106356).
 394. Speiser, S., Duignan, M. T., and Grunwald, E., IR multiphoton-induced visible luminescence from hexafluorobenzene, *J. Photochem.* **17**, No. 1/2, 58 (1981) (Eng).
 395. Stel'makh, G. F., and Tsvirko, M. P., Sensibilization of fluorescence from upper excited states of molecules, *Opt. and Spektrosk.* **50**, No. 5, 998–1000 (1981) (Russ) (*P. A.* **85**: 43990).
 396. Strokach, N. S., Brivina, L. P., Shigorin, D. N., and Shcheglova, N. A., Emission electronic-vibrational transitions at 4.2 K and electronic structure of 6,13-pentacenequinone, *Zh. Fiz. Khim.* **55**, No. 10, 2548–2553 (1981) (Russ).
 397. Susse, K. E., Vogel, W., and Welsch, D. G., Intensity correlation of the resonance fluorescence from a single molecule, *J. Phys. B: Atom. and Mol. Phys.* **14**, No. 20, L643–L647 (1981) (Eng) (*P. A.* **85**: 20115).
 398. Topp, M. R., Lin, H.-B., and Choi, K.-J., Fluorescence from subpicosecond states of 3,4,9,10-dibenzpyrene, *Chem. Phys.* **60**, No. 1, 47–59 (1981) (Eng) (*P. A.* **84**: 103730).
 399. Tskhai, K. V., Gastilovich, E. A., and Shigorin, D. N., Intensity distribution in fluorescence spectrum of thioindigo molecule, *Opt. and Spektrosk.* **51**, No. 6, 1028–1033 (1981) (Russ).
 400. Tuckett, R. P., Fluorescence spectra of fluorobenzene cations excited in a supersonic molecular beam, *Chem. Phys.* **58**, No. 2, 151–162 (1981) (Eng) (*P. A.* **84**: 81028).
 401. Whitaker, T. J., and Bushaw, B. A., Laser-induced fluorescence analysis of vapor-phase pyrene, *J. Phys. Chem.* **85**, No. 15, 2180–2182 (1981) (Eng) (*P. A.* **85**: 34480).
 402. Wilson, J. R., Park, S.-M., and Dabu, G. H., Electrogenerated chemiluminescence of trans-stilbene derivatives, *J. Electrochem. Soc.* **128**, No. 10, 2085–2089 (1981) (Eng) (*P. A.* **85**: 22104).

3.7. Phosphorescence

403. Bräuchle, Chr., Kabza, H., and Voithländer, J., Phosphorescence properties and kinetics of the lowest triplet state T_1 of a series of pyrene derivatives as obtained by ODMR techniques, *Chem. Phys.* **55**, No. 1, 137–152 (1981) (Eng) (*P. A.* **84**: 46007).
404. Dorokhin, A. V., and Kotov, A. A., Temperature effect on benzophenone-vapour delayed luminescence, *Opt. and Spektrosk.* **51**, No. 6, 1116–1118 (1981) (Russ).
405. Kokai, F., and Azumi, T., Sublevel phosphorescence spectra of pyrazine. Interpretation of "anomalous" behavior of the radiative rate constant ratios for totally symmetric vibrations and the reinvestigation of the triplet state geometry, *J. Chem. Phys.* **75**, No. 3, 1069–1073 (1981) (Eng) (*P. A.* **84**: 95748).
406. Marconi, G., Orlandi, G., Palmieri, P., and Vrbancich, J., Theoretical evaluation of the vibronic intensity distribution in the phosphorescence of benzene, *Chem. Phys.* **61**, No. 1, 2, 43–51 (1981) (Eng) (*P. A.* **85**: 29648).
407. Skrilec, M., and Cline Love, L. J., Micelle-stabilized room-temperature phosphorescence characteristics of carbazole and related derivatives, *J. Phys. Chem.* **85**, No. 14, 2047–2050 (1981) (Eng).
408. Steinberg, N., Gafni, A., and Steinberg, I. Z., Measurement of the optical activity of triplet-singlet transitions. The circular polarization of phosphores-

- cence of camphorquinone and benzophenone, *J. Amer. Chem. Soc.* **103**, No. 7, 1638–1640 (1981) (Eng) (*P.A.* **85**: 29650).
409. Suter, G. W., and Wild, U. P., Energy selection spectroscopy in the triplet state: high resolution phosphorescence polarization spectra of benzo a phenazine, *J. Lumin.* **24/25**, pt. 1, 497–498 (1981) (Eng) (*P.A.* **85**: 46706).
 410. Van Noort, H. M., Van 't Hof, C. A., Wirnitzer, B., and Schmidt, J., The phosphorescent triplet state of aniline in a *p*-xylene host crystal: a study of spin-spin and spin-lattice relaxation, *Chem. Phys. Lett.* **81**, No. 2, 351–355 (1981) (Eng).
 411. Yamauchi, S., Saigusa, H., and Azumi, T., Observation of the set of the three sublevel phosphorescence spectra. 3. External heavy atom effect on the phosphorescence spectra of quinoxaline and 2,3-dichloroquinoxaline, *J. Chem. Phys.* **74**, No. 10, 5335–5340 (1981) (Eng) (*P.A.* **84**: 76856).

3.8. Dissipation and migration of molecular excitation energy, time constants

412. Amirav, A., Even, U., and Jortner, J., Energetics and intramolecular dynamics of the isolated ultracold tetracene molecule in its first excited singlet state, *J. Chem. Phys.* **75**, No. 8, 3770–3793 (1981) (Eng) (*P.A.* **85**: 43970).
413. Amirav, A., and Navon, G., Intramolecular spin relaxation in isolated molecules, *Phys. Rev. Lett.* **47**, No. 13, 906–909 (1981) (Eng) (*P.A.* **85**: 740).
414. Asano, M., and Koningstein, J. A., Probing of chlorophyll a with a pulsed tunable laser: monomer and dimer excited state lifetimes and their time resolved fluorescence spectra, *Chem. Phys.* **57**, No. 1, 2, 1–10 (1981) (Eng) (*P.A.* **84**: 76847).
415. Asenbaum, A., and Mullner, M., Vibrations relaxation in benzol, *Z. Naturforsch.* **36A**, No. 5, 461–466 (1981) (Eng) (*P.A.* **84**: 72432).
416. Behlen, F. M., and Rice, S. A., Intersystem crossing in cold isolated molecules of naphthalene, *J. Chem. Phys.* **75**, No. 12, 5672–5684 (1981) (Eng) (*P.A.* **85**: 34474).
417. Beswick, J. A., and Jortner, J., Intermolecular and intramolecular $V \rightarrow V$ transfer in the vibrational predissociation of some polyatomic van der Waals molecules, *J. Chem. Phys.* **74**, No. 12, 6725–6733 (1981) (Eng).
418. Borisevich, N. A., Bolotko, L. M., and Raichenok, T. F., Radiationless deactivation of free excited molecules, *Opt. and Spektrosk.* **50**, No. 1, 137–142 (1981) (Russ) (*P.A.* **84**: 99819).
419. Borowski, K. J., and Connors, R. E., Deuterium isotope effect on intersystem crossing for pheophytins, *J. Photochem.* **16**, No. 1, 75–79 (1981) (Eng).
420. Brumbaugh, D. V., and Innes, K. K., Single vibronic level fluorescence and relaxation spectra of s-tetrazine- d_0 and d_2 vapors, *Chem. Phys.* **59**, No. 3, 413–437 (1981) (Eng) (*P.A.* **84**: 99789).
421. Capellos, C., Time-resolved spectroscopy and chemical reactivity of energetic transient species of nitroaromatics, *J. Photochem.* **17**, No. 3/4, 213–225 (1981) (Eng).
422. Chekalyuk, A. M., Fadeev, V. V., Georgiev, G. M., and Nickolov, Zh. S., Application of laser induced saturation of molecular fluorescence for lifetime measurements, *Opt. Commun.* **38**, No. 3, 177–181 (1981) (Eng) (*P.A.* **84**: 99833).
423. Choi, K.-J., Boczar, B. P., and Topp, M. R., Picosecond time-evolution of the fluorescence spectrum of a large aromatic hydrocarbon molecule in solution at 300 K, *Chem. Phys.* **57**, No. 3, 415–423 (1981) (Eng) (*P.A.* **84**: 76850).
424. Choi, P.-K., Takagi, K., and Negishi, K., Effect of near-resonant energy transfer on vibrational relaxation in liquid dichloromethane-benzene mixtures, *J. Chem. Phys.* **74**, No. 2, 1438–1441 (1981) (Eng) (*P.A.* **84**: 46084).

425. Da Silva, A. M., and Formosinho, S. J., The fluorescence quenching of naphthalene, anthracene and pyrene aerosols by a flow method, *J. Photochem.* **17**, No. 1/2, 143 (1981) (Eng).
426. Davis, A., Pilling, M. J., and Westby, M. J., Concentration quenching of pyrene $^1B_{1u}$ in the vapour phase, *Chem. Phys.* **63**, No. 1, 2, 209–218 (1981) (Eng) (*P.A.* **85**: 29688).
427. Dederen, J. C., Van der Auweraer, M., and De Schryver, F. C., Fluorescence quenching of solubilized pyrene and pyrene derivatives by metal ions in SDS micelles, *J. Phys. Chem.* **85**, No. 9, 1198–1202 (1981) (Eng).
428. Dolson, D. A., Parmenter, C. S., and Stone, B. M., Intramolecular vibrational redistribution in the S_1 state of *p*-fluorotoluene, *Chem. Phys. Lett.* **81**, No. 2, 360–364 (1981) (Eng) (*P.A.* **84**: 90604).
429. Dote, J. L., and Schwartz, R. N., Rotational relaxation of adamantane- d_1 in dilute *n*-alkane solutions. A molecular quasi-hydrodynamic free-space description, *J. Phys. Chem.* **85**, No. 25, 3756–3758 (1981) (Eng).
430. Dougherty, E. P., Jr., Augustin, S. D., and Rabitz, H., Stochastic theory of intramolecular energy transfer in the presence of radiation, *J. Chem. Phys.* **74**, No. 2, 1175–1185 (1981) (Eng) (*P.A.* **84**: 46048).
431. Duncan, M. A., Dietz, T. G., Liverman, M. G., and Smalley, R. E., Photoionization measurement of the triplet lifetime of benzene, *J. Phys. Chem.* **85**, No. 1, 7–9 (1981) (Eng) (*P.A.* **84**: 85206).
432. Dyumaev, K. M., Lebedeva, E. P., and Matyushin, G. A., The effect of radiation intensity on the value of the mean quantum yield of benzophenone photodestruction, *Zh. Prikl. Spektrosk.* **34**, No. 2, 325–328 (1981) (Russ) (*P.A.* **85**: 57624).
433. Englman, R., Relaxation dynamics of excited impurities in solids, *Chem. Phys.* **58**, No. 2, 227–242 (1981) (Eng) (*P.A.* **84**: 81981).
434. Ericsson, A., and Kowalewski, J., Internal motion in 1-methylnaphthalene. A variable temperature NMR study using ^{13}C and ^2H spin-lattice relaxation time measurements, *Chem. Phys.* **60**, No. 3, 387–391 (1981) (Eng) (*P.A.* **85**: 732).
435. Ewing, G. E., Curve crossing and vibrational predissociation of van der Waals molecules, *Chem. Phys.* **63**, No. 3, 411–418 (1981) (Eng) (*P.A.* **85**: 34508).
436. Fendt, A., Fischer, S. F., and Kaiser, W., Vibrational energy relaxation in benzene and some benzene substitutes, *Chem. Phys. Lett.* **82**, No. 2, 350–354 (1981) (Eng) (*P.A.* **84**: 106258).
437. Fendt, A., Fischer, S. F., and Kaiser, W., Vibrational lifetime and Fermi resonance in polyatomic molecules, *Chem. Phys.* **57**, No. 1, 2, 55–64 (1981) (Eng) (*P.A.* **84**: 76770).
438. Fitch, P. S. H., Haynam, C. A., and Levy, D. H., Intramolecular vibrational relaxation in jet-cooled phthalocyanine, *J. Chem. Phys.* **74**, No. 12, 6612–6620 (1981) (Eng) (*P.A.* **84**: 76774).
439. Formosinho, S. J., Miguel, M. G., and Cardoso, A. C., Static fluorescence quenching of aromatic hydrocarbons by the uranyl ion, *J. Photochem.* **17**, No. 1/2, 146 (1981) (Eng).
440. Gillbro, T., and Sundström, V., Excitation-energy-dependent rate of internal conversion in cyanine and triphenylmethane dyes, *J. Photochem.* **17**, No. 1/2, 25–26 (1981) (Eng).
441. Gryczynski, I., Kawasaki, A., Paszyc, S., and Skowrya, T., Quenching of the Y_F -base fluorescence by heavy-atom induced intermolecular singlet-triplet energy transfer, *Z. Naturforsch.* **36A**, No. 1, 76–77 (1981) (Eng) (*P.A.* **84**: 41424).
442. Gurinovich, G. P., and Salokhiddinov, K. I., Generation of $^1\Delta_g$ -oxygen during the quenching of the singlet and triplet states of polyatomic molecules, *Dokl. Akad. Nauk SSSR* **261**, No. 3, 596–599 (1981) (Russ).
443. Güsten, H., and Meisner, R., Influence of restricted intramolecular motions on the fluorescence quantum yield, *J. Photochem.* **17**, No. 1/2, 18 (1981) (Eng).
444. Gutsche, E., Non-radiative multiphonon transition, *J. Lumin.* **24/25**, pt. 2, 689–696 (1981) (Eng) (*P.A.* **85**: 46714).

445. Halperin, A. M., and Wryzkowska, K., Reversible intermolecular energy transfer between saturated amines and benzene in non-polar solution, *Chem. Phys. Lett.* **77**, No. 1, 82–87 (1981) (Eng) (*P. A.* **84**: 29098).
446. Hippler, H., Troe, J., and Wendelken, H. J., Direct observation of collisional deactivation of highly excited toluene, *Chem. Phys. Lett.* **84**, No. 2, 257–259 (1981) (Eng).
447. Hippler, H., Schubert, V., Troe, J., and Wendelken, H. J., Direct observation of unimolecular bond fission in toluene, *Chem. Phys. Lett.* **84**, No. 2, 253–256 (1981) (Eng).
446. Hirayama, S., Vapour-phase fluorescence quenching in 9,10-dicyanoanthracene by amines. Large quenching rate constants, *Chem. Phys. Lett.* **79**, No. 1, 174–177 (1981) (Eng) (*P. A.* **84**: 64088).
447. Hirose, C., and Sepulveda, L., Transfer free energies of *p*-alkyl-substituted benzene derivatives, benzene, and toluene from water to cationic and anionic micelles and to *n*-heptane, *J. Phys. Chem.* **85**, No. 24, 3689–3694 (1981) (Eng).
450. Ho, F., Tsay, W.-S., Trout, J., and Hochstrasser, R. M., Direct measurement of the vibrational relaxation of the 991 cm^{-1} mode of the benzene crystal, *Chem. Phys. Lett.* **83**, No. 1, 5–9 (1981) (Eng) (*P. A.* **85**: 26881).
451. Holtzclaw, K. W., and Schuh, M. D., Lifetimes of triplet state alkylbenzenes in the vapor phase, *Chem Phys.* **56**, No. 2, 219–229 (1981) (Eng) (*P. A.* **84**: 59562).
452. Holzwarth, A. R., Wendler, J., and Lehner, H., Intermediate level structure in a large molecule: fluorescence lifetimes of azulenophenylene, *J. Photochem.* **17**, No. 1/2, 178–179 (1981) (Eng).
453. Hoshino, M., Imamura, M., Ikehara, K., and Hama, Y., Fluorescence enhancement of benzene derivatives by forming inclusion complexes with β -cyclodextrin in aqueous solutions, *J. Phys. Chem.* **85**, No. 13, 1820–1823 (1981) (Eng).
454. Huang, K., Lattice relaxation and multiphonon transitions, *Contemp. Phys.* **22**, No. 6, 599–612 (1981) (Eng) (*P. A.* **85**: 31438).
455. Huppert, D., Rand, S. D., Rentzepis, P. M., Barbara, P. F., Struve, W. S., and Grabowski, Z. R., Picosecond kinetics of *p*-dimethylaminobenzonitrile, *J. Chem. Phys.* **75**, No. 12, 5714–5719 (1981) (Eng).
456. Jameson, A. K., and Lim, E. C., Non-radiative decay from photoselected vibrational levels of pyrimidine vapor: Franck-Condon effects on $^1n\pi^* \rightarrow ^3\pi\pi^*$ intersystem crossing, *Chem. Phys. Lett.* **79**, No. 2, 326–330 (1981) (Eng) (*P. A.* **84**: 68221).
457. Jameson, A. K., Okajima, S., and Lim, E. C., Rotational cooling and electronic relaxation in diazobenzenes, *J. Chem. Phys.* **75**, No. 1, 480–482 (1981) (Eng) (*P. A.* **84**: 95747).
458. Jones, A. C., and Williams, J. O., Energy transfer and photochemical changes in molecular crystals, *J. Photochem.* **17**, No. 1/2, 8 (1981) (Eng).
459. Kamlet, M. J., Dickinson, C., and Taft, R. W., Linear solvation energy relationships. Solvent effects on some fluorescence probes, *Chem. Phys. Lett.* **77**, No. 1, 69–72 (1981) (Eng) (*P. A.* **84**: 29014).
460. Ketsle, G. A., Levshin, L. V., Mel'nikov, G. V., and Minaev, B. F., Mechanism of magnetic-field effect on triplet-triplet compound annihilation, *Opt. and Spektrosk.* **51**, No. 4, 665–668 (1981) (Russ).
461. Lambert, Wm. R., Felker, P. M., and Zewail, A. H., Quantum beats and dephasing in isolated large molecules cooled by supersonic jet expansion and excited by picosecond pulses: Anthracene, *J. Chem. Phys.* **75**, No. 12, 5958–5960 (1981) (Eng) (*P. A.* **85**: 34386).
462. Lev, N. B., and Dunbar, R. C., Pulsed versus continuous laser multiphoton dissociation of iodobenzene cations, *Chem. Phys. Lett.* **84**, No. 3, 483–486 (1981) (Eng).
463. Lianos, P., Dinh-Cao, M., Lang, J., and Zana, R., Study of luminescence quenching and excimer formation in micellar systems and microemulsions. Case of small interaction rate constants, *J. chim. phys. et phys.-chim. biol.* **78**, No. 6, 497–501 (1981) (Eng).

464. Lim, B. T., Okajima, S., Chandra, A. K., and Lim, E. C., Radiationless transitions in electron donor-acceptor complexes: selection rules for $S_1 \rightarrow T$ intersystem crossing and efficiency of $S_1 \rightarrow S_0$ internal conversion, *Chem Phys. Lett.* **79**, No. 1, 22–27 (1981) (Eng) (*P.A.* **84**: 65734).
465. Lyman, J. L., Feldmann, D., Laukemper, J., and Welge, K. H., Collisional redistribution of vibrational energy in CO_2 -laser-excited benzene, *J. Chem. Phys.* **74**, No. 12, 6817–6823 (1981) (Eng).
466. Lysikov, Yu. I., Radiationless transitions initiated by an electronic rearrangement, *Opt. and Spektrosk.* **51**, No. 6, 1021–1027 (1981) (Russ).
467. Lysikov, Yu. I., Radiationless transitions in relaxing molecules, *Zh. Prikl. Spektrosk.* **35**, No. 2, 323–328 (1981) (Russ).
468. McDonald, D. B., and Rice, S. A., Collision induced intramolecular vibrational energy transfer in $^1B_{3u}$ pyrazine, *J. Chem. Phys.* **74**, No. 9, 4907–4917 (1981) (Eng) (*P.A.* **84**: 76931).
469. McDonald, D. B., and Rice, S. A., A correlation diagram model for interpreting propensity rules in collision induced vibrational relaxation, *J. Chem. Phys.* **74**, No. 9, 4918–4929 (1981) (Eng).
470. McDonald, D. B., Fleming, G. R., and Rice, S. A., Intermediate case radiationless decay: the excited state dynamics of pyrazine, *Chem Phys.* **60**, No. 3, 335–345 (1981) (Eng) (*P.A.* **85**: 748).
471. Maier, J. P., and Thommen, F., Fluorescence quantum yields and lifetimes of fluorobenzene cations in selected levels of their B and C states determined by photoelectron-photon coincidence spectroscopy, *Chem. Phys.* **57**, No. 3, 319–332 (1981) (Eng) (*P.A.* **84**: 76848).
472. Makshantsev, B. I., Dynin, E. A., and Finkelberg, V. M., On the theory of monomer concentration quenching of luminescence, *Chem. Phys.* **59**, No. 1, 2, 137–148 (1981) (Eng) (*P.A.* **84**: 92813).
473. Mar, A., and Winnik, M. A., Intramolecular quenching of benzophenone phosphorescence by olefins, *Chem. Phys. Lett.* **77**, No. 1, 73–76 (1981) (Eng).
474. Marty, A., Vigo, J., and Viallet, P., Etude de l'inhibition de la fluorescence de diverses amino-9 acridines par les acides amines, *J. Photochem.* **16**, No. 3, 203–214 (1981) (Fr).
475. Nakamura, H., and Tanaka, J., Temperature dependence of fluorescence lifetimes of 8-anilino-1-naphthalene sulfonate and solvent isotope effect, *Chem. Phys. Lett.* **78**, No. 1, 57–60 (1981) (Eng) (*P.A.* **84**: 41416).
476. Nemkovich, N. A., Rubinov, A. N., and Tomin, V. I., Difference method for the measurement of the excited-state lifetime, *Kvantovaya Elektron.* **8**, No. 6, 1278–1283 (1981) (Russ) (*P.A.* **85**: 39340).
477. Ohta, N., and Baba, H., Rotational effects on the quantum yield and lifetime of the slow component of fluorescence from *s*-triazine, *Chem. Phys. Lett.* **84**, No. 2, 308–312 (1981) (Eng).
478. Orlandi, G., and Siebrand, W., Electronic propensity rule for radiationless transitions, *Chem. Phys. Lett.* **80**, No. 3, 399–403 (1981) (Eng) (*P.A.* **84**: 81025).
479. Pineault, R. L., Morgante, C. G., and Struve, W. S., Picosecond triplet state dynamics and photodissociation in 2- and 9-iodoanthracene, *J. Photochem.* **17**, No. 1/2, 130 (1981) (Eng).
480. Platonenko, V. T., and Sukhareva, N. A., Vibrational relaxation of strongly excited polyatomic molecules, *Zh. Eksp. and Teor. Fiz.* **81**, No. 3, 851–861 (1981) (Russ).
481. Prasad, M., Theory of intramolecular energy relaxation and vibrational overtone resonance absorption lineshapes of isolated polyatomic molecules, *Physica B + C* **106**, No. 1, 106–116 (1981) (Eng) (*P.A.* **84**: 85236).
482. Rashev, S. S., On multiphonon description of selective energy of multiatomic molecules excitation, *Zh. Prikl. Spektrosk.* **35**, No. 3, 465–470 (1981) (Russ).
483. Rentsch, S. K., Danielius, R. V., Gadonas, R. A., and Piskarskas, A., Picosecond kinetics and transient spectra of pseudoisocyanine monomers and J-aggregates

- in aqueous solution, *Chem. Phys. Lett.* **84**, No. 3, 446–449 (1981) (Eng) (*P.A.* **85**: 70272).
484. Rice, S. A., New developments in the study of radiationless processes, *J. Photochem.* **17**, No. 1/2, 116 (1981) (Eng).
 485. Rodgers, M. A. J., and Baxendale, J. H., Dynamic quenching of the luminescent state of $\text{Ru}(\text{bipy})_3^{2+}$ by 9-methyl anthracene at anionic micelles, *Chem. Phys. Lett.* **81**, No. 2, 347–350 (1981) (Eng).
 486. Sarai, A., and Kakitani, T., Radiationless transitions of molecules with large nuclear rearrangement, *Chem. Phys. Lett.* **77**, No. 2, 427–432 (1981) (Eng) (*P.A.* **84**: 33487).
 487. Scaiano, J. C., Temperature dependence of the quenching of aromatic hydrocarbon triplets by tetramethylpiperidine-N-oxide, *Chem. Phys. Lett.* **79**, No. 3, 441–443 (1981) (Eng) (*P.A.* **84**: 72448).
 488. Scharf, B., and Band, Y. B., Contribution of direct mechanisms for radiative intercombination processes in aromatic systems, *Chem. Phys. Lett.* **79**, No. 3, 591–595 (1981) (Eng) (*P.A.* **84**: 68247).
 489. Shamah, I., and Flynn, G., Vibrational relaxation induced population inversions in laser pumped polyatomic molecules, *Chem. Phys.* **55**, No. 1, 103–115 (1981) (Eng) (*P.A.* **84**: 46032).
 490. Shapovalov, V. L., and Demyashkevich, A. B., Acid-induced radiationless deactivation of excited states of azaphenanthrenes in aprotic solvents, *Zh. Prikl. Spektrosk.* **35**, No. 3, 458–464 (1981) (Russ).
 491. Sibbett, W., Taylor, J. R., and Welford, D., Substituent and environmental effects on the picosecond lifetimes of the polymethine cyanine dyes, *IEEE J. Quantum Electron.* **QE-17**, No. 4, 500–509 (1981) (Eng) (*P.A.* **84**: 64251).
 492. Siebrand, W., and Zgierski, M. Z., Radiationless decay of vibronically coupled electronic states. 3. Strong coupling and its effect on triplet decay in aromatic hydrocarbons, *J. Chem. Phys.* **75**, No. 3, 1230–1238 (1981) (Eng) (*P.A.* **84**: 90607).
 493. Smith, G. P., and Barker, J. R., Energy transfer rates for vibrationally excited gas-phase azulene in the electronic ground state, *Chem. Phys. Lett.* **78**, No. 2, 253–258 (1981) (Eng).
 494. Sobolewski, A., Nonresonance radiationless transitions in polyatomic molecules, *J. Lumin.* **24/25**, pt. 2, 713–716 (1981) (Eng) (*P.A.* **85**: 43984).
 495. Stone, J., Thiele, E., and Goodman, M. F., The restricted quantum exchange theory of intramolecular T_1 and T_2 relaxation rates, *J. Chem. Phys.* **75**, No. 4, 1712–1727 (1981) (Eng).
 496. Sushida, K., Yamazaki, I., and Baba, H., Excitation-energy dependence of intramolecular nonradiative transitions in pyridine and its methyl derivatives in the vapor phase, *Bull. Res. Inst. Appl. Electr.* **32**, No. 2, 36–44 (1980) (Eng) (*P.A.* **85**: 24770).
 497. Sveshnikova, E. B., and Kondakova, V. P., Effect of deuteration on nonradiative transitions in oxy- and amino-derivatives of naphthalene, *Opt. and Spektrosk.* **50**, No. 5, 870–874 (1981) (Russ) (*P.A.* **85**: 43988).
 498. Tanielian, C., and Wolff, C., Singlet oxygen quenching by chlorophyll a in benzene, *J. chim. phys. et phys.-chim. biol.* **78**, No. 10, 855–856 (1981) (Fr).
 499. Ter Horst, G., Pratt, D. W., and Kommandeur, J., Electronic relaxation of $^1B_{3u}(n\pi^*)$ pyrazine in a supersonic jet: Rotational state dependence of the nonradiative rate leading to biexponential decay, *J. Chem. Phys.* **74**, No. 6, 3616–3618 (1981) (Eng) (*P.A.* **84**: 59565).
 500. Van Noort, H. M., Van 't Hof, C. A., Wurnitzer, B., and Schmidt, J., The phosphorescent triplet state of aniline in a *p*-xylene host crystal: a study of spin-spin and spin-lattice relaxation, *Chem. Phys. Lett.* **81**, No. 2, 351–355 (1981) (Eng).
 501. Venzl, G., and Fischer, S. F., The effect of localized modes on radiationless electronic transitions. 2. Dependence on impurity concentration, *J. Chem. Phys.*

- 74, No. 3, 1887–1892 (1981) (Eng).
502. Voropai, E. S., Saechnikov, V. A., and Sarzhevsky, A. M., The effect of molecular structure on the magnitude and nature of heterogeneous broadening of levels during energy transfer, *Zh. Prikl. Spektrosk.* **34**, No. 2, 312–318 (1981) (Russ) (*P. A.* **85**: 54899).
 503. Waldeck, D., Velsko, S., and Fleming, G. R., Influence of solvent-solute dynamics on radiationless processes, *J. Photochem.* **17**, No. 1/2, 131 (1981) (Eng).
 504. Weitz, D. A., Garoff, S., Hanson, C. D., Gramila, T. J., and Gersten, J. I., Fluorescent lifetimes and yields of molecules adsorbed on silver-island films, *J. Lumin.* **24/25**, pt. 1, 83–86 (1981) (Eng).
 505. Wertheimer, R., and Silbey, R., Theoretical studies of relaxation processes in excited state impurity molecules: Application to naphthalene dimers, *J. Chem. Phys.* **74**, No. 1, 686–702 (1981) (Eng) (*P. A.* **84**: 47532).
 506. Wolff, T., and Von Büna, G., Fluorescence of organic molecules in tenside solutions around the critical micelle concentration, *J. Photochem.* **17**, No. 1/2, 24–25 (1981) (Eng).
 507. Yamazaki, I., Fujita, M., and Baba, H., Excitation-energy dependence of quantum yields of fluorescence and intersystem crossing in pyrazine and pyrimidine vapors at moderately high pressure, *Chem. Phys.* **57**, No. 3, 431–440 (1981) (Eng) (*P. A.* **84**: 76851).
 508. Yarwood, J., Ackroyd, R., and Robertson, G. N., Vibrational relaxation of hydrogen-bonded species in solution: analysis of the $\nu\sigma(\text{OH}\dots\text{N})$ vibration of phenol-pyridine, *Chem. Phys. Lett.* **78**, No. 3, 614–617 (1981) (Eng) (*P. A.* **84**: 59507).
 509. Zakharova, G. V., and Chibisov, A. K., Quenching of triplet states of dyes by inorganic ions in aqueous solutions, *J. Photochem.* **17**, No. 1/2, 26 (1981) (Eng).
 510. Zurauskienė, E., The influence of binary solvent on the electronic radiationless transitions in molecule of quinoline, *Litov. Fiz. Sb.* **21**, No. 2, 91–94 (1981) (Russ).

3.9. Laser excitation, stimulated emission and light generation

511. Aaron, J.-J., Ward, J., and Winefordner, J. D., Spectrophosphorimetric determination of lowest excited triplet-state dissociation constants of substituted quinolines—quantitative study of the substituent effects, *J. chim. phys. et phys.-chim. biol.* **78**, No. 6, 493–496 (1981) (Eng).
512. Ageev, L. A., Miloslavsky, I. N., Shklyarevsky, I. N., and Yarovaya, R. G., On the use of interference structure in dye-laser emission spectrum for amplification determination, *Opt. and Spektrosk.* **51**, No. 5, 930–932 (1981) (Russ).
513. Ageev, L. A., A simple dye-laser for demonstrations, *Usp. Fiz. Nauk* **134**, No. 3, 551–552 (1981) (Russ).
514. Akimov, A. I., Levshin, L. V., Saletskii, A. M., and Yuzhakov, V. I., Electron excitation transfer and lasing characteristics of mixed dye solutions under conditions of inhomogeneous broadening of their molecular spectra, *Kvantovaya Elektron.* **8**, No. 11, 2339–2344 (1981) (Russ) (*P. A.* **85**: 70561).
515. Aminoff, C. G., and Kaivola, M., Michelson mode selectors and spatial hole burning in single-mode cw dye lasers, *Appl. Phys. B* **26**, No. 2, 133–140 (1981) (Eng).
516. Aoyagi, Y., Segawa, Y., and Namba, S., Tunable subpicosecond pulse generation in near IR region from OX-725 dye laser by passive and synchronous hybrid modelocking method, *Jap. J. Appl. Phys.* **20**, No. 8, 1595–1596 (1981) (Eng).
517. Aristov, A. V., and Shevandin, V. S., Effect of fluorescence light quenching upon the stimulated emission of rhodamine-6G solutions, *Opt. and Spektrosk.* **51**, No. 1, 110–114 (1981) (Russ) (*P. A.* **85**: 60073).

518. Arnaud, R., Deflandre, A., Lang, G., and Lemaire, J., Photosensitizing properties of furocoumarins. 4. Photochemistry of methoxy psoralens, *J. chim. phys. et phys.-chim. biol.* **78**, No. 7/8, 597–605 (1981) (Fr).
519. Asimov, M. M., Gavrilenko, V. N., and Rubinov, A. N., Determination of spectroscopic constants of intercombination transitions of some laser dyes, *Zh. Prikl. Spektrosk.* **35**, No. 5, 791–796 (1981) (Russ).
520. Bakhshiev, N. G., Voropai, E. S., Gaisenok, V. A., Girin, O. P., and Sarzhevsky, A. M., Effect of intermolecular-relaxation processes upon the absorption and emission spectra of solutions at high-intensity optical excitation, *Opt. and Spektrosk.* **50**, No. 6, 1117–1123 (1981) (Russ) (*P. A.* **85**: 49307).
521. Baltera, Evidence for vibrational non-equilibrium in the excited state of organic dye molecules in solution, *J. Lumin.* **26**, No. 1, 2, 99–106 (1981) (Eng).
522. Basov, Yu. G., Denisov, L. K., Zuev, V. S., Logunov, O. A., Nikitchenko, V. M., Startsev, A. V., and Stoilov, Yu. Yu., Coumarins in the gaseous phase. 1. Stimulated emission of coumarin vapors in the range 485–520 nm, *Kvantovaya Elektron.* **8**, No. 6, 1306–1307 (1981) (Russ) (*P. A.* **85**: 39644).
523. Bazyl', O. K., Maier, G. V., Kopylova, T. N., Danilova, V. I., and Chaikovsky, V. K., Theoretical and experimental investigation of lasing of phenylethynyl substituents of naphthalene, *Zh. Prikl. Spektrosk.* **35**, No. 2, 261–267 (1981) (Russ).
524. Bazyl', O. K., Maier, G. V., Kopylova, T. N., Danilova, V. I., Theoretical and experimental studies of generation of phenylethyl substituents of naphthalene, *Izv. Vuz. Fiz.* No. 1, 127 (1981) (Russ).
525. Bernhardt, A. F., and Rasmussen, P., Design criteria and operating characteristics of a single-mode pulsed dye laser, *Appl. Phys. B* **26**, No. 2, 141–146 (1981) (Eng).
526. Berry, S. D., and Bottcher, C., Time-dependent response of a two-level system with degenerate levels to coherent radiation, *Chem. Phys. Lett.* **81**, No. 2, 320–324 (1981) (Eng) (*P. A.* **84**: 90813).
527. Bhattacharyya, S. K., Eggett, P., and Thomas, L., Locking of a flashlamp-pumped dye laser at small injection powers, *Opt. Commun.* **39**, No. 6, 387–390 (1981) (Eng).
528. Bogner, U., and Röska, G., Fluorescence changes of dyes in amorphous solids, induced by selective laser excitation and by heat pulses, *J. Lumin.* **24/25**, pt. 2, 683–686 (1981) (Eng).
529. Bogner, U., and Schwarz, R., Laser-induced changes in the sideband shape of selectively excited dyes in noncrystalline organic solids at 1.3 K, *Phys. Rev. B* **24**, No. 5, 2846–2849 (1981) (Eng) (*P. A.* **84**: 106368).
530. Bojarski, C., and Grabowska, E., Photoluminescence decay and quantum yield studies for rhodamine 6G in ethanol, *Acta Phys. Pol.* **A60**, No. 3, 397–406 (1981) (Eng).
531. Bonch-Bruevich, A. M., and Razumova, T. K., Nonlinear effects in dye solutions, *Zh. Prikl. Spektrosk.* **34**, No. 5, 825–834 (1981) (Russ).
532. Boquillon, J. P., and Bazemlal, O., Laser a colorant a cavite en anneau, pompe par flash et de grande qualite spatiale, *Rev. Phys. Appl.* **16**, No. 6, 365–369 (1981) (Fr).
533. Bor, Zs., Amplified spontaneous emission from N_2 -laser pumped dye lasers, *Opt. Commun.* **39**, No. 6, 383–386 (1981) (Eng).
534. Borisenko, V. E., Gursky, S. Yu., and Ignatova, V. A., Spectroscopic investigation of a number of quinolinyl derivatives of triarylimidazole, *Zh. Prikl. Spektrosk.* **35**, No. 4, 664–670 (1981) (Russ).
535. Borisevich, N. A., and Tolstorozhev, G. B., Relaxation process in active media based on vapors of organic compounds, *Zh. Prikl. Spektrosk.* **34**, No. 5, 815–824 (1981) (Russ).
536. Braswell, E. H., and Lary, J., Equilibrium-sedimentation studies of some self-associating cationic dyes, *J. Phys. Chem.* **85**, No. 11, 1573–1578 (1981) (Eng).

537. Brito Cruz, C. H., Mataloni, P., Romagnoli, M., and De Martini, F., High power short pulse generation in two-frequency flashpumped dye laser, *Opt. Commun.* **39**, No. 5, 339–342 (1981) (Eng).
538. Cahen, C., Jegou, J. P., Pelon, J., Gildwarg, P., and Porteneuve, J., Wavelength stabilization and control of the emission of pulsed dye lasers by means of a multibeam Fizeau interferometer, *Rev. Phys. Appl.* **16**, No. 6, 353–358 (1981) (Eng).
539. Cassard, P., Taylor, R. S., Corkum, P. B., and Alcock, A. J., Characteristics of *p*-terphenyl dye lasers pumped by high energy XeXl pulses, *Opt. Commun.* **38**, No. 2, 131–135 (1981) (Eng).
540. Clark, J. B., Smirl, A. L., Van Stryland, E. W., Mackey, H. J., and Russell, B. R., Level decay and orientational kinetics of the rhodamine B monomer and dimer, *Chem. Phys. Lett.* **78**, No. 3, 456–460 (1981) (Eng).
541. Denisov, L. K., Udachin, Yu. M., Lantsov, A. M., Tokmakov, G. P., Patalakha, N. S., Chursinova, L. V., and Grandberg, I. I., Lasing characteristics of 1,4-bis(N-acylpyrazolyl)- and 1,4-bis(N-acylpyrazolyl-3)benzenes solutions, *Zh. Prikl. Spektrosk.* **35**, No. 2, 358–362 (1981) (Russ).
542. Deryugin, L. N., Demchenkov, V. P., Petrus', A. A., and Chekan, A. V., Wide-band dye laser as a source in the system of spectral transmission of information, *Opt. and Spektrosk.* **50**, No. 4, 625–627 (1981) (Russ).
543. Dorofeev, S. N., Kozlov, N. A., Klimashina, A. G., Mnuskin, V. E., Tokareva, A. N., and Fedorov, V. A., Investigation of characteristics of a tunable organic-dye laser excited with N_2 laser, *Zh. Prikl. Spektrosk.* **35**, No. 4, 612–617 (1981) (Russ).
544. Drullinger, R. E., Increased gain through identification and alleviation of dye self absorption in laser pumped dye lasers, *Opt. Commun.* **39**, No. 4, 263–264 (1981) (Eng).
545. Dulcic, A., Flytzanis, C., Tang, C. L., Pepin, D., Fetizon, M., and Hoppilliard, Y., Length dependence of the second-order optical nonlinearity in conjugated hydrocarbons, *J. Chem. Phys.* **74**, No. 3, 1559–1563 (1981) (Eng).
546. Duncanson, J. A., Jr., and Struve, W. S., The picosecond ultrashort cavity dye laser: Giant pulse analogy and active etalon model, *J. Appl. Phys.* **52**, No. 6, 3800–3820 (1981) (Eng).
547. Erdevdi, N. M., Zinevich, E. M., and Popadinets, Yu. Yu., Small-scale high-power laser based on molecular nitrogen for pumping of tunable organic dye lasers, *Zh. Prikl. Spektrosk.* **35**, No. 2, 220–222 (1981) (Russ).
548. Evseev, A. V., Evseev, I. V., and Ermachenko, V. M., Stimulated photon echo as a method of determining the spectroscopic characteristics of an individual resonance level, *Dokl. Akad. Nauk SSSR* **256**, No. 1, 57–60 (1981) (Russ) (*P. A.* **85**: 20817).
549. Ferguson, A. I., Improved performance of blue synchronously pumped dye lasers by operating at an increased repetition rate, *Opt. Commun.* **38**, No. 5, 6, 387–389 (1981) (Eng).
550. Fleming, G. R., Waldeck, D., and Beddard, G. S., Applications of synchronously pumped dye-lasers to time-resolved emission and absorption spectroscopy, *Nuovo Cimento B* **63B**, Ser. 2, No. 1, 151–173 (1981) (Eng) (*P. A.* **84**: 84086).
551. Garoff, S., Stephens, R. B., Hanson, C. D., and Sorensen, G. K., Energy transfer and electronic interactions between dye molecules at an interface, *J. Lumin.* **24/25**, pt. 2, 773–776 (1981) (Eng) (*P. A.* **85**: 43986).
552. Geacintov, N. E., Waldmeyer, J., Kuzmin, V. A., and Kolubayev, T., Dynamics of the binding of acridine dyes to DNA investigated by triplet excited state probe techniques, *J. Phys. Chem.* **85**, No. 24, 3608–3613 (1981) (Eng) (*P. A.* **85**: 49257).
553. Gorobchenko, V. S., Naboikin, Yu. V., Ogurtsova, L. A., and Pokrovskaya, F. S., The effect of excitation nonresonance frequency on the generation

- spectrum of a naphthalene crystal doped with $\beta\beta$ -dinaphthylethylene, *Ukr. Fiz. Zh.* **26**, No. 9, 1429–1433 (1981) (Russ).
554. Goryaev, M. A., Quantum yield and luminescence spectra of dyes in adsorbed states, *Opt. and Spektrosk.* **51**, No. 6, 1016–1020 (1981) (Russ).
 555. Govindanunni, T., Sivaram, B. M., and Srinivasan, M., Donor concentration dependence of the gain of a dye mixture laser, *Indian J. Phys.* **54B**, No. 1–2, 32–35 (1980) (Eng).
 556. Grattan, K. T. V., Calculation of gain coefficients for vapour phase dyes, *J. Lumin.* **22**, No. 2, 121–127 (1981) (Eng) (*P.A.* **84**: 90841).
 557. Gruzinskii, V. V., Davydov, S. V., and Kukhto, A. V., The effect of induced absorption of foreign gases on fluorescence intensity of vapors of complex organic compounds when excited by electron beams and the conditions necessary to obtain the gain, *Zh. Prikl. Spektrosk.* **34**, No. 3, 445–451 (1981) (Russ).
 558. Gruzinskii, V. V., Danilova, V. I., Kopylova, T. N., Maier, V. G., and Shalaev, V. K., Theoretical determination of the spectral and luminescence properties of complex molecules to assess their lasing capacity, *Kvantovaya Elektron.* **8**, No. 8, 1702–1707 (1981) (Russ) (*P.A.* **85**: 49511).
 559. Harris, S. J., and Weiner, A. M., Continuous wave intracavity dye laser spectroscopy. 2. A parametric study, *J. Chem. Phys.* **74**, No. 7, 3673–3679 (1981) (Eng) (*P.A.* **84**: 64028).
 560. Heldt, J. R., Szczepanski, J., and Heldt, J., Laser emission of new phenyl-acetoxy anthracene derivatives, *Opt. Commun.* **39**, No. 5, 325–327 (1981) (Eng).
 561. Higuchi, F., and Muto, J., Photo and thermal bleaching of rhodamine 6G (Rh6G) in the copolymer of methyl methacrylate (MMA) with methacrylic acid (MA), *Phys. Lett.* **86A**, No. 1, 51–53 (1981) (Eng).
 562. Higuchi, F., and Muto, J., Thermal bleaching of rhodamine 6G in polymethyl methacrylate (PMMA), *Phys. Lett.* **81A**, No. 1, 95–96 (1981) (Eng).
 563. Hirth, A., Meyer, R., and Schetter, K., A reliable high power repetitive pulsed dye laser, *Opt. Commun.* **40**, No. 1, 63–67 (1981) (Eng).
 564. Ishida, Y., Nakamura, A., Naganuma, K., and Yajima, T., Internal amplification of subpicosecond pulses from a cw mode-locked dye laser, *Opt. Commun.* **39**, No. 6, 411–415 (1981) (Eng).
 565. Itagi, V. V., Pawar, B. H., and Itagi, S., Dye laser from optical whiteners, *Indian J. Phys.* **54B**, No. 1 and 2, 69–72 (1980) (Eng).
 566. Kaarli, R., and Rebane, A., Anomalous gain of S_2 -fluorescence intensity after two-step excitation of some polymethyn dyes by picosecond laser pulses, *Eesti NSV Tead. Akad. Toim., Füüs., Mat.* **30**, No. 3, 290–292 (1981) (Russ) (*P.A.* **85**: 31556).
 567. Kaarli, R., and Rebane, A., Investigation of the relaxations in the excited electronic state of the polymethine dyes in solutions via two-step excited fluorescence, *Eesti NSV Tead. Akad. Toim., Füüs., Mat.* **30**, No. 3, 287–289 (1981) (Eng).
 568. Kabanov, V. V., and Rubanov, A. S., The resonant mechanism effect on emission frequency shift of a CW dye laser, *Zh. Prikl. Spektrosk.* **34**, No. 6, 975–979 (1981) (Russ).
 569. Kaminishi, K., Roy, R., Short, R., and Mandel, L., Investigation of photon statistics and correlations of a dye laser, *Phys. Rev. A* **24**, No. 1, 370–378 (1981) (Eng).
 570. Kapoor, R. C., Jain, M. K., and Mishra, V. N., Fluorescence and absorption spectra of Rose-Bengal dye in the presence of surfactants, *J. Lumin.* **22**, No. 4, 429–439 (1981) (Eng).
 571. Kivits, P., De Bont, R., and Van der Veen, J., Vanadyl phthalocyanine: An organic material for optical data recording, *Appl. Phys. A* **26**, No. 2, 101–105 (1981) (Eng).
 572. Klemm, E., Klemm, D., Kleinschmidt, J., and Graneß, A., Untersuchungen zum

- Substituenteneinfluß auf die Lebensdauer der Polymethin-Farbform photochromer Dinitrobenzylpyridine, *Z. Phys. Chem. Leipzig* **262**, No. 4, 621–624 (1981) (Ger).
573. König, R., and Mory, S., Relaxation oscillation of nanosecond dye lasers, *Experim. Techn. Phys.* **29**, No. 3, 203–212 (1981) (Ger).
 574. Koyava, V. T., Pavlovich, V. S., Popechits, V. I., and Sarzhevsky, A. M., Kinetics of nanosecond time-resolved fluorescence spectra of polar dye solutions, *Zh. Prikl. Spektrosk.* **34**, No. 6, 1017–1022 (Russ) (*P. A.* **85**: 75350).
 575. Kudo, K., and Moriizumi, T., Spectrum-controllable color sensors using organic dyes, *Appl. Phys. Lett.* **39**, No. 8, 609–611 (1981) (Eng).
 576. Kushida, T., Kinoshita, S., Tanaka, I., Kinoshita, Y., and Kimura, S., Picosecond fluorescence spectroscopy of dye molecules in living biological cells, *J. Lumin.* **24/25**, pt. 2, 787–790 (1981) (Eng).
 577. Kuznetsov, V. A., Deactivation processes of rhodamine 6G in aqueous solutions, *Zh. Prikl. Spektrosk.* **35**, No. 4, 627–631 (1981) (Russ).
 578. Lawandy, N. M., Fuhr, P. L., and Robinson, D. W., Laser inhibited diffusion in rhodamine-ethanol solutions, *Phys. Lett.* **84A**, No. 3, 137–138 (1981) (Eng).
 579. Lebedev, V. V., and Plyasulya, V. M., Single-frequency tunable pulsed dye laser with diffraction grating, *Opt. and Spektrosk.* **50**, No. 4, 744–749 (1981) (Russ) (*P. A.* **85**: 39669).
 580. Levshin, L. V., Reva, M. G., Ryzhikov, B. D., and Stalmakhovich, S. I., The influence of water impurities on association processes of rhodamine 6G molecules in ethanol solution, *Vestn. Moskov. Univ. Fiz., astron.* **22**, No. 4, 71–74 (1981) (Russ).
 581. Logunov, O. A., Startsev, A. V., and Stoilov, Yu. Yu., Coumarins in the gaseous phase. 2. Investigation of stimulated emission from coumarin vapors in the range 470–540 nm, *Kvantovaya Elektron.* **8**, No. 6, 1307–1310 (1981) (Russ) (*P. A.* **85**: 39645).
 582. Loutfy, R. O., Bulk optical properties of phthalocyanine pigment particles, *Can. J. Chem.* **59**, No. 3, 549–554 (1981) (Eng) (*P. A.* **84**: 82456).
 583. Lutz, D. R., Nelson, K. A., Gochanour, C. R., and Fayer, M. D., Electronic excited state energy transfer, trapping by dimers and fluorescence quenching in concentrated dye solutions: Picosecond transient grating experiments, *Chem. Phys.* **58**, No. 3, 325–334 (1981) (Eng) (*P. A.* **84**: 90606).
 584. Makogonenko, A. G., Neporent, B. S., and Stepanov, Yu. A., Photobleaching and “shortwavelength” lasing of kryptocyanine solutions, *Opt. and Spektrosk.* **51**, No. 4, 655–659 (1981) (Russ).
 585. Masilamani, V., and Sivaram, B. M., Spectral and laser gain characteristics of solvated species of scopoletin, *J. Lumin.* **22**, No. 2, 211–220 (1981) (Eng).
 586. Mataloni, P., A two frequency cavity pumped dye laser, *Opt. Acta* **28**, No. 7, 1003–1008 (1981) (Eng).
 587. Mavroyannis, C., Non-linear fluorescent spectra at high photon densities, *J. Photochem.* **17**, No. 1/2, 177–178 (1981) (Eng).
 588. Mchedlov-Petrosyan, N. O., State of rhodamine 6G in water solutions of mineral acids, *Zh. Fiz. Khim.* **55**, No. 7, 1723–1727 (1981) (Russ).
 589. Melishchuk, M. V., Tikhonov, E. A., and Shpak, M. T., Fine structure in vibronic fluorescence spectra of polymethine dyes, *Opt. and Spektrosk.* **51**, No. 6, 1002–1008 (1981) (Russ).
 590. Mory, S., Rosenfeld, A., and König, R., Generation of subnanosecond dye laser pulses of narrow linewidth by grazing-incidence on two gratings, *Opt. Commun.* **38**, No. 5, 6, 416–418 (1981) (Eng).
 591. Muto, S., and Ito, C., Characteristics of Coumarin 1-Uranine energy transfer dye laser, *Jap. J. Appl. Phys.* **20**, No. 8, 1591–1592 (1981) (Eng).
 592. Nabokin, Yu. V., Samartsev, V. V., and Sheibut, Yu. E., Effects of resonant nonlinear coherent interaction of laser radiation with molecular crystals and their application (review), *Ukr. Fiz. Zh.* **26**, No. 5, 705–724 (1981) (Russ).

593. Needham, C., and Rhodes, W., Laser intensity induced nonradiative processes in molecules, *J. Phys. Chem.* **85**, No. 17, 2535–2542 (1981) (Eng).
594. Nemkovich, N. A., Rubinov, A. N., and Tomin, V. I., Kinetics of luminescence spectra of rigid dye solutions due to directed electronic energy transfer, *J. Lumin.* **23**, No. 3, 4, 349–361 (1981) (Eng).
595. Neporent, B. S., Spiro, A. G., Shilov, V. B., and Fainberg, B. D., On the shape of the stimulated secondary radiation spectra of dye solutions, *Pis'ma v Zh. Eksp. and Teor. Fiz.* **33**, No. 3, 133–136 (1981) (Russ) (*P.A.* **84**: 48118).
596. Osman, A.-M., And Youssef, M. S. K., Spectrophotometric studies on some 2-styryl benothiazole cyanine dyes, *Spectrochim. acta* **37A**, No. 9, 811–814 (1981) (Eng).
597. Pavlopoulos, T. G., The dye mixture perylene-rhodamine 110, *J. Photochem.* **17**, No. 1/2, 103–104 (1981) (Eng).
598. Pavlopoulos, T. G., A figure of merit for laser dyes, *Opt. Commun.* **38**, No. 5, 6, 397–401 (1981) (Eng).
599. Perchi, Z. I., Tunable organic dye lasers with automatic control, *Zh. Prikl. Spektrosk.* **34**, No. 5, 812–814 (1981) (Russ).
600. Prasad, C. R., Yoganarasimha, A., and Venkateshan, S. P., Photobleaching of laser dye rhodamine 6G, *Indian J. Phys.* **54B**, No. 1 and 2, 24–31 (1980) (Eng).
601. Prishchepov, A. S., Perekalina, Z. B., and Sender, V. R., Investigation of structural organization of dyes in active laser media, *Zh. Prikl. Spektrosk.* **35**, No. 2, 257–260 (1981) (Russ).
602. Pruski, M., The development of subnanosecond pulses in dye lasers, *Acta Phys. Pol. A* **60**, No. 4, 583–590 (1981) (Eng).
603. Quickenden, T. I., and Bassett, R. L., Electrode dye layers in the gold-rhodamine B photoelectrochemical cell, *J. Phys. Chem.* **85**, No. 15, 2232–2238 (1981) (Eng).
604. Rettner, C. T., and Brophy, J. H., Resonance enhanced laser ionisation mass spectrometry of four aromatic molecules, *Chem. Phys.* **56**, No. 1, 53–61 (1981) (Eng).
605. Reva, M. G., Akimov, A. I., Denisov, L. K., and Uzhinov, B. M., Improvement of efficiency of oxazine 17 lasing through electronic energy transfer from the excited rhodamine dye molecules, *Zh. Prikl. Spektrosk.* **35**, No. 6, 975–978 (1981) (Russ).
606. Ritchie, G., and Burstein, E., Luminescence of dye molecules adsorbed at a Ag surface, *Phys. Rev. B* **24**, No. 8, 4843–4846 (1981) (Eng) (*P.A.* **85**: 26976).
607. Rodgers, M. A. J., Picosecond fluorescence studies of xanthene dyes in anionic micelles in water and reverse micelles in heptane, *J. Phys. Chem.* **85**, No. 23, 3372–3374 (1981) (Eng).
608. Rodionova, G. N., Krutovskaya, I. V., Tuchin, Yu. G., Rodionov, A. N., and Karpov, V. V., Electronic spectra and structure of some azodyes in different aggregate states, *Zh. Prikl. Spektrosk.* **34**, No. 4, 667–672 (1981) (Russ) (*P.A.* **85**: 64992).
609. Rubeko, L. M., Akimov, A. I., Denisov, L. K., and Uzhinov, B. M., Luminescence and lasing of complexes with the H-bond of 4-methyl-7-oxycoumarin in aprotic solvents, *Zh. Prikl. Spektrosk.* **35**, No. 3, 436–442 (1981) (Russ).
610. Sah, R. E., Stokes shift of fluorescent dyes in the doped polymer matrix, *J. Lumin.* **24/25**, pt. 2, 869–872 (1981) (Eng) (*P.A.* **85**: 46727).
611. Saikan, S., Sei, J., and Kiguchi, M., Modified double-grating grazing incidence pulsed dye laser, *Jap. J. Appl. Phys.* **20**, No. 7, 1339–1340 (1981) (Eng).
612. Salamon, Z., and Skibinski, A., Fluorescence properties of methine dyes in a nematic liquid crystal matrix, *Mol. Cryst. and Liquid Cryst.* **65**, No. 1–2, 51–60 (1981) (Eng) (*P.A.* **84**: 82473).
613. Sanchez Gomez, M., and Guerra Perez, J. M., The ACDF. A new class of lasing dyes, *Opt. Commun.* **40**, No. 2, 144–146 (1981) (Eng).
614. Scherer, P., Kopainsky, B., and Kaiser, W., The optical constants of thin films of

- pseudoisocyanine chloride, *Opt. Commun.* **39**, No. 6, 375–378 (1981) (Eng).
615. Sens, R., and Drexhage, K. H., Fluorescence quantum yield of oxazine and carbazine laser dyes, *J. Lumin.* **24/25**, pt. 2, 709–712 (1981) (Eng) (*P. A.* **85**: 43983).
 616. Smirnova, T. N., Tikhonov, E. A., and Shpak, M. T., Peculiarities of the two-photon excited coumarine dye solution fluorescence spectra, *Ukr. Fiz. Zh.* **26**, No. 9, 1448–1455 (1981) (Russ).
 617. Spiro, A. G., Neporent, B. S., Fainberg, B. D., and Shilov, V. B., Concerning interpretation of secondary radiation (superluminescence and SRS) spectrum shape of complex organic dye solutions, *Zh. Prikl. Spektrosk.* **35**, No. 2, 285–291 (1981) (Russ).
 618. Spiro, A. G., Neporent, B. S., Fainberg, B. D., and Shilov, V. B., On the nature of secondary luminescence of dye solutions under laser excitation, *Zh. Prikl. Spektrosk.* **35**, No. 1, 52–59 (1981) (Russ).
 619. Steiger, R., and Reber, J. F., Chemical and photographic properties of symmetrical trinuclear cyanine dyes, *Photogr. Sci. and Eng.* **25**, No. 4, 127–138 (1981) (Eng) (*P. A.* **85**: 52232).
 620. Studenov, V. I., Piterskaya, I. V., and Bakhshiev, N. G., On the effect of statistical intermolecular processes on the characteristics of multicomponent-solution stimulated emission, *Opt. and Spektrosk.* **51**, No. 1, 115–119 (1981) (Russ).
 621. Sundström, V., and Gillbro, T., Viscosity dependent radiationless relaxation rate of cyanine dyes. A picosecond laser spectroscopy study, *Chem. Phys.* **61**, No. 3, 257–269 (1981) (Eng).
 622. Telle, H., Hüffer, W., and Basting, D., The XeCl excimer laser: a powerful and efficient UV pumping source for tunable dye lasers, *Opt. Commun.* **38**, No. 5, 6, 402–406 (1981) (Eng).
 623. Teuchner, K., Dähne, S., Dresner, J., and Prochorow, J., The anomalous blue fluorescence of pseudoisocyanine dyes, *J. Lumin.* **23**, No. 3, 4, 413–422 (1981) (Eng).
 624. Timoshenko, M. M., Korkoshko, I. V., Kleimenov, V. I., Petrachenko, N. E., Chizhov, Yu. V., Ryl'kov, V. V., and Akopyan, M. E., Ionization potentials of rhodamine dyes, *Dokl. Akad. Nauk SSSR* **260**, No. 1, 138–140 (1981) (Russ).
 625. Vernon, M. F., Lisy, J. M., Kwok, H. S., Krajnovich, D. J., Tramer, A., Shen, Y. R., and Lee, Y. T., Vibrational predissociation of benzene dimers and trimers by the crossed laser-molecular beam technique, *J. Phys. Chem.* **85**, No. 22, 3327–3333 (1981) (Eng) (*P. A.* **85**: 44014).
 626. Villaeys, A. A., and Freed, K. F., General features of coherence effects in spectroscopy, *J. Photochem.* **17**, No. 1/2, 163 (1981) (Eng).
 627. Vranchev, D., Reason for the infringement of the universal balance between the absorption and emission spectra of some polymethine dyes, *Bulg. J. Phys.* **8**, No. 3, 253–256 (1981) (Russ).
 628. Weidner, F., and Hermann, J., Stationäre Impulsenergie und Stabilitätsbereiche in passiv modensynchronisierten Farbstofflasern mit linear Resonatoranordnung, *Exp. Techn. Phys.* **29**, No. 5, 443–450 (1981) (Ger).
 629. Wiedmann, J., and Penzkofer, A., Excited-state absorption cross-sections in rhodamine dyes determined after molecular reorientation, *Nuovo Cimento B* **63B**, Ser. 2, No. 1, 459–469 (1981) (Eng) (*P. A.* **84**: 87228).
 630. Wolfbeis, O. S., Solvent and acidity dependence of the absorption and fluorescence spectra of 3-hydroxycoumarin, *Z. Phys. Chem.* **125**, Teil 1, 15–20 (1981) (Eng).
 631. Wu Chengjiu, Wang Naiguang, Li Guangxiao, Xu Ling, Second order CARS of benzene, *Laser J.* **8**, No. 1, 21–22 (1981) (Chin.) (*P. A.* **85**: 20362).
 632. Yashiro, M., and Sato, K., A new electrochromic material: 1,4-benzoquinone in a non-aqueous solution, *Jap. J. Appl. Phys.* **20**, No. 7, 1319–1320 (1981) (Eng).
 633. Zewail, A. H., Laser-selective chemistry and vibrational energy redistribution in

- molecules, *J. Photochem.* **17**, No. 1/2, 59 (1981) (Eng).
634. Zhang, G. W., Grethen, H., Kronfeldt, H.-D., and Winkler, R., The influence of the beam expanding prism in a dye laser resonator on the linewidth and its dependence on the expansion ratio, *Opt. Commun.* **40**, No. 1, 49–53 (1981) (Eng).
635. Zuev, V. S., Kruglenko, V. P., Logunov, O. A., Povstyanov, M. V., Startsev, A. V., and Stoilov, Yu. Yu., Imitrines. 3. Laser action at the 500-nm band in organic dyes of the imitrine class in solutions and vapors, *Kvantovaya Elektron.* **8**, No. 7, 1567–1570 (1981) (Russ).

3.10. Spectroscopy of photochemical reactions

636. Agostini, G., Gambaro, A., Gennari, G., Giacometti, G., and Pasimeni, L., CIDNP evidence in the β -styryl naphthalene photoisomerization from exciplexes, *Chem. Phys. Lett.* **78**, No. 3, 596–597 (1981) (Eng) (*P.A.* **84**: 59544).
637. Albin, A., Bettinetti, G. F., Fasani, E., Minoli, G., and Pietra, S., The photochemical reaction of 1,4-dicyanonaphthalene with methylbenzenes, *J. Photochem.* **17**, No. 1/2, 89 (1981) (Eng).
638. Avouris, Ph., and Demuth, J. E., Spectroscopy and photophysical dynamics of aromatics adsorbed on a clean Ag(111) surface, *J. Photochem.* **17**, No. 1/2, 111–112 (1981) (Eng).
639. Balakin, A. A., Lukin, L. V., Tolmachev, A. V., and Yakovlev, B. S., Photoejection of electron from the anthracene negative ion in nonpolar liquid. Effect of temperature, *Opt. and Spektrosk.* **50**, No. 2, 301–306 (1981) (Russ).
640. Band, Y. B., Freed, K. F., and Kouri, D. J., Half-collision description of final state distributions of the photodissociation of polyatomic molecules, *J. Chem. Phys.* **74**, No. 8, 4380–4394 (1981) (Eng) (*P.A.* **84**: 74492).
641. Barbara, P. F., Picosecond spectroscopy of organic photochemical reactions, *J. Photochem.* **17**, No. 1/2, 131 (1981) (Eng).
642. Barigelletti, F., Dellonte, S., Flamigni, L., and Orlandi, G., Photophysical properties of benzil, *J. Photochem.* **17**, No. 1/2, 23 (1981) (Eng).
643. Becker, H.-D., Sandros, K., and Andersson, K., Adiabatic photoreactions involving anthracenes. Intramolecular exciplex formation by photolytic cycloreversion, *Chem. Phys. Lett.* **77**, No. 2, 246–252 (1981) (Eng) (*P.A.* **84**: 33474).
644. Berkovic, G. E., and Ludmer, Z., Exciplex emission and mixed photodimerization from “uphill” doped crystals, *J. Photochem.* **17**, No. 1/2, 115 (1981) (Eng).
645. Bertucci, C., Carlini, C., Ciardelli, F., Rosini, C., and Salvadori, P., Optically active hydrocarbon polymers with aromatic side chains. 11. Dependence of chiroptical properties on the distance between main chain and aromatic group, *Polym. Bull.* **5**, No. 9–10, 535–542 (1981) (Eng) (*P.A.* **85**: 61867).
646. Brauer, H.-D., Drews, W., and Schmidt, R., Wave-length-dependent and adiabatic photochemistry of endoperoxides of aromatic hydrocarbons, *J. Photochem.* **17**, No. 1/2, 22 (1981) (Eng).
647. Caballero, J. F., and Wittig, C., IR multiple photon excitation of C_2H_5F and $1,1-C_2H_4F_2$ near dissociation threshold: vibrational emissions from parent and product species, *Chem. Phys. Lett.* **82**, No. 1, 63–67 (1981) (Eng).
648. Das, P. K., and Bhattacharyya, S. N., Laser flash photolysis study of electron transfer reactions of phenolate ions with aromatic carbonyl triplets, *J. Phys. Chem.* **85**, No. 10, 1391–1395 (1981) (Eng).
649. Davidson, R. S., Bonneau, R., Fournier de Violet, P., and Joussot-Dubien, J., Electron transfer from the excited singlet and triplet states of aromatic hydrocarbons to methyl viologen, *Chem. Phys. Lett.* **78**, No. 3, 475–478 (1981) (Eng).
650. Despres, A., Lejeune, V., and Migirdicyan, E., Photochemistry in X traps and in isotopically mixed crystals of durene at very low temperatures, *J. Photochem.* **17**, No. 1/2, 161 (1981) (Eng).

651. Donati, D., Guarini, G. G. T., and Sarti-Fantoni, P., Isothermal monomerization of 9-cyanoanthracene dimer (9-CNAD), *Mol. Cryst. and Liquid Cryst.* **65**, No. 1–2, 147–150 (1981) (Eng).
652. Faure, J., Delaire, J. A., Castella, M., Van der Auweraert, P., and De Schryver, F. C., Two-photon photoionization of substituted anthracenes from the S_1 state: application to the study of intermolecular and intramolecular charge transfer, *J. Photochem.* **17**, No. 1/2, 20–21 (1981) (Eng).
653. Favaro, G., and Masetti, F., Effect of excited state switching on the photophysical characteristics of benzophenone and related molecules, *J. Photochem.* **17**, No. 1/2, 20 (1981) (Eng).
654. Favaro, G., Photochemical and photophysical behavior of benzoylpyridines. 3. A proposal for σ values of benzoylpyridines in their excited states, *J. Photochem.* **15**, No. 2, 89–96 (1981) (Eng).
655. Ferguson, J., Castellan, A., Desvergne, J.-P., and Bouas-Laurent, H., Excimer intermediate in the unsymmetrical photodimerization of the anthracene ring system, *Chem. Phys. Lett.* **78**, No. 3, 446–450 (1981) (Eng).
656. Frank, R., and Gauglitz, G., On the determination of partial photochemical quantum yields by combined absorbance and fluorescence measurement, *Z. Naturforsch.* **36A**, No. 1, 57–61 (1981) (Eng) (*P.A.* **84**: 43690).
657. Freed, K. F., Morse, M. D., and Band, Y. B., State-selected angular distributions in molecular photodissociations, *J. Photochem.* **17**, No. 1/2, 177 (1981) (Eng).
658. Friedrich, J., Scheer, H., Zickendraht-Wendelstadt, B., and Haarer, D., High-resolution optical studies on C-phycocyanin via photochemical hole burning, *J. Amer. Chem. Soc.* **103**, No. 5, 1030–1035 (1981) (Eng).
659. Friedrich, J., Wolfrum, H., and Haarer, D., Photochemical holes: A spectral probe of the amorphous state in the optical domain, *J. Chem. Phys.* **77**, No. 5, 2309–2316 (1981) (Eng).
660. Garg, R. K., Malhotra, K., and Sidhu, K. S., Dye-sensitized cyclization of diphenylamines, *J. Photochem.* **17**, No. 1/2, 27 (1981) (Eng).
661. Grabowska, A., Protonation and strong H-bonding as the factors controlling structural changes in excited azaaromatics, *J. Lumin.* **24/25**, pt. 2, 505–510 (1981) (Eng) (*P.A.* **85**: 49497).
662. Gutierrez, A. R., Friedrich, J., Haarer, D., and Wolfrum, H., Multiple photochemical hole burning in organic glasses and polymers: spectroscopy and storage aspects, *IBM J. Res. Develop.* **26**, No. 2, 198–208 (1982) (Eng).
663. Ito, O., Nogami, K., and Matsuda, M., Flash photolysis study on initiation of radical polymerization. Addition rates of benzothiazole-2-thiyl radical to vinyl monomers, *J. Phys. Chem.* **85**, No. 10, 1365–1368 (1981) (Eng).
664. Jones, A. C., and Williams, J. O., Energy transfer and photochemical changes in molecular crystals, *J. Photochem.* **17**, No. 1/2, 8 (1981) (Eng).
665. Jones, A. C., and Williams, J. O., Fluorescence lifetimes and state-selective photochemistry of anthracene crystals doped with 2-hydroxyanthracene, *Mol. Cryst. and Liquid Cryst.* **78**, No. 1–4, 41–53 (1981) (Eng) (*P.A.* **85**: 51694).
666. Joussot-Dubien, J., Lamotte, M., and Pereyre, J., The indirect two-photon photolysis of polycyclic aromatic hydrocarbons and benzene in rigid matrices, *J. Photochem.* **17**, No. 3/4, 347–354 (1981) (Eng).
667. Kelm, J., and Strauss, K., F-NMR-spectroscopy for the identification of photo products generated from aromatic iodo compounds. 4, *Spectrochem. acta* **37A**, No. 8, 689–692 (1981) (Eng).
668. Krysanov, S. A., and Alfimov, M. V., $cis \rightleftharpoons trans$ photoisomerization of thioindigoid dyes studied by picosecond flash photolysis, *Chem. Phys. Lett.* **82**, No. 1, 51–54 (1981) (Eng).
669. Loughnot, D. J., Jacques, P., and Fouassier, J. P., Laser investigation of the photoreduction of benzophenone in micellar media: new arguments in favour of an exciplex mechanism, *J. Photochem.* **17**, No. 1/2, 75–76 (1981) (Eng).
670. Memming, R., and Kobs, K., Population and deactivation of triplets of thioin-

- digoid dyes via electron-transfer reactions, *Chem. Phys. Lett.* **80**, No. 3, 475–478 (1981) (Eng) (*P.A.* **84**: 80906).
671. Migita, M., Okada, T., Mataga, N., Nishitani, S., Kurata, N., Sakata, Y., and Misumi, S., Picosecond time-resolved observation of photoinduced charge separation from the singlet excited state of porphyrin-quinone model systems, *Chem. Phys. Lett.* **84**, No. 2, 263–266 (1981) (Eng).
 672. Mikhailov, Yu. T., and Ryl'kov, V. V., Towards kinetics of nonlinear photoreactions in dye solutions, *Zh. Prikl. Spektrosk.* **35**, No. 6, 979–983 (1981) (Russ).
 673. Mordzinski, A., and Grabowska, A., Proton addition to excited S_1 and T_1 benzo[a]phenazine: photophysics and acid-base equilibria, *J. Lumin.* **23**, No. 3, 4, 393–404 (1981) (Eng).
 674. Nosaka, Y., Kira, A., and Imamura, M., Reactions of the excited singlet state of pyrene with metal ions. Intermolecular electron transfer in caffeine-solubilized aqueous solution, *J. Phys. Chem.* **85**, No. 10, 1353–1358 (1981) (Eng).
 675. Odaka, T., Karaki, I., and Mataga, N., Picosecond laser photolysis study of hydrogen atom transfer reactions via heteroexcimer states: isotope and substitution effects on pyrene-amine systems, *J. Photochem.* **17**, No. 1/2, 74 (1981) (Eng).
 676. Ogilvie, J. F., Structural aspects of the mechanism of photochemical radical pair formation in crystalline fluorene containing acridine, *J. Photochem.* **17**, No. 1/2, 114 (1981) (Eng).
 677. Pak, K., and Testa, A. C., Photoreduction of 2-nitroso-1-naphthol, *J. Photochem.* **16**, No. 3, 223–230 (1981) (Eng).
 678. Pineault, R. L., Morgante, C. G., and Struve, W. S., Picosecond triplet state dynamics and photodissociation in 2- and 9-iodoanthracene, *J. Photochem.* **17**, No. 3/4, 435–449 (1981) (Eng).
 679. Rau, H., and Hörmann, M., Kinetic resolution of optically active molecules and asymmetric chemistry: asymmetrically sensitized photolysis of trans-3,5-diphenylpyrazoline, *J. Photochem.* **16**, No. 3, 231–247 (1981) (Eng).
 680. Rentsch, S. K., Danielius, R. V., and Gadonas, R. A., Picosecond time-resolved kinetic studies on the formation of short-lived pseudoisocyanine iodide photoisomers in methanol and ethylene glycol, *Chem. Phys. Lett.* **84**, No. 3, 450–453 (1981) (Eng) (*P.A.* **85**: 72991).
 681. Royer, J., and Beugelmans-Verrier, M., Interaction between neighboring aromatic and polar groups. 4. Synthesis, pK_a , and fluorescence of *N*-substituted 3-(3'-indolyl) norbornene 2-amines, *Nouv. J. Chim.* **5**, No. 11, 581–585 (1981) (Eng) (*P.A.* **85**: 49505).
 682. Shizuka, H., Tsutsumi, K., Takeuchi, H., and Tanaka, I., Proton transfer reactions in the excited state of 1-aminopyrene by picosecond/streak camera and nanosecond spectroscopy, *Chem. Phys.* **59**, No. 1, 2, 183–190 (1981) (Eng) (*P.A.* **84**: 98046).
 683. Tully, F. P., Ravishankara, A. R., Thompson, R. L., Nicovich, J. M., Shah, R. C., Kreutter, N. M., and Wine, P. H., Kinetics of the reactions of hydroxyl radical with benzene and toluene, *J. Phys. Chem.* **85**, No. 15, 2262–2269 (1981) (Eng).
 684. Turro, N. J., Chow, M.-F., and Burkhart, R. D., Photophysical properties of poly(*N*-vinylcarbazole) solid films at elevated temperatures. Evidence for a third phosphorescent species, *Chem. Phys. Lett.* **80**, No. 1, 146–148 (1981) (Eng) (*P.A.* **84**: 74124).
 685. Vernon, M. F., Lisy, J. M., Kwok, H. S., Krajnovich, D. J., Tramer, A., Shen, Y. R., and Lee, Y. T., Vibrational predissociation of benzene dimers and trimers by the crossed laser-molecular beam technique, *J. Phys. Chem.* **85**, No. 22, 3327–3333 (1981) (Eng) (*P.A.* **85**: 44014).
 686. Waluk, J., Bułska, H., Pakuła, B., and Sepiół, J., Red edge excitation study of cooperative double proton transfer in 7-azaindole, *J. Lumin.* **24/25**, pt. 2, 519–522 (1981) (Eng) (*P.A.* **85**: 49498).

687. Watson, T. A., Mangir, M., Wittig, C., and Levy, M. R., Optical detection of photoproducts using a pulsed supersonic molecular beam: application to intramolecular $V \rightleftharpoons E$ coupling in IR laser excited polyatomics, *J. Chem. Phys.* **75**, No. 11, 5311–5317 (1981) (Eng) (*P.A.* **85**: 24783).
688. Wight, C. A., and Beauchamp, J. L., Infrared laser photochemistry of vibrationally excited cyanobenzene cation prepared by internal conversion following electronic excitation, *Chem. Phys. Lett.* **77**, No. 1, 30–35 (1981) (Eng) (*P.A.* **84**: 31874).
689. Wolff, T., Micelle-directed regioselective photodimerization of 9-hydroxymethylanthracene, *J. Photochem.* **16**, No. 4, 343–346 (1981) (Eng).
690. Yamaguchi, Y., Miyashita, T., and Matsuda, M., Photoinduced charge separation of the duroquinone-*N*-ethylcarbazole system in micellar solutions and microemulsions, *J. Phys. Chem.* **85**, No. 10, 1369–1371 (1981) (Eng).
691. Zewail, A. H., Laser-selective chemistry and vibrational energy redistribution in molecules, *J. Photochem.* **17**, No. 3/4, 269–279 (1981) (Eng).

4. ABSORPTION AND LUMINESCENCE SPECTRA OF INTERMOLECULAR COMPLEXES

4.1. Charge-transfer complexes

692. Agarwala, B. V., Spectral studies of some pyridine and bipyridine complexes of platinum(II), *Spectrosc. Lett.* **14**, No. 3, 187–193 (1981) (Eng).
693. Al'bert, F. M., Dzhardzhinka, M., Megya, A., and Ivan, G., Spectroscopic investigation of complexes with charge transfer of some *N,N*-disubstituted *p*-phenylenediamines, *Zh. Prikl. Spektrosk.* **35**, No. 1, 85–93 (1981) (Russ).
694. Allgeier, J., Gutsze, A., Stehlik, D., and Vieth, H. M., Optical nuclear polarization studies of exciton dynamics in anthracene/tetracyanobenzene charge transfer crystals, *J. Lumin.* **24/25**, pt. 1, 449–452 (1981) (Eng) (*P.A.* **85**: 46426).
695. Bhowmik, B. B., and Chattopadhyay, S. P., Charge transfer complexes of iodine with aromatic hydrocarbons, *Spectrochim. acta* **37A**, No. 2, 135–139 (1981) (Eng).
696. Bhowmik, B. B., and Chattopadhyay, S., Solvent effect on the charge-transfer absorption bands of iodine complexes with aromatic hydrocarbons, *Spectrochim. acta* **37A**, No. 6, 445–447 (1981) (Eng) (*P.A.* **84**: 78562).
697. Brivina, L. P., Strokach, N. S., and Shigorin, D. N., Polarized infrared absorption spectra of pentacene-6,13-quinone monocrystal, *Zh. Fiz. Khim.* **55**, No. 10, 2541–2547 (1981) (Russ).
698. Crawford, M. K., Wang, Y., and Eisenthal, K. B., Effects of conformation and solvent polarity on intramolecular charge transfer: a picosecond laser study, *Chem. Phys. Lett.* **79**, No. 3, 529–533 (1981) (Eng) (*P.A.* **84**: 68224).
699. Hays, T. R., Henke, W., Selzle, H. L., and Schlag, E. W., Anthracene-argon complexes in a supersonic jet; spectra and lifetimes, *Chem. Phys. Lett.* **77**, No. 1, 19–24 (1981) (Eng).
700. Kawenoki, I., Keita, B., Kossanyi, J., and Nadjo, L., Singlet charge transfer complexes between anthraquinones and electron donors, *J. Photochem.* **17**, No. 1/2, 18–19 (1981) (Eng).
701. Kozankiewicz, B., Prochorow, J., and Krzystek, J., Migration and annihilation of triplet excitation energy in the charge-transfer anthracene-tetrachlorophthalic anhydride crystal, *Mol. Cryst. and Liquid Cryst.* **75**, No. 1–4, 17–31 (1981) (Eng) (*P.A.* **85**: 26972).
702. McCaffrey, R. R., and Prasad, P. N., Spectroscopic studies of interaction and dynamics in the naphthalene: perfluorobiphenyl crystalline complex, *Chem.*

- Phys.* **63**, No. 1, 2, 13–18 (1981) (Eng) (*P.A.* **85**: 31471).
703. Maslov, V. G., Some characteristics of degenerate electronic states of porphyrin photosensitive donor-acceptor complexes by the hole burning method, *Opt. and Spektrosk.* **51**, No. 6, 1009–1015 (1981) (Russ).
 704. Mazumdar, S., and Soos, Z. G., Valence-bond analysis of extended Hubbard models: Charge-transfer excitations of molecular conductors, *Phys. Rev. B* **23**, No. 6, 2810–2823 (1981) (Eng).
 705. Miniewicz, A., Nowak, R., Samoc, M., and Sworakowski, J., Electroluminescence in the anthracene-trinitrobenzene system, *Acta Phys. Pol.* **A60**, No. 5, 715–722 (1981) (Eng).
 706. Pasimeni, L., Guella, G., and Corvaja, C., EPR study of spin polarization of charge-transfer triplet excitons in anthracene-tetracyanobenzene single crystals, *Chem. Phys. Lett.* **84**, No. 3, 466–470 (1981) (Eng) (*P.A.* **85**: 36408).
 707. Petelenz, P., and Siebrand, W., Frequencies of intermolecular vibrations in electronically excited dimers and charge-transfer complexes in solids, *Chem. Phys. Lett.* **82**, No. 3, 427–429 (1981) (Eng) (*P.A.* **85**: 1567).
 708. Petelenz, P., and Smith, V. H., Jr., Triplet exciton mobilities in weak donor-acceptor complexes, *Chem. Phys. Lett.* **82**, No. 3, 430–433 (1981) (Eng).
 709. Raitt, I., Griffiths, A. M., and Freedman, P. A., The electronic spectra of argon-tetracene van der Waals complexes, *Chem. Phys. Lett.* **80**, No. 2, 225–228 (1981) (Eng) (*P.A.* **84**: 76825).
 710. Ripmeester, J. A., Reddoch, A. H., and Dalal, N. S., Molecular dynamics and the phase transition in the naphthalene-tetracyanobenzene charge-transfer complex as studied by ¹H NMR and triplet state EPR, *J. Chem. Phys.* **74**, No. 3, 1526–1533 (1981) (Eng) (*P.A.* **84**: 47958).
 711. Thomas, M. M., and Drickamer, H. G., High pressure study of viscosity effects on the luminescence of tetracyanobenzene EDA complexes, *J. Chem. Phys.* **74**, No. 6, 3198–3204 (1981) (Eng) (*P.A.* **84**: 61387).
 712. Tokura, Y., and Koda, T., Experimental determination of the charge-transfer exciton band width in anthracene-PMDA crystal, *Solid State Commun.* **40**, No. 3, 299–301 (1981) (Eng).
 713. Tokura, Y., and Koda, T., Raman spectra of the librational phonon modes in isotopically mixed anthracene-PMDA crystals, *Solid State Commun.* **40**, No. 3, 295–297 (1981) (Eng).
 714. Umemura, J., Haley, L. V., Cameron, D. G., Murphy, W. F., Ingold, C. F., and Williams, D. F., Infrared and Raman spectra of the disordered phase of the anthracene- and perdeuterioanthracene-tetracyanobenzene charge transfer complexes, *Spectrochim. acta* **37A**, No. 10, 835–845 (1981) (Eng).
 715. Venuvanalingam, P., Singh, U. C., and Subbaratnam, N. R., Molecular complexes of *p*-benzoquinonechlorimides with aromatic π -donors, *Spectrochim. acta* **37A**, No. 7, 505–510 (1981) (Eng) (*P.A.* **84**: 95702).
 716. Von Schütz, J. U., Steudle, W., Wolf, H. C., Reineker, P., and Schmid, U., The doublet structure of the DF-ODMR signals of triplet excitons in anthracene/TCNB, *Chem. Phys. Lett.* **79**, No. 1, 1–5 (1981) (Eng) (*P.A.* **84**: 65602).

4.2. Excimers, dimers and other homomolecular complexes

717. Abbott, G. D., Chewter, L., O'Connor, D. V., and Phillips, D., Vapour phase exciplex formation in cyano-substituted naphthalenes, *J. Photochem.* **17**, No. 1/2, 186 (1981) (Eng).
718. Baumann, W., Bischof, H., and Fröhling, J. C., A study on exciplex dipole moments, *J. Lumin.* **24/25**, pt. 2, 555–558 (1981) (Eng).
719. Berkovic, G. E., Ludmer, Z., and Zeiri, L., Excimer fluorescence in β -9,10-dichloroanthracene crystals, *Chem. Phys. Lett.* **80**, No. 3, 409–412 (1981) (Eng) (*P.A.* **84**: 87245).

720. Busse, R., and Zachariasse, K. A., Triplet excimer formation with phenanthrene: the importance or relative chromophore configuration, *J. Photochem.* **17**, No. 1/2, 47–48 (1981) (Eng).
721. Chewter, L., O'Connor, D. V., and Phillips, D., Exciplex fluorescence in vapour-phase mixtures of 1-cyanonaphthalene and triethylamine, *Chem. Phys. Lett.* **84**, No. 1, 39–43 (1981) (Eng).
722. Deparasinska, I., and Prochorow, J., On the formation of molecular exciplex in the gas phase, *J. Lumin.* **24/25**, pt. 2, 523–526 (1981) (Eng).
723. Friesner, R., and Silbey, R., Absorption and circular dichroism line shapes of a molecular dimer in the strong electronic coupling limit, *J. Chem. Phys.* **75**, No. 12, 5630–5639 (1981) (Eng) (*P.A.* **85**: 34461).
724. Gangola, P., Joshi, N. B., and Pant, D. D., Excimer emission in 9-aminoacridine hydrochloride, *Chem. Phys. Lett.* **80**, No. 3, 418–421 (1981) (Eng) (*P.A.* **84**: 87246).
725. Hamanoue, K., Hidaka, T., Nakayama, T., and Teranishi, H., Excimer formation of neat benzene derivatives studied by picosecond spectroscopy, *Chem. Phys. Lett.* **82**, No. 1, 55–58 (1981) (Eng) (*P.A.* **84**: 99710).
726. Hatano, Y., Yamamoto, M., and Nishijima, Y., Enhanced phosphorescence in intramolecular exciplex systems, *Chem. Phys. Lett.* **77**, No. 2, 299–303 (1981) (Eng) (*P.A.* **84**: 33486).
727. Kapinus, E. I., Staryi, V. P., and Dilung, I. I., Properties of triplet exciplexes of porphyrin compounds, *Dokl. Akad. Nauk SSSR* **261**, No. 4, 907–911 (1981) (Russ).
728. Ketsle, G. A., Levshin, L. V., Mel'nikov, G. V., and Minaev, B. F., Magnetic field effect on the delayed fluorescence of anthracene exciplexes, *Zh. Prikl. Spektrosk.* **34**, No. 3, 435–440 (1981) (Russ) (*P.A.* **85**: 49504).
729. Langridge-Smith, P. R. R., Brumbaugh, D. V., Haynam, C. A., and Levy, D. H., Ultraviolet spectra of benzene clusters, *J. Phys. Chem.* **85**, No. 25, 3742–3746 (1981) (Eng) (*P.A.* **85**: 75487).
730. Levshin, L. V., Reva, M. G., and Ryzhikov, B. D., The dependence of spectral characteristics of associates of complex organic molecules on their structure, *Zh. Prikl. Spektrosk.* **34**, No. 4, 656–662 (1981) (Russ) (*P.A.* **85**: 65053).
731. Lianos, P., Dinh-Cao, M., Lang, J., and Zana, R., Study of luminescence quenching and excimer formation in micellar systems and microemulsions. Case of small interaction rate constants, *J. chim. phys. et phys.-chim. biol.* **78**, No. 6, 497–501 (1981) (Eng).
732. Loughnot, D. J., Jacques, P., and Fouassier, J. P., Laser investigation of the photoreduction of benzophenone in micellar media: new arguments in favour of an exciplex mechanism, *J. Photochem.* **17**, No. 1/2, 75–76 (1981) (Eng).
733. Masuhara, H., Maeda, Y., Nakajo, Y., Mataga, N., Tomita, K., Tatemitsu, H., Sakata, Y., and Misumi, S., Exciplex emissions of intra- and intermolecular benzophenone and N,N-dimethylaniline systems, *J. Amer. Chem. Soc.* **103**, No. 3, 634–640 (1981) (Eng) (*P.A.* **84**: 81029).
734. Mayer, U., Auweter, H., Braun, A., Wolf, H. C., and Schmid, D., Investigation of the excimer dynamics in 9,10-dichloroanthracene crystals using picosecond spectroscopy, *Chem. Phys.* **59**, No. 3, 449–465 (1981) (Eng) (*P.A.* **84**: 101147).
735. Okada, T., Mataga, N., Sakata, Y., and Misumi, S., Ultrafast intersystem crossing of intramolecular heteroexcimers, *J. Photochem.* **17**, No. 1/2, 130–131 (1981) (Eng).
736. Olson, R. W., Patterson, F. G., Lee, H. W. H., and Fayer, M. D., Delocalized electronic excitations of pentacene dimers in a *p*-terphenyl host: Picosecond photon echo experiments, *Chem. Phys. Lett.* **79**, No. 3, 403–407 (1981) (Eng) (*P.A.* **84**: 72405).
737. Rentsch, S. K., Danielius, R. V., Gadonas, R. A., and Piskarskas, A., Picosecond kinetics and transient spectra of pseudoisocyanine monomers and *J*-aggregates

- in aqueous solution, *Chem. Phys. Lett.* **84**, No. 3, 446–449 (1981) (Eng) (*P.A.* **85**: 70272).
738. Reva, M. G., Levshin, L. V., and Ryzhikov, B. D., On the nature of variations in electron absorption spectra of the compounds of anthracene series at the association of their molecules, *Opt. and Spektrosk.* **50**, No. 3, 561–568 (1981) (Russ) (*P.A.* **85**: 34407).
739. Selinger, B. K., and Watkins, A. R., Fast kinetics of pyrene excimer formation in micelles of cetyltrimethylammonium bromide, *J. Photochem.* **16**, No. 4, 321–330 (1981) (Eng).
740. Sudhindra, B. S., and Fuhrhop, J.-H., Intermolecular interactions in porphyrin dimers: a quantum mechanical study, *Int. J. Quantum Chem.* **20**, No. 3, 747–753 (1981) (Eng) (*P.A.* **85**: 769).
741. Tanaka, Y., and Walker, W. C., Emission spectrum of rare gas dimers in the vacuum UV regions. 3. Ne_2 , *J. Chem. Phys.* **74**, No. 5, 2760–2768 (1981) (Eng) (*P.A.* **84**: 68199).
742. Thomas, M. M., and Drickamer, H. G., High pressure study of viscosity and temperature effects on tetracyanobenzene EDA complexes, *J. Chem. Phys.* **75**, No. 11, 5246–5249 (1981) (Eng) (*P.A.* **85**: 20113).
743. Vernon, M. F., Lisy, J. M., Kwok, H. S., Krajnovich, D. J., Tramer, A., Shen, Y. R., and Lee, Y. T., Vibrational predissociation of benzene dimers and trimers by the crossed laser-molecular beam technique, *J. Phys. Chem.* **85**, No. 22, 3327–3333 (1981) (Eng) (*P.A.* **85**: 44014).

5. SPECTRA OF PURE MOLECULAR CRYSTALS

5.1. Phonon spectra

744. Afanas'eva, N. I., Bagdanskis, N. I., Burlakov, V. M., Vinogradov, E. A., and Zhizhin, G. N., Methods of study of the optical properties of materials in long-wave region of spectrum in wide temperature interval, In: *Spectroscopy of Molecules and Crystals. Pt. 2. Kiev*, 288–297 (1980) (Russ).
745. Andrews, B., and Anderson, A., Raman and infrared spectra of crystalline dinitrogen tetroxide, *J. Chem. Phys.* **74**, No. 3, 1534–1537 (1981) (Eng).
746. Andrews, J. R., and Hochstrasser, R. M., Comparison of ground- and excited-state Raman transitions using resonant coherent Stokes generation, *Chem. Phys. Lett.* **83**, No. 3, 427–431 (1981) (Eng) (*P.A.* **85**: 20065).
747. Andrews, J. R., and Hochstrasser, R. M., Thermally induced excited-state coherent Raman spectra of solids, *Chem. Phys. Lett.* **82**, No. 3, 381–385 (1981) (Eng) (*P.A.* **85**: 2225).
748. Arendt, P., Koswig, H. D., Pilz, W., and Reich, P., Raman evidence for the existence of three solid modifications in MBBA, *Mol. Cryst. and Liquid Cryst.* **75**, No. 1–4, 295–301 (1981) (Eng) (*P.A.* **85**: 22020).
749. Baumgartner, R., Engelhardt, M., Renk, K. F., and Orbach, R., Spontaneous decay of high-frequency acoustic phonons, *Physica, B & C* **107**, No. 1–3, 109–110 (1981) (Eng) (*P.A.* **85**: 26009).
750. Belousov, M. V., and Petrikov, V. D., Interaction of pseudospins and spectrum of density of librational states in NH_4Cl crystal, *Pis'ma v Zh. Eksp. and Teor. Fiz.* **34**, No. 4, 183–185 (1981) (Russ).
751. Belushkin, A. V., Bokhenkov, E. L., Kolesnikov, A. I., Natkaniec, I., Righini, R., and Sheka, E. F., External phonon spectrum of naphthalene crystal at 5 K, *Fiz. Tverd. Tela* **23**, No. 9, 2607–2613 (1981) (Russ) (*P.A.* **85**: 71596).
752. Belushkin, A. V., Dolganov, V. K., Natkaniec, I., and Sheka, E. F., Spectrum of vibrational states in amorphous substances with molecular structure, *Pis'ma v*

- Zh. Eksp. and Teor. Fiz.* **33**, No. 10, 497–500 (1981) (Russ) (*P.A.* **84**: 86257).
753. Bertie, J. E., Francis, B. F., and Jacobs, S. M., The far-infrared spectrum of the tetragonal phase adamantane II at 4.6°K, *J. Chem. Phys.* **74**, No. 11, 6522–6523 (1981) (Eng) (*P.A.* **84**: 78531).
754. Brehat, F., Wyncke, B., and Hadni, A., Lattice mode anharmonicity in sodium nitrate, *Phys. Status Solidi (b)* **106**, No. 1, 207–214 (1981) (Eng).
755. Brivina, L. P., Strokach, N. S., Shigorin, D. N., and Gorelik, M. V., Polarized infrared absorption spectra of the 1,4-anthraquinone single crystal (oriented-gas model), *Opt. and Spektrosk.* **51**, No. 4, 679–684 (1981) (Russ).
756. Brivina, L. P., Strokach, N. S., and Shigorin, D. N., Polarized infrared absorption spectra of pentacene-6,13-quinone monocrystal, *Zh. Fiz. Khim.* **55**, No. 10, 2541–2547 (1981) (Russ).
757. Bron, W. E., Defect probes of phonons in insulating crystals. In: Defects in insulating crystals. Riga, Berlin, Heidelberg, New York, 560–576 (1981) (Eng).
758. Bugueno-Hoffmann, R., Interpretation of the i.r. and Raman spectra of chloropentamethylbenzene in the disordered room temperature phase, *Spectrochim. Acta* **37A**, No. 3, 163–167 (1981) (Eng) (*P.A.* **84**: 74108).
759. Burgos, E., Halac, E., and Bonadeo, H., Vibrational spectra and phase transitions of crystalline promoform, *J. Chem. Phys.* **74**, No. 3, 1546–1551 (1981) (Eng).
760. Carlone, C., Hota, N. K., Stolz, H. J., Elbert, M., and Hochheimer, H. D., Study of mode Grüneisen parameters in various quasi-one-dimensional crystals, *J. Chem. Phys.* **75**, No. 7, 3220–3225 (1981) (Eng).
761. Chaplot, S. L., Pawley, G. S., Bokhenkov, E. L., Sheka, E. F., Dorner, B., Kalus, J., Jindal, V. K., and Natkaniec, I., Eigenvectors of low frequency internal phonons in crystalline anthracene-d₁₀, *Chem. Phys.* **57**, No. 3, 407–414 (1981) (Eng) (*P.A.* **84**: 77977).
762. Chattopadhyay, T., Carlone, C., Jayaraman, A., and Schnering, H. G. v., Temperature and pressure dependence of the Raman spectrum of crystalline P₄S₃, *Phys. Rev. B* **23**, No. 6, 2471–2483 (1981) (Eng).
763. Chhor, K., Lucazeau, G., and Sourisseau, C., Vibrational study of the dynamic disorder in nickelocene and ferrocene crystals, *J. Raman Spectrosc.* **11**, No. 3, 183–198 (1981) (Eng) (*P.A.* **84**: 92741).
764. Di Lauro, C., and Lattanzi, F., Phase angles for matrix elements in ro-vibronic spectroscopy, *J. Phys.* **42**, No. 5, 693–703 (1981) (Fr).
765. Dorner, B., Bokhenkov, E. L., Sheka, E. F., Chaplot, S. L., Pawley, G. S., Kalus, J., Schmelzer, U., and Natkaniec, I., Phonon dispersion curves in the molecular crystals naphthalene and anthracene measured by inelastic neutron scattering, *J. phys. Colloq.* **42**, No. C-6, 602–604 (1981) (Eng) (*P.A.* **85**: 50791).
766. Dumetz, J., Vergoten, G., Huvenne, J. P., and Fleury, G., Lattice vibrations of crystalline diazepam (valium), *J. Raman Spectrosc.* **11**, No. 4, 221–224 (1981) (Eng).
767. Duppen, K., Hesp, B. M. M., and Wiersma, D. A., A picosecond CARS study of librons in naphthalene, *Chem. Phys. Lett.* **79**, No. 3, 399–402 (1981) (Eng) (*P.A.* **84**: 72746).
768. Esipov, S. E., and Levinson, I. B., Unlocal phonon heat conductivity in the conditions of an intense excitation, *Pis'ma v Zh. Eksp. and Teor. Fiz.* **34**, No. 4, 218–221 (1981) (Russ).
769. Excoffon, P., and Marechal, Y., H-bonds of imidazole crystals. 4. Effects of CD/CH substitutions, *J. chim. phys. et phys.-chim. biol.* **78**, No. 4, 353–362 (1981) (Fr).
770. Flakus, H. T., The effect of strong coupling between vibrations in hydrogen bonds on the polarized spectra of the mercapto-benzothiazole crystal: an 'anomalous' isotopic effect, *Chem. Phys.* **62**, No. 1, 2, 103–114 (1981) (Eng) (*P.A.* **85**: 26885).
771. Fondere, F., Obriot, J., Marteau, Ph., Allavena, M., and Chakroun, H., Far

- infrared spectroscopy and empirical intermolecular potential for α - and γ - N_2 under pressure, *J. Chem. Phys.* **74**, No. 5, 2675–2685 (1981) (Eng) (*P.A.* **84**: 70148).
772. Fujimura, Y., Seo, K., and Shiraishi, J., Effects of frequency change on the resonance Raman scattering in the Condon approximation, *Chem. Phys. Lett.* **83**, No. 3, 568–572 (1981) (Eng) (*P.A.* **85**: 20066).
 773. Ginzburg, V. L., Sobyenin, A. A., and Levanyuk, A. P., The principle of 'interacting spectra' as a tool for analysis of the light scattering spectral distribution near phase transition points, *J. Raman Spectrosc.* **10**, 194–196 (1981) (Eng) (*P.A.* **84**: 61336).
 774. Heidemann, A., Press, W., Lushington, K. J., and Morrison, J. A., Study of the tunneling rotations in phase II of solid CH_4 with high resolution neutron spectroscopy, *J. Chem. Phys.* **75**, No. 8, 4003–4009 (1981) (Eng).
 775. Jobic, H., Ghosh, R. E., and Renouprez, A., The limited influence of the Debye-Waller factor on the intensities of high frequency molecular modes measured by neutron inelastic spectroscopy, *J. Chem. Phys.* **75**, No. 8, 4025–4030 (1981) (Eng) (*P.A.* **85**: 21262).
 776. Kubinyi, M., and Castellucci, E., Oblique phonons in uniaxial molecular crystals: Raman spectra of *s*-trioxane, *J. Raman Spectrosc.* **10**, 126–128 (1981) (Eng).
 777. Lengfellner, H., and Renk, K. F., Anharmonic decay of zone-boundary phonons observed by a new method of phonon detection, *Phys. Rev. Lett.* **46**, No. 18, 1210–1212 (1981) (Eng) (*P.A.* **84**: 69471).
 778. Mathur, M. S., Nelson, J. B., and Tabisz, G. C., Far-infrared spectrum of benzophenone, *Spectrosc. Lett.* **14**, No. 5, 339–346 (1981) (Eng).
 779. Moore, D. R., Tekippe, V. J., Ramdas, A. K., and Toledano, J. C., A Raman scattering study of the solid to solid phase transition in benzil, *J. Phys. Colloq.* **42**, No. C-6, 785–787 (1981) (Eng) (*P.A.* **85**: 51591).
 780. Naudts, J., Dispersion in Brillouin spectra of some plastic crystals, *Solid State Commun.* **38**, No. 12, 1233–1236 (1981) (Eng) (*P.A.* **84**: 92776).
 781. Owens, F. J., and Iqbal, Z., Effect of temperature and hydrostatic pressure on the Raman active internal and external modes of 1,3,5-trinitro-1,3,5-triazocyclohexane, *J. Chem. Phys.* **74**, No. 8, 4242–4245 (1981) (Eng).
 782. Schmelzer, U., Bokhenkov, E. L., Dorner, B., Kalus, J., Mackenzie, G. A., Natkaniec, I., Pawley, G. S., and Sheka, E. F., Pressure dependence of phonon energies in d_8 -naphthalene, *J. Phys. C: Solid State Phys.* **14**, No. 7, 1025–1041 (1981) (Eng) (*P.A.* **84**: 47186).
 783. Slivka, V. Yu., Vysochansky, Yu. M., Stefanovich, V. A., and Chepur, D. V., Davydov double resonance in vibrational spectra of crystals, *Opt. and Spektrosk.* **51**, No. 1, 5–7 (1981) (Russ) (*P.A.* **85**: 61897).
 784. Sood, A. K., Arora, A. K., Umadevi, V., and Fenkataraman, G., Raman study of temperature dependence of lattice modes in calcite, *Pramana* **16**, No. 1, 1–16 (1981) (Eng) (*P.A.* **84**: 47187).
 785. Szostak, M. M., Sanquer, M., and Meinel, J., Spectroscopic study of single crystal of β -naphthol: low-frequency vibrations, oriented gas model and lattice dynamics, *J. Raman Spectrosc.* **11**, No. 4, 256–261 (1981) (Eng).
 786. Takeuchi, H., Suzuki, S., Dianoux, A. J., and Allen, G., Low frequency vibrations in crystalline biphenyl: model calculations and Raman and neutron spectra, *Chem. Phys.* **55**, No. 2, 153–162 (1981) (Eng).
 787. Tsyashchenko, Yu. P., and Krasnyanskii, G. E., Studies on anharmonic damping mechanisms of high-frequency phonons in crystals containing complex ions, *Phys. status solidi (b)* **103**, No. 1, 391–395 (1981) (Eng) (*P.A.* **84**: 48081).
 788. Wada, M., Sawada, A., and Ishibashi, Y., Soft modes associated with incommensurate phase transitions in biphenyl, *J. Phys. Soc. Jap.* **50**, No. 3, 737–738 (1981) (Eng).
 789. Watson, G. H. Jr., Daniels, W. B., and Wang, C. S., Measurements of Raman intensities and pressure dependence of phonon frequencies in sapphire, *J. Appl.*

- Phys.* **52**, No. 2, 956–958 (1981) (Eng) (*P. A.* **84**: 74100).
790. Wiersma, D. A., A study of vibrational and librational dynamics in molecular crystals by picosecond CARS, *J. Lumin.* **24/25**, pt. 2, 639–640 (1981) (Eng) (*P. A.* **85**: 46570).
791. Wilkinson, G. R., Medina, J. A., and Sherman, W. F., High pressure and variable temperature study of the Raman spectrum of camphor, *J. Raman Spectrosc.* **10**, 155–157 (1981) (Eng) (*P. A.* **84**: 61331).

5.2. Electronic and vibronic states and absorption spectra

792. Allgeier, J., Gutsze, A., Stehlik, D., and Vieth, H. M., Optical nuclear polarization studies of exciton dynamics in anthracene/tetracyanobenzene charge transfer crystals, *J. Lumin.* **24/25**, pt. 1, 449–452 (1981) (Eng) (*P. A.* **85**: 46426).
793. Aslangul, C., and Kottis, P., Density-operator description of excitons in molecular aggregates. 4. Optical spectra and excitonic motion in two-dimensional finite chains, *Phys. Rev. B* **24**, No. 8, 4805–4825 (1981) (Eng) (*P. A.* **85**: 26303).
794. Berk, N. F., Bizzaro, W., Rosenthal, J., and Yarmus, L., EPR linewidth of triplet excitons in molecular crystals. 1. Theory and experiment: Pyrene, *Phys. Rev. B* **23**, No. 11, 5661–5672 (1981) (Eng) (*P. A.* **84**: 92570).
795. Bizzaro, W., Yarmus, L., Rosenthal, J., and Berk, N. F., EPR linewidth of triplet excitons in molecular crystals. 2. Tetracene, *Phys. Rev. B* **23**, No. 11, 5673–5675 (1981) (Eng) (*P. A.* **84**: 92571).
796. Bondar, V. V., and Kurik, M. V., Exciton spectra of the anthracene-cadmium sulfide system, *Fiz. and Tekh. Poluprovodn.* **15**, No. 8, 1462–1466 (1981) (Russ) (*P. A.* **85**: 51091).
797. Dinse, K. P., Deimling, M., and Wäckerle, G., Optical detection of nuclear quadrupole resonance in organic crystals, *J. Lumin.* **24/25**, pt. 1, 499–502 (1981) (Eng) (*P. A.* **85**: 46419).
798. Fugol', I. Ya., Grigorashchenko, O. N., Ratner, A. M., and Savchenko, E. V., Effects of exciton-photon interaction and spatial dispersion in xenon crystals, *Solid State Commun.* **38**, No. 11, 1031–1035 (1981) (Eng) (*P. A.* **84**: 92848).
799. Galuza, A. I., and Kirichenko, A. P., Determination of optical dielectric constant of nonmetallic crystals and its applicability to Kramers-Kronig analysis, *Ukr. Fiz. Zh.* **26**, No. 7, 1083–1086 (1981) (Russ).
800. Gorelov, B. M., Kaplunov, M. G., Pokhodnya, K. I., Borod'ko, Yu. G., and Sheinkman, M. K., Tetrathiotetracene iodide reflection spectra, *Ukr. Fiz. Zh.* **26**, No. 12, 2044–2047 (1981) (Russ).
801. Haarer, D., Optical and photoelectric properties of organic charge transfer crystals. In: *Festkörperprobleme (Advances in Solid State Physics)*. Vol. 20. Braunschweig, Vieweg, 341–367 (1980) (Eng).
802. Jordan, A. D., Fischer, G., and Ross, I. G., Electronic spectrum of 1,5-naphthyridine: crystal spectra, *J. Mol. Spectrosc.* **87**, No. 2, 345–356 (1981) (Eng) (*P. A.* **85**: 2319).
803. Krochuk, A. S., Pazdry, O. M., and Smishko, E. V., Davydov splitting and absorption spectrum peculiarities of a phenanthrene single crystal, *Ukr. Fiz. Zh.* **26**, No. 5, 757–761 (1981) (Russ) (*P. A.* **84**: 78567).
804. Ostapenko, N. I., Sugakov, V. I., Chernomorets, M. P., and Shpak, M. T., Determination of exciton-phonon interaction constants from deformed naphthalene crystals spectra. In: *Spectroscopy of Molecules and Crystals*. Pt. 1. *Kiev*, 11–17 (1981) (Russ).
805. Patel, J. S., and Hanson, D. M., Experimental observations of the effect of an electric field on excitation motion in molecular crystals, *J. Chem. Phys.* **75**, No. 10, 5203–5205 (1981) (Eng).
806. Patel, J. S., and Hanson, D. M., Pyroelectric luminescence, *Nature* **293**, No. 5832, 445–447 (1981) (Eng).

807. Tomioka, K., Iemura, M., and Matsui, A., Reflectance spectra and optical constants of pyrene crystals, *J. Phys. Soc. Jap.* **50**, No. 6, 2078–2083 (1981) (Eng) (*P.A.* **84**: 92780).
808. Verbitskii, S. S., Vitukhnovskii, A. G., Vysloukh, V. A., and Zhevandrov, N. D., Anisotropy of triplet exciton diffusion in stilbene monocrystals, *Pis'ma v Zh. Eksp. and Teor. Fiz.* **33**, No. 3, 144–148 (1981) (Russ).
809. Vial, M., and Martin-Bouyer, M., Absorption and emission spectra investigation at room temperature and 77 K of pure and thick single crystals of three heterocyclic related to anthracene compounds: thioxanthene, thianthrene and phenoxathiin, *Mol. Cryst. and Liquid Cryst. Lett.* **71**, No. 3–4, 219–232 (1981) (Fr) (*P.A.* **85**: 22080).
810. Wakayama, N. I., Low-energy electronic transitions and phase transition of the biphenyl crystal, *Chem. Phys. Lett.* **83**, No. 2, 413–417 (1981) (Eng) (*P.A.* **85**: 26952).
811. Wojdac, L. F., and Noe, L. J., Examination of the lowest triplet $n\pi^*$ states of 4,4'-dichlorobenzophenone and 4,4'-dibromobenzophenone in neat crystals using the Stark effect, *J. Phys. Chem.* **85**, No. 14, 2119–2123 (1981) (Eng).
812. Yamanaka, H., Hangyo, M., Hishikawa, Y., and Kato, R., Fine structure in luminescence spectra of NaNO_2 . 2. Isotopic lines and their resonant enhancement, *J. Phys. Soc. Jap.* **50**, No. 8, 2689–2694 (1981) (Eng).

5.3. Fluorescence and phosphorescence

813. Arnold, S., and Whitten, W. B., Temperature dependence of the triplet exciton yield in fission and fusion in tetracene, *J. Chem. Phys.* **75**, No. 3, 1166–1169 (1981) (Eng) (*P.A.* **84**: 92029).
814. Benderskii, V. A., Brikenshtein, V. Kh., Filippov, P. G., and Shamovskii, I. A., Non-linear fluorescence quenching in molecular crystals. 3. Recombination of static excitations, *Phys. status solidi (b)* **106**, No. 1, 407–418 (1981) (Eng) (*P.A.* **84**: 101162).
815. Bondybey, V. E., English, J. H., Miller, T. A., and Vaughn, C. B., Low-temperature fluorescence of the pentafluorophenol radical cation, *J. Phys. Chem.* **85**, No. 12, 1667–1670 (1981) (Eng).
816. Bree, A., Taliani, C., and Thirunamachandran, T., The polarised two-photon excitation spectrum of benzene monocrystals at 6 eV, *Chem. Phys.* **56**, No. 1, 123–134 (1981) (Eng) (*P.A.* **84**: 61369).
817. Chabr, M., Wild, U. P., Fünfschilling, J., and Zschokke-Gränacher, I., Quantum beats of prompt fluorescence in tetracene crystals, *Chem. Phys.* **57**, No. 3, 425–430 (1981) (Eng) (*P.A.* **84**: 78572).
818. Chandra, B. P., Mechanoluminescence and piezoelectric behaviour of molecular crystals, *Phys. status solidi (a)* **64**, No. 1, 395–405 (1981) (Eng) (*P.A.* **84**: 61413).
819. Chandra, B. P., and Zink, J. I., Triboluminescence of triclinic crystals, *J. Lumin.* **23**, No. 3, 4, 363–372 (1981) (Eng).
820. Fave, J. L., Guthmann, C., and Schott, M., The effect of spin relaxation on triplet-triplet annihilation and delayed fluorescence in molecular crystals, *J. Lumin.* **24/25**, pt. 1, 493–496 (1981) (Eng) (*P.A.* **85**: 46705).
821. Fave, J. L., Guthmann, C., Schott, M., and Bouchriha, H., Influence of spin relaxation on triplet-triplet exciton annihilation in organic crystals. Application to naphthalene, *Phys. Rev. B* **24**, No. 8, 4545–4551 (1981) (Eng) (*P.A.* **85**: 22086).
822. Fugol', I. Ya., and Tarasova, E. I., Phonon damping of excitons in rare-gas cryocrystals, *Fiz. Nizk. Temp.* **7**, No. 10, 1325–1338 (1981) (Russ).
823. Fugol', I. Ya., and Tarasova, E. I., Probability of two-photon polariton scattering in xenon cryocrystals, *Fiz. Nizk. Temp.* **7**, No. 11, 1458–1462 (1981) (Russ)

- (*P. A.* **85**: 26890).
824. Gillies, R., and Ponte-Goncalves, A. M., Triplet-state spin coherence in photoexcited benzil crystals at 77 K: optically detected transient nutation and adiabatic rapid passage, *Chem. Phys. Lett.* **82**, No. 1, 172–176 (1981) (Eng) (*P. A.* **84**: 97636).
 825. Glinski, J., and Kalinowski, J., Fluorescence spectra of anthracene and tetracene crystals corrected for spatial distribution of excitons, *J. Lumin.* **22**, No. 2, 147–152 (1981) (Eng) (*P. A.* **84**: 92825).
 826. Grigorashchenko, O. N., Savchenko, E. V., and Fugol', I. Ya., Surface excitons and surface polaritons in the luminescence spectrum of xenon cryocrystals, *Fiz. Nizk. Temp.* **7**, No. 11, 1451–1457 (1981) (Russ) (*P. A.* **85**: 26953).
 827. Kink, R., Lohmus, A., and Selg, M., Self-trapping and hot luminescence of excitons in rare gas solids, *Phys. status solidi* (b) **107**, No. 2, 479–490 (1981) (Eng).
 828. Klöpffer, W., Luminescence of poly(N-vinyl-carbazole) films at 77 K. 2. Kinetic model of exciton trapping and annihilation, *Chem. Phys.* **57**, No. 1, 2, 75–87 (1981) (Eng).
 829. Kobayashi, S., Janecka-Styrcz, K., and Williams, J. O., Laser-excited delayed fluorescence of crystalline p-terphenyl, *Mol. Cryst. and Liquid Cryst.* **75**, No. 1–4, 1–15 (1981) (Eng) (*P. A.* **85**: 22079).
 830. Kondratenko, P. A., Khutornaya, L. A., and Shpak, M. T., The investigation of low-temperature fluorescence excitation spectra in anthracene single crystals, *Ukr. Fiz. Zh.* **26**, No. 9, 1515–1521 (1981) (Russ).
 831. Kozankiewicz, B., Prochorow, J., and Krzystek, J., Migration and annihilation of triplet excitation energy in the charge-transfer anthracene-tetrachlorophthalic anhydride crystal, *Mol. Cryst. and Liquid Cryst.* **75**, No. 1–4, 17–31 (1981) (Eng) (*P. A.* **85**: 26972).
 832. Lesin, V. I., Pristupa, A. I., and Frankevich, E. L., Fluorescence yield detected NMR of triplet-exciton pairs in polycrystalline rubren layers with nonequivalent position of molecules in the cells, *Opt. and Spektrosk.* **51**, No. 5, 861–865 (1981) (Russ).
 833. Lisovenko, V. A., Khutornaya, L. A., and Shpak, M. T., Fluorescence of anthracene single crystals irradiated by laser light, *Ukr. Fiz. Zh.* **26**, No. 5, 862–864 (1981) (Russ) (*P. A.* **84**: 92855).
 834. Maksimov, A. A., and Tartakovskii, I. I., Stimulated resonant Raman scattering of light in anthracene crystals, *Phys. status solidi* (b) **107**, No. 1, 55–60 (1981) (Eng) (*P. A.* **85**: 2233).
 835. Mel'nik, V. I., Nelipovich, K. I., Faidysh, A. N., and Yankovskaya, L. B., Exciton and extrinsic phosphorescence intensity temperature dependence in benzophenon α -crystals, *Dopov. Akad. Nauk UkrSR ser. A* No. 3, 53–57 (1981) (Russ) (*P. A.* **84**: 101148).
 836. Mitra, P., and Graham, D. J., The low-temperature luminescence spectrum of crystalline biquinoline: trap phosphorescence and delayed excimer fluorescence, *Chem. Phys. Lett.* **84**, No. 2, 290–292 (1981) (Eng).
 837. Morsink, J. B. W., Rullmann, J. A. C., and Wiersma, D. A., Laser-induced energy transfer in solids, *J. Lumin.* **24/25**, pt. 2, 767–772 (1981) (Eng) (*P. A.* **85**: 46725).
 838. Naboikin, Yu. V., Samartsev, V. V., and Sheibut, Yu. E., Effects of resonant nonlinear coherent interaction of laser radiation with molecular crystals and their application (review), *Ukr. Fiz. Zh.* **26**, No. 5, 705–724 (1981) (Russ).
 839. Poltoratskii, Yu. B., Stepanenko, V. M., and Fugol', I. Ya., Reconstruction of radiation spectrum of solid nitrogen due to variation of exciting electron beam parameters, *Fiz. Nizk. Temp.* **7**, No. 1, 121–126 (1981) (Russ).
 840. Scott, T. W., and Albrecht, A. C., A Rydberg transition in benzene in the condensed phase: two-photon fluorescence excitation studies, *J. Chem. Phys.* **74**, No. 7, 3807–3812 (1981) (Eng) (*P. A.* **84**: 78574).

841. Shimura, H., and Ohba, Y., Time-resolved reabsorption effect on the fluorescence decay of anthracene crystal and solution, *Jap. J. Appl. Phys.* **20**, No. 9, 1683–1690 (1981) (Eng) (*P.A.* **84**: 106356).
842. Snyder, R., and Testa, A. C., Nature of the low-temperature emission from 9-nitroanthracene, *J. Phys. Chem.* **85**, No. 13, 1871–1873 (1981) (Eng).
843. Strokach, N. S., Brivina, L. P., Shigorin, D. N., and Gorelik, M. V., Electronic-vibrational transitions and electronic structure of 1,4-naphthoquinone. Emission spectrum at 4.2 K, *Zh. Fiz. Khim.* **55**, No. 5, 1211–1215 (1981) (Russ).
844. Takagahara, T., Resonance Raman scattering and luminescence from highly excited states, *Progr. Theory. Phys. Suppl.* No. 69, 420–435 (1980) (Eng) (*P.A.* **85**: 22025).
845. Testa, A. C., and Snyder, R., Nature of the low temperature emission from 9-nitroanthracene, *J. Photochem.* **17**, No. 1/2, 48 (1981) (Eng).
846. Trommsdorff, H. P., Andrews, J. R., Decola, P. L., and Hochstrasser, R. M., Multiresonant four wave mixing in molecular crystals, *J. Lumin.* **24/25**, pt. 2, 663–666 (1981) (Eng) (*P.A.* **85**: 44403).
847. Uchida, K., and Takahashi, Y., Monomer emission and defects in pyrene crystals, *J. Lumin.* **24/25**, pt. 1, 453–456 (1981) (Eng) (*P.A.* **85**: 46699).
848. Van Noort, H. M., Van't Hof, C. A., Wirnitzer, B., and Schmidt, J., The phosphorescent triplet state of aniline in a p-xylene host crystal: a study of spin-spin and spin-lattice relaxation, *Chem. Phys. Lett.* **81**, No. 2, 351–355 (1981) (Eng).
849. Von Schütz, J. U., Burger, D., Krauss, R., Mühle, W., and Wolf, H. C., Optical detection of magnetic resonance on triplet states in organic crystals, *J. Lumin.* **24/25**, pt. 1, 467–474 (1981) (Eng) (*P.A.* **85**: 46431).
850. Williams, J. O., and Jones, A. C., Time-resolved luminescence spectroscopy of molecular crystals, *J. Lumin.* **24/25**, pt. 2, 723–730 (1981) (Eng) (*P.A.* **85**: 46717).

6. SPECTRA OF IMPURITY AND DISORDERED MOLECULAR CRYSTALS

851. Abramczyk, H., and Reimschüssel, W., IR band contour analysis in the benzene-nitrobenzene system, *Chem. Phys. Lett.* **80**, No. 2, 291–294 (1981) (Eng) (*P.A.* **84**: 76790).
852. Ahlgren, D. C., and Kopelman, R., Universality and critical exponents of energy transport in binary crystals: $^3B_{2u}$ naphthalene, *Chem. Phys. Lett.* **77**, No. 1, 135–138 (1981) (Eng) (*P.A.* **84**: 30639).
853. Akimov, A. V., and Kaplyanskii, A. A., Deformation and rotation resonance interaction of terahertz acoustic phonons with impurity ions in $\text{CaF}_2\text{-Sm}^{2+}$ crystals, *Fiz. Tverd. Tela* **23**, No. 11, 3326–3336 (1981) (Russ).
854. Aleksandrovskaya, N. G., Dobrokhotova, V. K., Chukanova, I. N., and Tiunov, Yu. A., Investigation of phosphorescence spectra of 1,4 dibromnaphthalene monocrystals doped with acenaphthenequinone, *Zh. Prikl. Spektrosk.* **34**, No. 4, 650–655 (1981) (Russ) (*P.A.* **85**: 67107).
855. Argyrakos, P., and Kopelman, R., Dynamics of energy transport in ternary molecular solids. 1. Naphthalene steady state fluorescence, *Chem. Phys.* **57**, No. 1, 2, 29–44 (1981) (Eng) (*P.A.* **84**: 78570).
856. Artemova, L. K., About defect states of naphthalene crystal in polycrystalline toluene matrix, *Izv. Vuz. Fiz.* No. 2, 121 (1981) (Russ).
857. Baluk, P., Kowski, A., Kalas, M., and Jung, C., On the vibronic structure of Shpolskii spectra of naphthalene in *n*-pentane at 77 K (fluorescence, $S_0 \rightarrow S_1$ - and $S_0 \rightarrow S_2$ -absorption), *Z. Naturforsch.* **36A**, No. 7, 705–712 (1981) (Eng) (*P.A.* **84**: 90561).

858. Bielushkin, A. V., Natkaniec, I., Dolganov, V. K., and Sheka, E. F., Vibrational density of states of amorphous and crystalline liquid crystal substances, *J. phys. Colloq.* **42**, No. C-6, 34-36 (1981) (Eng) (*P. A.* **85**: 56141).
859. Bogdanov, V. L., and Klochkov, V. P., Shpolsky effect in electron-vibrational Raman spectra, *Opt. and Spektrosk.* **51**, No. 2, 214-216 (1981) (Russ) (*P. A.* **85**: 70264).
860. Bogner, U., Plail, B., and Tauschek, H., Fluorescence of perylene in crystalline n-heptane, selectively laser excited in the phonon sideband, *J. Lumin.* **24/25**, pt. 2, 665-658 (1981) (Eng) (*P. A.* **85**: 46711).
861. Brand, J., Weinzierl, G., and Friedrich, J., Single-mode electron-phonon coupling and optical lineshape analysis on a naphthalene X trap system, *Chem. Phys. Lett.* **84**, No. 1, 197-200 (1981) (Eng) (*P. A.* **85**: 22069).
862. Chukanova, I. N., Aleksandrovskaya, N. G., Dobrokhotova, V. K., and Naboikin, Yu. V., Investigation of intensity distribution in absorption and fluorescence spectra of di-(β -naphthyl)-1,2-ethylene in a naphthalene crystal at 4.2 K, *Zh. Prikl. Spektrosk.* **35**, No. 5, 823-826 (1981) (Russ).
863. Chukanova, I. N., Aleksandrovskaya, N. G., Dobrokhotova, V. K., and Naboikin, Yu. V., Investigation of a pure electronic transition band in low-temperature spectra of di(β -naphthyl)-1,2-ethylene in a naphthalene crystal, *Ukr. Fiz. Zh.* **26**, No. 9, 1541-1546 (1981) (Russ).
864. Cimiraglia, R., Miertus, S., and Tomasi, J., On the ab initio evaluation of the solvent shift of electronic absorption spectra, *Chem. Phys. Lett.* **80**, No. 2, 286-290 (1981) (Eng) (*P. A.* **84**: 76694).
865. Despres, A., Lejeune, V., and Migirdicyan, E., Photochemistry in X traps and in isotopically mixed crystals of durene at very low temperatures, *J. Photochem.* **17**, No. 1/2, 161 (1981) (Eng).
866. Dicker, A. I. M., Dobkowski, J., and Völker, S., Optical dephasing of the $S_1 \rightarrow S_0$ transition of free-base porphyrin in an n-decane host studied by photochemical hole-burning: a case of slow exchange, *Chem. Phys. Lett.* **84**, No. 3, 415-420 (1981) (Eng) (*P. A.* **85**: 72531).
867. Dolganov, V. K., Kroo, N., Rosta, L., and Sheka, E. F., Structural and spectral studies of glassy MBBA, *Mol. Cryst. and Liquid Cryst.* **64**, No. 4, 115-120 (1981) (Eng).
868. Duppen, K., Molenkamp, L. W., Morsink, J. B. W., Wiersma, D. A., and Trommsdorff, H. P., Optical dephasing in a glass-like system: a photon echo study of pentacene in benzoic acid, *Chem. Phys. Lett.* **84**, No. 3, 421-424 (1981) (Eng).
869. Friedrich, J., Swalen, J. D., and Haarer, D., Electron-phonon coupling in amorphous organic host materials as investigated by photochemical hole burning, *J. Chem. Phys.* **73**, No. 2, 705-711 (1980) (Eng).
870. Fünfschilling, J., Zschokke-Gränacher, I., and Williams, D. F., The determination of the site-energy distribution of organic molecules dissolved in glassy matrices, *J. Chem. Phys.* **75**, No. 8, 3669-3673 (1981) (Eng).
871. Fünfschilling, J., and Zschokke-Gränacher, I., The distribution of O—O energies of organic molecules in glassy matrices, *J. Lumin.* **24/25**, pt. 1, 491-492 (1981) (Eng) (*P. A.* **85**: 46704).
872. Gorobchenko, V. S., Naboikin, Yu. V., Ogurtsova, L. A., and Pokrovskaya, F. S., The effect of excitation nonresonance frequency on the generation spectrum of a naphthalene crystal doped with $\beta\beta$ -dinaphthylethylene, *Ukr. Fiz. Zh.* **26**, No. 9, 1429-1433 (1981) (Russ).
873. Gorokhovskii, A. A., Kikas, Ya. V., Palm, V. V., and Rebane, L. A., Peculiarities of hole-burning in the spectra of organic molecules in glassy matrices, *Fiz. Tverd. Tela* **23**, No. 4, 1040-1047 (1981) (Russ) (*P. A.* **85**: 36700).
874. Hayes, J. M., Stout, R. P., and Small, G. J., Hole burning, soft-phonon scattering, and ultrafast dephasing of impurity electronic transitions in glasses, *J. Chem. Phys.* **74**, No. 8, 4266-4275 (1981) (Eng).

875. Hesselink, W. H., and Wiersma, D. A., Vibronic relaxation in molecular mixed crystals: Pentacene in naphthalene and *p*-terphenyl, *J. Chem. Phys.* **74**, No. 2, 886–889 (1981) (Eng) (*P. A.* **84**: 47179).
876. Hutchison, C. A., Jr., and Kemple, M. D., EPR and ENDOR of triplet state diphenyl-h₁₀ in diphenyl-d₁₀ single crystals. Molecule conformation and spin distribution, *J. Chem. Phys.* **74**, No. 1, 192–199 (1981) (Eng).
877. Jäckle, J., Low frequency Raman scattering in glasses. In: *Amorphous solids. Low-temperature properties*. Berlin, Heidelberg, New York, Springer-Verlag, 135–161 (1981) (Eng).
878. Jones, A. C., and Williams, J. O., Fluorescence lifetimes and site-selective photochemistry of anthracene crystals doped with 2-hydroxyanthracene, *Mol. Cryst. and Liquid Cryst.* **78**, No. 1–4, 41–53 (1981) (Eng) (*P. A.* **85**: 51694).
879. Jones, A. C., Janecka-Styrz, K., Elliot, D. A., and Williams, J. O., Singlet exciton energy transfer in tetracene-doped *p*-terphenyl single crystals, *Chem. Phys. Lett.* **80**, No. 3, 413–417 (1981) (Eng) (*P. A.* **84**: 86490).
880. Jones, L. H., and Swanson, B. I., High resolution infrared studies of dynamics in low temperature matrices: Vibrational dephasing for SeF₆ in noble gas solids, *J. Chem. Phys.* **74**, No. 6, 3216–3224 (1981) (Eng) (*P. A.* **84**: 59513).
881. Kaplyanskii, A. A., and Akimov, A. V., Resonance interaction of high energy acoustic phonons with impurity centers in insulating crystals. In: *Defects in insulating crystals*. Riga, Berlin, Heidelberg, New York, 577–600 (1981) (Eng).
882. Kawakubo, T., Color centers in irradiated durene crystals, *Phys. Status Solidi* (a) **64**, No. 1, 303–310 (1981) (Eng) (*P. A.* **84**: 61375).
883. Kawakubo, T., Radiation-induced color centers in para-terphenyl, *J. Chem. Phys.* **74**, No. 7, 3680–3689 (1981) (Eng) (*P. A.* **84**: 65556).
884. Kawakubo, T., Radical pairs in irradiated anthracene single crystals, *Mol. Cryst. and Liquid Cryst.* **69**, No. 3–4, 207–215 (1981) (Eng).
885. Kharakhash'yan, E. G., Khlebnikov, S. Y., Teitelbaum, G. B., and Zenin, A. G., Critical broadening of EPR line in molecular crystals of free radicals, *Solid State Commun.* **37**, No. 5, 395–398 (1981) (Eng).
886. Kind, V. V., Fedorov, V. P., and Korshunov, A. V., The manifestation of intermolecular hydrogen bond in a binary naphthalene- β -naphthol mixture, *Phys. status solidi* (b) **108**, No. 2, K143–K144 (1981) (Eng) (*P. A.* **85**: 51598).
887. Kirste, B., ENDOR investigations of phenalenyl in polycrystalline durene and in liquid crystals, *Chem. Phys. Lett.* **83**, No. 3, 465–468 (1981) (Eng).
888. Kohler, B. E., and Loda, R. T., Spectroscopy of benzil-bibenzyl clusters. Site selection in three-component mixtures, *J. Chem. Phys.* **74**, No. 10, 5424–5429 (1981) (Eng).
889. Kohler, B. E., and Loda, R. T., The spectroscopy of a benzil-bibenzyl mixed crystal system. Effects of isotopic substitution, *J. Chem. Phys.* **74**, No. 10, 5420–5423 (1981) (Eng) (*P. A.* **84**: 78557).
890. Kohler, B. E., and Loda, R. T., Spectroscopy of the benzil-bibenzyl mixed crystal system: High resolution optical studies, *J. Chem. Phys.* **74**, No. 1, 18–24 (1981) (Eng) (*P. A.* **84**: 39119).
891. Kohler, B. E., and Loda, R. T., The spectroscopy of a benzil-bibenzyl mixed crystal system. Lifetime and optical spin orientation studies, *J. Chem. Phys.* **75**, No. 6, 2616–2620 (1981) (Eng) (*P. A.* **84**: 106353).
892. Melishchuk, M. V., Tikhonov, E. A., and Shpak, M. T., On nonstationarity mechanism of quasi-linear spectra of impurity molecules in disordered matrices, *Fiz. Tverd. Tela* **23**, No. 3, 943–945 (1981) (Russ).
893. Mel'nik, V. I., Nelipovich, K. I., Faidysh, A. N., Shpak, M. T., and Yankovskaya, L. B., Delayed exciton phosphorescence of doped benzophenone single crystals, *Dopov. Akad. Nauk UkrSR ser. A* No. 8, 71–75 (1981) (Russ).
894. Mel'nik, V. I., Nelipovich, K. I., Faidysh, A. N., and Yankovskaya, L. B., The influence of temperature on the efficiency of electron excitation energy transfer between the matrix, lattice imperfections and impurity molecules in benzophe-

- none, *Ukr. Fiz. Zh.* **26**, No. 9, 1504–1509 (1981) (Russ).
895. Mel'nik, V. I., Nelipovich, K. I., Faidysh, A. N., Shpak, M. T., and Yankovskaya, L. B., Temperature dependence of excitation energy transfer in doped *X*-benzophenone, *Zh. Prikl. Spektrosk.* **34**, No. 6, 1078–1083 (1981) (Russ) (*P.A.* **85**: 77572).
 896. Millar, D. P., Robbins, R. J., and Zewail, A. H., Picosecond dynamics of electronic energy transfer in condensed phases, *J. Chem. Phys.* **75**, No. 8, 3649–3659 (1981) (Eng).
 897. Miller, J. H., and Andrews, L., Emission and excitation spectra of benzyl radicals in solid argon, *J. Mol. Spectrosc.* **90**, No. 1, 20–26 (1981) (Eng) (*P.A.* **85**: 24718).
 898. Morsink, J. B. W., and Wiersma, D. A., Optical detrapping in solids, *J. Chem. Phys.* **74**, No. 8, 4734–4735 (1981) (Eng) (*P.A.* **84**: 73811).
 899. Naboikin, Yu. V., and Ogurtsova, L. A., Stimulated emission of impurity molecular crystals and its application in relaxation process study, *Zh. Prikl. Spektrosk.* **34**, No. 6, 1036–1051 (1981) (Russ).
 900. Naboikin, Yu. V., Tiunov, Yu. A., and Chukanova, I. N., Studies in kinetics of acenaphthenequinone phosphorescence damping in acenaphthene at 4.2–300 K, *Ukr. Fiz. Zh.* **26**, No. 3, 493–494 (1981) (Russ) (*P.A.* **84**: 70225).
 901. Najbar, J., Turek, A. M., and Hamilton, T. D. S., Modelling of site induced structures in the electronic transitions of naphthalene in rare gas matrices, *J. Lumin.* **24/25**, pt. 1, 103–106 (1981) (Eng) (*P.A.* **85**: 43982).
 902. Najbar, J., Turek, A. M., and Hamilton, T. D. S., Site-induced structures in the electronic transitions of naphthalene in rare gas matrices, *J. Photochem.* **17**, No. 1/2, 16 (1981) (Eng).
 903. Nakayama, T., and Sheng, S. J., Optical studies of hydronaphthyl radicals embedded in dihydronaphthalene crystal, *Mol. Cryst. and Liquid Cryst.* **69**, No. 3–4, 199–206 (1981) (Eng).
 904. Nakayama, T., Sheng, S. J., and Takagi, K., Spectroscopic studies of phenyl-cyclohexadienyl radicals in the irradiated biphenyl crystal, *J. Phys. Chem.* **85**, No. 2, 174–178 (1981) (Eng) (*P.A.* **84**: 82469).
 905. Nowak, R., Miniewicz, A., Samoc, M., and Sworakowski, J., Steady-state electroluminescence in perylene-doped anthracene crystals, *Mol. Cryst. and Liquid Cryst. Lett.* **72**, No. 4, 113–118 (1981) (Eng).
 906. Olson, R. W., Patterson, F. G., Lee, H. W. H., and Fayer, M. D., Delocalized electronic excitations of pentacene dimers in a *p*-terphenyl host: Picosecond photon echo experiments, *Chem. Phys. Lett.* **79**, No. 3, 403–407 (1981) (Eng) (*P.A.* **84**: 72405).
 907. Palewska, K., Electronic spectra and luminescence properties of 1, 2-benzotetraphene in crystalline matrices at 77 K, *Chem. Phys.* **58**, No. 1, 21–28 (1981) (Eng) (*P.A.* **84**: 76852).
 908. Patterson, F. G., Lee, H. W. H., Olson, R. W., and Fayer, M. D., Non-photochemical hole burning in the mixed molecular crystal pentacene in benzoic acid, *Chem. Phys. Lett.* **84**, No. 1, 59–63 (1981) (Eng).
 909. Peretti, P., Ranson, P., and Rousset, Y., Spin-lattice relaxation and thermal deactivation of *X* traps in 4,4'-dichlorobenzophenone, *Chem. Phys.* **56**, No. 1, 135–144 (1981) (Eng) (*P.A.* **84**: 61381).
 910. Port, H., Scheckenburger, H., and Wolf, H. C., Host-guest energy transfer via dipole-dipole interaction in doped fluorene crystals, *Z. Naturforsch.* **36A**, No. 7, 697–704 (1981) (Eng) (*P.A.* **84**: 92857).
 911. Port, H., Rund, D., and Wolf, H. C., Triplet states in isotopically mixed anthracene crystals: high resolution optical spectroscopy, *Chem. Phys.* **60**, No. 1, 81–98 (1981) (Eng) (*P.A.* **84**: 101127).
 912. Prasad, P. N., Morgan, J. R., and El-Sayed, M. A., Spectral diffusion in orientationally disordered organic solids, *J. Phys. Chem.* **85**, No. 24, 3569–3571

- (1981) (Eng) (*P. A.* **85**: 51651).
913. Prass, B., Fujara, F., Seiff, F., and Stehlik, D., Triplet-triplet absorption studies in acridine doped fluorene single crystals, *J. Lumin.* **24/25**, pt. 1, 483–486 (1981) (Eng) (*P. A.* **85**: 46702).
 914. Rebane, L. A., Inhomogeneous broadening of the spectra of organic molecules in solid matrices, *Zh. Prikl. Spektrosk.* **34**, No. 6, 1023–1035 (1981) (Russ) (*P. A.* **85**: 75357).
 915. Rebane, L. A., and Sild, O. I., Spectroscopy of molecular impurities in alkali halides. In: Defects in insulating crystals. Riga, Berlin, Heidelberg, New York, 619–641 (1981) (Eng).
 916. Roduner, E., Observation of muonium substituted free radicals in a durene single crystal, *Chem. Phys. Lett.* **81**, No. 2, 191–194 (1981) (Eng).
 917. Silinsh, E. A., Local electronic states of structural origin in organic molecular crystals. In: Defects in insulating crystals. Riga, Berlin, Heidelberg, New York, 107–134 (1981) (Eng).
 918. Sinha, N. P., Misra, Y., Tripathi, L. N., and Misra, M., Electro-optical properties of doped anthracene films, *Solid State Commun.* **39**, No. 1, 89–91 (1981) (Eng) (*P. A.* **84**: 97661).
 919. Sloop, D. J., Yu, H.-L., Lin, T.-S., and Weissman, S. I., Electron spin echoes of a photoexcited triplet: Pentacene in *p*-terphenyl crystals, *J. Chem. Phys.* **75**, No. 8, 3746–3757 (1981) (Eng).
 920. Solodunov, V. V., and Grebenshchikov, D. M., Quasi-line delayed-fluorescence spectra of some aromatic hydrocarbons in *n*-paraffine solutions at 77 K, *Opt. and Spektrosk.* **51**, No. 2, 374–376 (1981) (Russ) (*P. A.* **85**: 65042).
 921. Sopkova, A., and Bubanec, J., Phenol as a guest molecule in clathrate compounds, *J. Mol. Struct.* **75**, No. 1, 73–80 (1981) (Eng) (*P. A.* **84**: 90572).
 922. Talapatra, G. B., and Misra, T. N., Decay and buildup characteristics of delayed luminescence in a “real” organic mixed crystal: Naphthalene host-chrysene guest system, *J. Chem. Phys.* **75**, No. 8, 3684–3690 (1981) (Eng).
 923. Talapatra, G. B., and Misra, T. N., Excitation spectra of delayed luminescence in a ‘real’ organic mixed crystal: naphthalene host-chrysene guest system, *Indian J. Pure and Appl. Phys.* **19**, No. 2, 93–99 (1981) (Eng) (*P. A.* **84**: 48131).
 924. Tokura, Y., and Koda, T., Raman spectra of the librational phonon modes in isotopically mixed anthracene-PMDA crystals, *Solid State Commun.*, **40**, No. 3, 295–297 (1981) (Eng).
 925. Umemura, J., Haley, L. V., Cameron, D. G., Murphy, W. F., Ingold, C. F., and Williams, D. F., Infrared and Raman spectra of the disordered phase of the anthracene- and perdeuterioanthracene-tetracyanobenzene charge transfer complexes, *Spectrochim. acta* **37A**, No. 10, 835–845 (1981) (Eng).
 926. Van Noort, H. M., Van't Hof, C. A., Wirnitzer, B., and Schmidt, J., The phosphorescent triplet state of aniline in a *p*-xylene host crystal: a study of spin-spin and spin-lattice relaxation. *Chem. Phys. Lett.* **81**, No. 2, 351–355 (1981) (Eng).
 927. Vol, E. D., Naboikin, Yu. V., and Tiunov, Yu. A., An anomalous temperature dependence of phosphorescence kinetics of acenaphthene quinone in acenaphthene, *Ukr. Fiz. Zh.* **26**, No. 12, 1950–1954 (1981) (Russ).
 928. Weinzierl, G., and Friedrich, J., Heavy-atom effect in the electron-phonon coupling of naphthalene *X*-traps, *Chem. Phys. Lett.* **77**, No. 1, 139–142 (1981) (Eng) (*P. A.* **84**: 31180).
 929. Weinzierl, G., and Friedrich, J., Investigation of thermal detrapping in a naphthalene crystal, *Chem. Phys. Lett.* **83**, No. 1, 204–206 (1981) (Eng) (*P. A.* **84**: 105661).
 930. White, M. A., Ryan, T. G., and Morrison, J. A., Luminescence of ultraviolet-irradiated solid methane and solid argon doped with benzene or toluene, *J. Lumin.* **23**, No. 3, 4, 241–254 (1981) (Eng).

931. Zagainova, L. I., Klimusheva, G. V., Kurmey, N. D., and Soroka, G. M., Energy spectrum of molecular clusters. In: Spectroscopy of molecules and crystals. pt. 2. Kiev, 118–127 (1981) (Russ).

7. EXCITON PROBLEM OF MOLECULAR CRYSTALS

7.1. Lattice dynamics and phonon spectra

932. Agranovich, V. M., and Dubovskii, O. A., Local biphonon in crystals with defects, *Fiz. Tverd. Tela* **23**, No. 7, 2197–2200 (1981) (Russ) (*P.A.* **85**: 45491).
933. Anastassakis, E., and Cardona, M., Internal strains and Raman-active optical phonons, *Phys. Status Solidi* (b) **104**, No. 2, 589–600 (1981) (Eng).
934. Antsygina, T. N., Slyusarev, V. A., Freiman, Yu. A., and Erenburg, A. I., Libration motion dynamics in N_2 -type crystals. 1. Theory of self-consistent field and harmonic approximation, *Fiz. Nizk. Temp.* **8**, No. 2, 199–210 (1982) (Russ) (*P.A.* **85**: 56103).
935. Belushkin, A. V., Bokhenkov, E. L., Kolesnikov, A. I., Natkaniec, I., Rignini, R., and Sheka, E. F., External phonon spectrum of naphthalene crystal at 5 K, *Fiz. Tverd. Tela* **23**, No. 9, 2607–2613 (1981) (Russ) (*P.A.* **85**: 71596).
936. Bilz, H., Büttner, H., Bussmann-Holder, A., Kress, W., and Schröder, U., Nonlinear lattice dynamics of crystals with structural phase transitions, *Phys. Rev. Lett.* **48**, No. 4, 264–267 (1982) (Eng).
937. Bokhenkov, E. L., Kolesnikov, A. I., Krivenko, T. A., Sheka, E. F., and Dementjev, V. A., Harmonic dynamics of anthracene and naphthalene crystals, *J. phys. Colloq.* **42**, No. C-6, 566–568 (1981) (Eng) (*P.A.* **85**: 45454).
938. Bokhenkov, E. L., Kolesnikov, A. I., Krivenko, T. A., and Sheka, E. F., Neutron spectroscopy of internal phonons of naphthalene and anthracene crystals, *J. phys. Colloq.* **42**, No. C-6, 605–607 (1981) (Eng) (*P.A.* **85**: 50783).
939. Bounds, P. J., and Munn, R. W., Polarization energy of a localized charge in a molecular crystal. 2. Charge-quadrupole energy, *Chem. Phys.* **59**, No. 1, 2, 41–45 (1981) (Eng) (*P.A.* **84**: 92675).
940. Bounds, P. J., and Munn, R. W., Polarization energy of a localized charge in a molecular crystal. 3. Submolecule treatment, *Chem. Phys.* **59**, No. 1, 2, 47–53 (1981) (Eng) (*P.A.* **84**: 92676).
941. Burgos, E., Halac, E., and Bonadeo, H., Vibrational spectra and phase transitions of crystalline bromoform, *J. Chem. Phys.* **74**, No. 3, 1546–1551 (1981) (Eng).
942. Chaplot, S. L., Pawley, G. S., Bokhenkov, E. L., Sheka, E. F., Dorner, B., Kalus, J., Jindal, V. K., and Natkaniec, I., Eigenvectors of low frequency internal phonons in crystalline anthracene- d_{10} , *Chem. Phys.* **57**, No. 3, 407–414 (1981) (Eng) (*P.A.* **84**: 77977).
943. Chaplot, S. L., Sahni, V. C., and Rao, K. R., Self terms in external-mode formalism, *Acta Crystallogr.* **37A**, No. 3, 374–377 (1981) (Eng).
944. Cox, P. A., Day, P., and Ballhausen, C. J., The intermolecular potential in tetracyanoplatinite salts and other ionic molecular crystals, *Chem. Phys. Lett.* **82**, No. 1, 15–17 (1981) (Eng).
945. Cox, S. R., Hsu, L.-Y., and Williams, D. E., Nonbonded potential function models for crystalline oxohydrocarbons, *Acta crystallogr.* **37A**, No. 3, 293–301 (1981) (Eng).
946. De Leon, N., and Berne, B. J., Intramolecular rate process: isomerization dynamics and the transition to chaos, *J. Chem. Phys.* **75**, No. 7, 3495–3510 (1981) (Eng).
947. Della Valle, R. G., Fracassi, P. F., and Walmsley, S. H., Theory of ultrasonic

- absorption in anharmonic molecular crystals, *Chem. Phys.* **62**, No. 1,2, 231–237 (1981) (Eng) (*P.A.* **85**: 25990).
948. Dolgov, A. S., Dynamical method of density of states determination of harmonic crystalline lattice, *Fiz. Tverd. Tela* **23**, No. 2, 359–364 (1981) (Russ).
 949. Dolgov, A. S., High-localized states in anharmonic crystalline lattice, *Fiz. Tverd. Tela* **23**, No. 5, 1560–1562 (1981) (Russ).
 950. Filippini, G., and Gramaccioli, C. M., Deriving the equilibrium conformation in molecular crystals by the quasi-harmonic procedure: some critical remarks, *Acta crystallogr.* **37A**, No. 3, 335–342 (1981) (Eng) (*P.A.* **84**: 69333).
 951. Filippini, G., Gramaccioli, C. M., and Simonetta, M., Lattice-dynamical calculations for fluorene, carbazole, dibenzofuran and dibenzothiophen, *Chem. Phys. Lett.* **79**, No. 3, 470–475 (1981) (Eng) (*P.A.* **84**: 69474).
 952. Fraser, S. J., and Winnik, M. A., Monte Carlo simulation of a lattice model of intramolecular exciplex formation, *J. Chem. Phys.* **75**, No. 9, 4683–4695 (1981) (Eng).
 953. Galtier, M., and Benoit, C., Calculation of the response function moments for a harmonic system. Application to IR, Raman, and neutron scattering, *Phys. status solidi (b)* **105**, No. 1, K61–K65 (1981) (Eng).
 954. Gamba, Z., and Bonadeo, H., Lattice dynamical calculations on azabenzene crystals: The distributed dipole model, *J. Chem. Phys.* **75**, No. 10, 5059–5066 (1981) (Eng) (*P.A.* **85**: 21248).
 955. Griffin, A., and Jobic, H., Theory of the effective Debye-Waller factor in neutron scattering from high frequency molecular modes, *J. Chem. Phys.* **75**, No. 12, 5940–5943 (1981) (Eng).
 956. Hinchliffe, A., Bounds, D. G., Klein, M. L., McDonald, I. R., and Righini, R., Intermolecular potentials for ammonia based on SCF-MO calculations, *J. Chem. Phys.* **74**, No. 2, 1211–1216 (1981) (Eng) (*P.A.* **84**: 46052).
 957. Jobic, H., Ghosh, R. E., and Renouprez, A., The limited influence of the Debye-Waller factor on the intensities of high frequency molecular modes measured by neutron inelastic spectroscopy, *J. Chem. Phys.* **75**, No. 8, 4025–4030 (1981) (Eng) (*P.A.* **85**: 21262).
 958. Kazakovtsev, D. V., and Levinson, I. B., Temperature of film phonon injector, *Pis'ma v Zh. Tekhn. Fiz.* **7**, No. 19, 1185–1187 (1981) (Russ).
 959. Kimball, J. C., Fong, C. Y., and Shen, Y. R., Anharmonicity, phonon localization, two-phonon bound states, and vibrational spectra, *Phys. Rev. B* **23**, No. 10, 4946–4959 (1981) (Eng) (*P.A.* **84**: 86241).
 960. Klein, M. L., Levesque, D., and Weis, J.-J., Molecular dynamics study of solid β -N₂, *J. Chem. Phys.* **74**, No. 4, 2566–2568 (1981) (Eng).
 961. Klein, M. L., Levesque, D., and Weis, J.-J., Molecular dynamics study of solid nitrogen at high pressure, *Can. J. Phys.* **59**, No. 4, 530–534 (1981) (Eng) (*P.A.* **84**: 64836).
 962. Kovalenko, S. I., and Krainyukova, N. V., Atomic dynamics of small xenon crystals, *Fiz. Nizk. Temp.* **7**, No. 1, 111–116 (1981) (Russ).
 963. Lalov, I. Y., Temperature effects in two-phonon spectra, *Solid State Commun.* **39**, No. 3, 501–504 (1981) (Eng) (*P.A.* **84**: 91721).
 964. Lax, M., Hu, P., and Narayanamurti, V., Spontaneous phonon decay selection rule: *N* and *U* processes, *Phys. Rev. B* **23**, No. 6, 3095–3097 (1981) (Eng) (*P.A.* **84**: 60548).
 965. Levelut, A. M., Mousa, F., Doucet, J., Benattar, J. J., Lambert, M., and Dörner, B., Local order and lattice dynamics in the ordered phases of TBBA. (Terephthal-bis-butyl-aniline), *J. phys.* **42**, No. 12, 1651–1663 (1981) (Eng) (*P.A.* **85**: 25724).
 966. Lisitsa, M. P., and Yaremko, A. M., Resonance phenomena and anharmonicity effects in vibrational exciton and polariton spectra. In: Spectroscopy of molecules and crystals. Pt. 1. Kiev, 150–157 (1981) (Russ).
 967. Lisitsa, M. P., and Yaremko, A. M., Resonant interactions in phonon crystal

- spectra, *Zh. Prikl. Spektrosk.* **35**, No. 4, 654–659 (1981) (Russ).
968. Luty, T., Van der Avoird, A., Berns, R. M., and Wasiutynski, T., Dynamical and optical properties of the ethylene crystal: Self-consistent phonon calculations using an “ab initio” intermolecular potential, *J. Chem. Phys.* **75**, No. 3, 1451–1458 (1981) (Eng) (*P. A.* **84**: 96693).
 969. Masri, P., Interface phonons: effects of crystal size, *J. Phys. C: Solid State Phys.* **14**, No. 6, 2265–2278 (1981) (Eng).
 970. Michard, F., and Plicque, F., Ultrasonic absorption in some highly attenuation ionic-molecular crystals, *J. Phys. Colloq.* No. 5, pt. 2, C5-683–C5-688 (1981) (Eng) (*P. A.* **85**: 56100).
 971. Michel, K. H., and Courtens, E., Dynamics of translations and rotations in molecular crystals: Macroscopic and microscopic approaches, *Phys. Rev. B* **23**, No. 2, 513–522 (1981) (Eng) (*P. A.* **84**: 42330).
 972. Natkaniec, I., Bielushkin, A. V., and Wasiutynski, T., Calculations of phonon dynamics in solid biphenyl. Mixing between interphenyl and lattice vibrations, *Phys. status solidi (b)* **105**, No. 1, 413–423 (1981) (Eng) (*P. A.* **84**: 81978).
 973. Ovander, L. N., Pashkevich, Yu. G., and Tyu, N. S., Effective-field method and Raman scattering on intermolecular vibrations in molecular crystals, *Opt. and Spektrosk.* **51**, No. 6, 816–822 (1981) (Russ).
 974. Pawley, G. S., Molecular dynamics simulation of the plastic phase; a model for SF₆, *Mol. Phys.* **43**, No. 6, 1321–1330 (1981) (Eng) (*P. A.* **84**: 105292).
 975. Perrin, B., Ultrasonic attenuation in molecular crystals, *Phys. Rev. B* **24**, No. 10, 6104–6113 (1981) (Eng).
 976. Perrin, B., Ultrasonic relaxation in molecular crystals, *J. phys. Colloq.* No. 5, pt. 2, C5-677–C5-682 (1981) (Eng) (*P. A.* **85**: 56099).
 977. Pershin, V. K., and Pershin, V. K., General virial relations for a molecular crystal, *Ukr. Fiz. Zh.* **26**, No. 11, 1869–1874 (1981) (Russ) (*P. A.* **85**: 25998).
 978. Pershin, V. K., and Pershin, V. K., On relation of intermolecular interaction to the crystal lattice orientational dynamics, *Ukr. Fiz. Zh.* **26**, No. 4, 641–646 (1981) (Russ).
 979. Pershin, V. K., and Pershin, V. K., Dynamics of anharmonic molecular crystal, *Fiz. Tverd. Tela* **23**, No. 7, 2200–2203 (1981) (Russ) (*P. A.* **85**: 45431).
 980. Pertsin, A. J., Ivanov, Yu. P., and Kitaigorodsky, A. I., Examination of semiempirical atom-atom potential functions for C1 ··· C1 non-bonded interactions, *Acta crystallogr. A* **37**, No. 6, 908–913 (1981) (Eng).
 981. Podoprigora, V. G., Botvich, A. N., Shestakov, N. P., and Shabanov, V. F., Intensity of Raman-scattering lines of photon spectra and electrooptical parameters of molecular crystals, *Opt. and Spektrosk.* **50**, No. 2, 307–312 (1981) (Russ).
 982. Ramamurthy, V., and Rajendraprasad, S. B., Analysis of phonon frequencies of rare gas solids, *Phys. scripta* **23**, No. 6, 1104–1107 (1981) (Eng) (*P. A.* **84**: 91716).
 983. Ratner, A. M., Van der Waals interaction constants for rare gas atoms, *Fiz. Nizk. Temp.* **7**, No. 3, 371–374 (1981) (Russ).
 984. Righini, R., Maki, K., and Klein, M. L., An intermolecular potential for methane, *Chem. Phys. Lett.* **80**, No. 2, 301–305 (1981) (Eng) (*P. A.* **84**: 76899).
 985. Rousseau, D. L., Bauman, R. P., and Porto, S. P. S., Normal mode determination in crystals, *J. Raman Spectrosc.* **10**, 253–290 (1981) (Eng) (*P. A.* **84**: 60545).
 986. Schmelzer, U., Bokhenkov, E. L., Dorner, B., Kalus, J., Mackenzie, G. A., Natkaniec, I., Pawley, G. S., and Sheka, E. F., Pressure dependence of phonon energies in d₈-naphthalene, *J. Phys. C: Solid State Phys.* **14**, No. 7, 1025–1041 (1981) (Eng) (*P. A.* **84**: 47186).
 987. Sharma, B. K., Gruneisen constant and interchain specific heat of copolymers, *Acustica* **48**, No. 3, 193–194 (1981) (Eng) (*P. A.* **84**: 91727).
 988. Singh, R. K., and Neb, D. K., On cohesion and many-body forces in rare gas solids, *Phys. status solidi (b)* **107**, No. 1, K47-K52 (1981) (Eng).
 989. Srivastava, S. P., and Singh, I. D., Effect of anharmonicity on the

- Anderson-Grüneisen parameter of molecular crystals, *J. Phys. and Chem. Solids* **42**, No. 4, 335–336 (1981) (Eng).
990. Stacey, F. D., Interpretation of adiabatic decompression measurements of the Grüneisen parameter, *J. Geophys. Res.* **86**, No. B2, 1039–1041 (1981) (Eng) (*P.A.* **84**: 91730).
 991. Swanson, B. I., and Jones, L. H., Matrix-molecule interactions, dynamics, and exchange phenomena in low temperature matrices: SF₆ in argon and krypton, *J. Chem. Phys.* **74**, No. 6, 3205–3215 (1981) (Eng) (*P.A.* **84**: 59512).
 992. Talapatra, S. K., Biswas, S. C., Sarkar, S. B., Samanta, C., and Sen, R. K., Atom-atom approximation and lattice energy of organic molecular crystals, *Indian J. Phys.* **55A**, No. 3, 281–283 (1981) (Eng).
 993. Tsyashchenko, Yu. P., and Krasnyanskii, G. E., Studies on anharmonic damping mechanisms of high-frequency phonons in crystals containing complex ions, *Phys. status solidi (b)* **103**, No. 1, 391–395 (1981) (Eng) (*P.A.* **84**: 48081).
 994. Van der Merwe, P. du T., Non-linear phonon dispersion of condensed matter, *Phys. Lett.* **82A**, No. 8, 415–417 (1981) (Eng) (*P.A.* **84**: 60546).
 995. Watanabe, K., Allnatt, A. R., and Meath, W. J., On the validity and properties of the atom-atom potential as a function of intermolecular separation, configuration, and partial wave order, *Mol. Phys.* **42**, No. 1, 165–191 (1981) (Eng) (*P.A.* **84**: 41517).

7.2. Singlet excitons and cooperative effects

996. Agranovich, V. M., Kravtsov, V. E., and Leskova, T. A., Diffraction of surface polaritons by the impedance step in the region of resonance with oscillations in the transition layer, *Zh. Eksp. and Teor. Fiz.* **81**, No. 5, 1828–1838 (1981) (Russ).
997. Agranovich, V. M., Rupasov, V. I., and Chernyak, V. Ya., Self-induced transparency of surface polaritons, *Pis'ma v Zh. Eksp. and Teor. Fiz.* **33**, No. 4, 196–199 (1981) (Russ).
998. Agranovich, V. M., Darmanyan, S. A., and Rupasov, V. I., To the theory of light reabsorption in plane-parallel plates of arbitrary thickness, *Opt. and Spektrosk.* **51**, No. 2, 364–366 (1981) (Russ).
999. Aslangul, C., and Kottis, P., Density-operator description of excitons in molecular aggregates. 4. Optical spectra and excitonic motion in two-dimensional finite chains, *Phys. Rev. B* **24**, No. 8, 4805–4825 (1981) (Eng) (*P.A.* **85**: 26303).
1000. Bader, G., Caron, L., and Sanche, L., Electron-exciton complex formation in organic solids, *Solid State Commun.* **38**, No. 9, 849–851 (1981) (Eng) (*P.A.* **84**: 92039).
1001. Bilz, H., Büttner, H., and Fröhlich, H., Electret model for the collective behaviour of biological systems, *Z. Naturforsch. B* **36**, 208–212 (1981) (Eng).
1002. Bounds, P. J., Petelenz, P., and Siebrand, W., Charge-transfer excitons in anthracene crystals. A theoretical investigation of their optical absorption and thermal dissociation, *Chem. Phys.* **63**, No. 3, 303–320 (1981) (Eng) (*P.A.* **85**: 35943).
1003. Egri, I., Electronic interband transitions: plasmons, Frenkel- and Wannier-excitons, *Z. Phys. B* **42**, No. 2, 99–106 (1981) (Eng) (*P.A.* **84**: 92705).
1004. Fox, D., Interactions between Frenkel excitons. 1. Formalism and preliminary results, *Chem. Phys.* **61**, No. 3, 477–489 (1981) (Eng).
1005. Fugol', I. Ya., and Tarasova, E. I., Probability of two-photon polariton scattering in xenon cryocrystals, *Fiz. Nizk. Temp.* **7**, No. 11, 1458–1462 (1981) (Russ) (*P.A.* **85**: 26890).
1006. Gaevskii, A. Yu., Kaplan, I. G., and Ruvinskii, M. A., Scattering of neutrons in molecular crystals with a high level of optical pumping of excitons, *Zh. Eksp. and Teor. Fiz.* **80**, No. 3, 1149–1162 (1981) (Russ) (*P.A.* **84**: 60311).

1007. Gumbs, G., and Mavroyannis, C., Excitons in a semi-infinite insulator in the tight-binding approximation, *J. Phys. C: Solid State Phys.* **14**, No. 16, 2199–2215 (1981) (Eng).
1008. Haarer, D., Optical and photoelectric properties of organic charge transfer crystals. In: *Festkörperprobleme* (Advances in Solid State Physics). Vol. 20. *Braunschweig, Vieweg*, 341–367 (1980) (Eng).
1009. Kenkre, V. M., Determination of the exciton diffusion constant from variation of quantum yield with penetration length, *Chem. Phys. Lett.* **82**, No. 2, 301–304 (1981) (Eng) (*P.A.* **84**: 105659).
1010. Kukhtarev, N. V., and Semenets, T. I., The use of dynamical self-diffraction of light for a study of an exciton region of a molecular crystals spectrum. In: *Spectroscopy of molecules and crystals*. Pt. 2. Kiev, 72–79 (1980) (Russ).
1011. Lee, Y. C., and Liu, K. C., Superradiance of excitons, *J. Phys. C: Solid State Phys.* **14**, No. 10, L281–L285 (1981) (Eng) (*P.A.* **84**: 60813).
1012. Maradudin, A. A., and Wallis, R. F., Theory of light scattering by surface polaritons in gyrotropic media, *J. Raman Spectrosc.* **10**, 85–93 (1981) (Eng).
1013. Matsui, A., Iemura, M., and Nishimura, H., Dynamical behavior of excitons in pyrene, *J. Lumin.* **24/25**, pt. 1, 445–448 (1981) (Eng) (*P.A.* **85**: 46698).
1014. Ovander, L. N., Pashkevich, Yu. G., and Tyu, N. S., Theory of Frenkel excitons and effective-field method, *Opt. and Spektrosk.* **50**, No. 6, 1129–1136 (1981) (Eng) (*P.A.* **85**: 51090).
1015. Pekar, S. I., Piskovoi, V. N., and Tsekvava, B. E., Light transmission and reflection on vacuum-crystal interference in the region of quadrupole exciton transition, *Fiz. Tverd. Tela* **23**, No. 7, 1905–1912 (1981) (Russ) (*P.A.* **85**: 46523).
1016. Rashba, E. I., Self-trapping of excitons in solids. In: *Defects in insulating crystals*. Riga, Berlin, Heidelberg, New York, 255–266 (1981) (Eng).
1017. Rogan, J., and Inglesfield, J. E., Electronic excitations in tight-binding systems, *J. Phys. C: Solid State Phys.* **14**, No. 25, 3585–3602 (1981) (Eng).
1018. Ruvinskii, M. A., Coherent states of molecular excitons and Davydov splitting, *Phys. status solidi* (b) **107**, No. 1, K43–K46 (1981) (Eng) (*P.A.* **85**: 1836).
1019. Sataric, M., Vujicic, G., and Zakula, R., Biexcitons as solitons in the one-dimensional molecular crystal, *Nuovo Cimento B* **63B**, ser. 2, No. 2, 709–723 (1981) (Eng) (*P.A.* **84**: 92031).
1020. Singh, J., Formation of a complex charge carrier due to the interaction between a free Frenkel exciton and excess electron in molecular crystals, *Phys. status solidi* (b) **103**, No. 1, 423–428 (1981) (Eng) (*P.A.* **84**: 47496).
1021. Skettrup, T., Microscopic approach to polaritons, *Phys. Rev. B* **24**, No. 2, 884–891 (1981) (Eng) (*P.A.* **85**: 1842).
1022. Song, K. S., and Leung, C. H., Theory of the self-trapped exciton bubble in rare gas solids, *J. Phys. C: Solid State Phys.* **14**, No. 12, L359–L363 (1981) (Eng) (*P.A.* **84**: 60814).
1023. Strizhevskii, S. V., Surface polaritons scattering in the vicinity of the point of phase transition. In: *Spectroscopy of molecules and crystals*. Pt. 1. Kiev, 112–122 (1981) (Russ).
1024. Strizhevskii, V. L., Chepilko, N. M., and Korkushko, A. O., Raman scattering at polaritons in the region of crystal two-particle excitation zones. In: *Spectroscopy of molecules and crystals*. Pt. 1. Kiev, 65–83 (1981) (Russ).
1025. Sugakov, V. I., and Khotyaintsev, V. N., Dislocational excitons. In: *Spectroscopy of molecules and crystals*. Pt. 1. Kiev, 3–11 (1981) (Russ).
1026. Sumi, A., Crystal-size dependence of optical spectra through radiative decay of excitons, *J. Phys. Soc. Jap.* **50**, No. 9, 2985–2995 (1981) (Eng).
1027. Tkach, N. V., Boichuk, V. I., and Nitovich, M. V., Peculiarities of the exciton spectrum of absorption by thin films. In: *Spectroscopy of molecules and crystals*. Pt. 1. Kiev, 48–50 (1981) (Russ).
1028. Tokura, Y., and Koda, T., Experimental determination of the charge-transfer

exciton band width in anthracene-PMDA crystal, *Solid State Commun.* **40**, No. 3, 299–301 (1981) (Eng).

1029. Tovstenko, V. I., About some peculiarities of surface exciton manifestation in reflection and luminescence spectra of molecular crystals. In: *Spectroscopy of molecules and crystals*. Pt. 1. Kiev, 22–30 (1981) (Russ).

7.3. Triplet excitons

1030. Altwegg, L., and Zschokke-Gränacher, I., Reply to “Comments on ‘Triplet-exciton annihilation and triplet spin relaxation in molecular crystals’”, *Phys. Rev. B* **24**, No. 2, 1106 (1981) (Eng) (*P.A.* **85**: 1837).
1031. Arnold, S., and Whitten, W. B., Temperature dependence of the triplet exciton yield in fission and fusion in tetracene, *J. Chem. Phys.* **75**, No. 3, 1166–1169 (1981) (Eng) (*P.A.* **84**: 92029).
1032. Berk, N. F., Bizzaro, W., Rosenthal, J., and Yarmus, L., EPR linewidth of triplet excitons in molecular crystals. 1. Theory and experiment: Pyrene, *Phys. Rev. B* **23**, No. 11, 5661–5672 (1981) (Eng) (*P.A.* **84**: 92570).
1033. Bizzaro, W., Yarmus, L., Rosenthal, J., and Berk, N. F., EPR linewidth of triplet excitons in molecular crystals. 2. Tetracene, *Phys. Rev. B* **23**, No. 11, 5673–5675 (1981) (Eng) (*P.A.* **84**: 92571).
1034. Fave, J. L., Guthmann, C., Schott, M., and Bouchriha, H., Influence of spin relaxation on triplet-triplet exciton annihilation in organic crystals. Application to naphthalene, *Phys. Rev. B* **24**, No. 8, 4545–4551 (1981) (Eng) (*P.A.* **85**: 22086).
1035. Park, J. M., and Reddoch, A. H., An EPR study of triplet excitons in crystalline anthracene-tetracyanobenzene: Exciton dynamics, long-range order parameter, and critical exponent, *J. Chem. Phys.* **74**, No. 3, 1519–1525 (1981) (Eng) (*P.A.* **84**: 47927).
1036. Pasimeni, L., Guella, G., and Corvaja, C., EPR study of spin polarization of charge-transfer triplet excitons in anthracene-tetracyanobenzene single crystals, *Chem. Phys. Lett.* **84**, No. 3, 466–470 (1981) (Eng) (*P.A.* **85**: 36408).
1037. Petelenz, P., Charge carrier detrapping by triplet excitons, *Phys. Status Solidi (b)* **104**, No. 1, 133–144 (1981) (Eng).
1038. Petelenz, P., and Smith, V. H., Jr., Triplet exciton mobilities in weak donor-acceptor complexes, *Chem. Phys. Lett.* **82**, No. 3, 430–433 (1981) (Eng).
1039. Port, H., Rund, D., and Wolf, H. C., Triplet states in isotopically mixed anthracene crystals: high resolution optical spectroscopy, *Chem. Phys.* **60**, No. 1, 81–98 (1981) (Eng) (*P.A.* **84**: 101127).
1040. Rosenthal, J., Yarmus, L., and Berk, N. F., Comments on “Triplet-exciton annihilation and triplet spin relaxation in molecular crystals”, *Phys. Rev. B* **24**, No. 2, 1103–1105 (1981) (Eng) (*P.A.* **84**: 105668).
1041. Von Schütz, J. U., Steudle, W., Wolf, H. C., Reineker, P., and Schmid, U., The doublet structure of the DF-ODMR signals of triplet excitons in anthracene/TCNB, *Chem. Phys. Lett.* **79**, No. 1, 1–5 (1981) (Eng) (*P.A.* **84**: 65602).

7.4. Exciton-phonon interaction (shape of bands, energy dissipation, vibronic spectra)

1042. Belov, A. G., Yurtaeva, E. M., and Svishchev, V. N., Self-trapping of high excited states in neon and argon crystals, *Fiz. Nizk. Temp.* **7**, No. 3, 350–360 (1981) (Russ) (*P.A.* **84**: 61383).
1043. Brand, J., Weinzierl, G., and Friedrich, J., Single-mode electron-phonon coupling and optical lineshape analysis on a naphthalene X trap system, *Chem. Phys. Lett.* **84**, No. 1, 197–200 (1981) (Eng) (*P.A.* **85**: 22069).

1044. Bussemer, P., and Taubert, A., On the asymmetry of the absorption spectrum at localized centres, *Phys. status solidi* (b) **105**, No. 2, K107-K110 (1981) (Eng).
1045. Craig, D. P., and Singh, J., An improved approximate diagonalization for exciton-phonon coupling in molecular crystals, *Chem. Phys. Lett.* **82**, No. 3, 405-409 (1981) (Eng) (*P. A.* **84**: 1566).
1046. Falenchuk, V. D., and Nitsovich, B. M., Calculation of spectral characteristics of α -band of anthracene crystal exciton absorption. In: Spectroscopy of molecules and crystals. Pt. 1. Kiev, 54-59 (1981) (Russ).
1047. Friesner, R., and Silbey, R., Exciton-phonon coupling in a dimer: An analytic approximation for eigenvalues and eigenvectors, *J. Chem. Phys.* **74**, No. 2, 1166-1174 (1981) (Eng) (*P. A.* **84**: 47180).
1048. Fugol', I. Ya., and Tarasova, E. I., Phonon damping of excitons in rare-gas cryocrystals, *Fiz. Nizk. Temp.* **7**, No. 10, 1325-1338 (1981) (Russ).
1049. Hesselink, W. H., and Wiersma, D. A., Vibronic relaxation in molecular mixed crystals: Pentacene in naphthalene and *p*-terphenyl, *J. Chem. Phys.* **74**, No. 2, 886-889 (1981) (Eng) (*P. A.* **84**: 47179).
1050. Hizhnyakov, V. V., and Sherman, A. V., Spectroscopic manifestations of the exciton self-trapping barrier, *Solid State Commun.* **37**, No. 2, 165-169 (1981) (Eng).
1051. Jackson, B., and Silbey, R., Line shapes and transport for excitons with stochastic coupling, *J. Chem. Phys.* **75**, No. 7, 3293-3296 (1981) (Eng).
1052. Miyazaki, H., and Hanamura, E., Optical response of exciton-phonon system. 1. Absorption spectrum and Urbach-Matienssen rule, *J. Phys. Soc. Jap.* **50**, No. 4, 1310-1320 (1981) (Eng) (*P. A.* **84**: 65215).
1053. Myasnikov, E. N., and Fomin, G. V., Interaction of polaritons with acoustic phonons at low temperatures, *Fiz. Nizk. Temp.* **7**, No. 8, 1053-1057 (1981) (Russ) (*P. A.* **84**: 100798).
1054. Nitsovich, B. M., Study of shape function of exciton absorption. In: Spectroscopy of molecules and crystals. Pt. 1. Kiev, 17-22 (1981) (Russ).
1055. Nitsovich, B. M., Pestryakov, G. M., and Blonskii, I. V., Temperature shift of exciton absorption bands, *Fiz. Tverd. Tela* **23**, No. 11, 3252-3255 (1981) (Russ).
1056. Ostapenko, N. I., Sugakov, V. I., Chernomorets, M. P., and Shpak, M. T., Determination of exciton-phonon interaction constants from deformed naphthalene crystals spectra. In: Spectroscopy of molecules and crystals. Pt. 1. Kiev, 11-17 (1981) (Russ).
1057. Pestryakov, G. M., Exciton-phonon interaction and stability of molecular lattices. In: Spectroscopy of molecules and crystals. Pt. 1. Kiev, 30-36 (1981) (Russ).
1058. Rebane, L. A., Inhomogeneous broadening of the spectra of organic molecules in solid matrices, *Zh. Prikl. Spektrosk.* **34**, No. 6, 1023-1035 (1981) (Russ) (*P. A.* **85**: 75357).
1059. Scott, A. C., The laser-Raman spectrum of a Davydov soliton, *Phys. Lett.* **86A**, No. 1, 60-62 (1981) (Eng).
1060. Singh, J., Line shape of the low-energy tail of exciton absorption in molecular crystals, *Phys. Rev. B* **23**, No. 4, 2011-2021 (1981) (Eng) (*P. A.* **84**: 47499).
1061. Sood, A. K., and Dattagupta, S., Model for vibrational relaxation: pure-dephasing and depopulation, *Pramana* **17**, No. 4, 315-326 (1981) (Eng) (*P. A.* **85**: 29700).
1062. Suemoto, T., and Kanzaki, H., Relaxation processes from higher excited states of self-trapped excitons in condensed neon, *J. Phys. Soc. Jap.* **50**, No. 11, 3664-3668 (1981) (Eng) (*P. A.* **85**: 26959).
1063. Sumi, H., Exciton polarons in molecular crystals. Studies using the dynamical CPA. In: Defects in insulating crystals. Riga, Berlin, Heidelberg, New York, 267-283 (1981) (Eng).
1064. Venzl, G., and Fischer, S. F., The effect of localized modes on radiationless electronic transitions. 1. Diatomic impurities in a crystal, *J. Chem. Phys.* **74**, No. 3, 1877-1886 (1981) (Eng).

7.5. Excitons in mixed crystals.

1065. Agranovich, V. M., and Dubovskii, O. A., Local biphonon in crystals with defects, *Fiz. Tverd. Tela* **23**, No. 7, 2197–2200 (1981) (Russ) (*P.A.* **85**: 45491).
1066. Ahlgren, D. C., and Kopelman, R., Universality and critical exponents of energy transport in binary crystals: $^3B_{2u}$ naphthalene, *Chem. Phys. Lett.* **77**, No. 1, 135–138 (1981) (Eng) (*P.A.* **84**: 30639).
1067. Antsygina, T. N., Pastur, L. A., and Slyusarev, V. A., Localized states and kinetic properties of one-dimension disordered systems (review), *Fiz. Nizk. Temp.* **7**, No. 1, 5–44 (1981) (Russ).
1068. Argyrakis, P., and Kopelman, R., Dynamics of energy transport in ternary molecular solids. 1. Naphthalene steady state fluorescence, *Chem. Phys.* **57**, No. 1, 2, 29–44 (1981) (Eng) (*P.A.* **84**: 78570).
1069. Bässler, H., Localized states and electronic transport in single component organic solids with diagonal disorder, *Phys. status solidi (b)* **107**, No. 1, 9–54 (1981) (Eng).
1070. Böttger, H., and Kleinert, P., Calculation of vibrational state density and long-wavelength spectral density of compositionally disordered chains, *Phys. status solidi (b)* **103**, No. 1, 221–229 (1981) (Eng).
1071. Bussemer, P., and Taubert, A., On the asymmetry of the absorption spectrum at localized centres, *Phys. status solidi (b)* **105**, No. 2, K107–K110 (1981) (Eng).
1072. Chen, Y. C., Wu, S-Y., and Sinai, J. J., Excitation spectra of disordered systems. 1. General theory, *Phys. status solidi (b)* **104**, No. 2, 441–452 (1981) (Eng) (*P.A.* **84**: 73646).
1073. Dransfeld, K., Dynamic properties of amorphous solids at low temperatures. In: Defects in insulating crystals. Riga, Berlin, Heidelberg, New York, 56–68 (1981) (Eng).
1074. Druzhinin, A. A., and Elyutin, P. V., On the localization of the excitonic states in structurally disordered systems, *Dokl. Akad. Nauk SSSR* **259**, No. 1, 91–93 (1981) (Eng) (*P.A.* **85**: 66496).
1075. Druzhinin, A. A., Orlov, V. Yu., Polevoi, A. V., and Sukhov, F. F., On spectra of dipole-active optical phonons in solid isotopic mixture, *Fiz. Tverd. Tela* **23**, No. 8, 2498–2501 (1981) (Russ).
1076. Friesner, R., and Silbey, R., Effect of inhomogeneous broadening on the optical line shape of molecular aggregates, *Chem. Phys. Lett.* **84**, No. 2, 365–369 (1981) (Eng) (*P.A.* **85**: 39377).
1077. Friesner, R., and Silbey, R., Exciton-phonon coupling in a dimer: An analytic approximation for eigenvalues and eigenvectors, *J. Chem. Phys.* **74**, No. 2, 1166–1174 (1981) (Eng) (*P.A.* **84**: 47180).
1078. Gorban', K. N., and Sugakov, V. I., Broadening of impurity bands in crystals with defects, *Opt. and Spektrosk.* **51**, No. 1, 141–147 (1981) (Russ) (*P.A.* **85**: 67090).
1079. Hesselink, W. H., and Wiersma, D. A., Vibronic relaxation in molecular mixed crystals: Pentacene in naphthalene and *p*-terphenyl, *J. Chem. Phys.* **74**, No. 2, 886–889 (1981) (Eng) (*P.A.* **84**: 47179).
1080. Hinchliffe, A., The interaction energy and polarizability of a pair of fluorine molecules, *Adv. Mol. Relaxation and Interaction Processes* **20**, No. 1–2, 63–69 (1981) (Eng) (*P.A.* **84**: 72308).
1081. Hutchison, C. A., Jr., and Kemple, M. C., EPR and ENDOR of triplet state diphenyl-h₁₀ in diphenyl-d₁₀ single crystals. Molecule conformation and spin distribution, *J. Chem. Phys.* **74**, No. 1, 192–199 (1981) (Eng).
1082. Klafter, J., and Silbey, R., A comment on the dynamics of excitation trapping in molecular crystals, *J. Chem. Phys.* **74**, No. 6, 3510–3513 (1981) (Eng).
1083. Kohler, B. E., and Loda, R. T., Spectroscopy of benzil-bibenzyl clusters. Site selection in three-component mixtures, *J. Chem. Phys.* **74**, No. 10, 5424–5429 (1981) (Eng).

1084. Koiller, B., Davidovich, M. A., and Goncalves da Silva, C. E. T., Transfer matrix theory for the optical absorption spectrum of mixed crystals, *Solid State Commun.* **38**, No. 7, 579–582 (1981) (Eng).
1085. Kulagin, S. A., and Osad'ko, I. S., On burning out mechanism of metastable holes in nonuniform broadened optical spectra of organic solid solutions, *Fiz. Tverd. Tela* **23**, No. 11, 3512–3514 (1981) (Russ).
1086. Morsink, J. B. W., and Wiersma, D. A., Optical detrapping in solids, *J. Chem. Phys.* **74**, No. 8, 4734–4735 (1981) (Eng) (*P. A.* **84**: 73811).
1087. Osad'ko, I. S., and Chigirev, A. R., Line-shape dependence of shallow trap luminescence and free exciton capture probability on trap depth and temperature, *Fiz. Tverd. Tela* **23**, No. 2, 538–546 (1981) (Russ) (*P. A.* **84**: 2343).
1088. Palit, N. B., Chaudhuri, M. K., Chakravarty, S. C., Host-guest interaction in mixed molecular crystals, *Mol. Cryst. and Liquid Cryst. Lett.* **71**, No. 3–4, 173–179 (1981) (Eng) (*P. A.* **85**: 22049).
1089. Pekcan, Ö., Energy transfer via disturbed host species in a mixed organic crystal system, *J. Phys. C: Solid State Phys.* **14**, No. 5, 745–752 (1981) (Eng) (*P. A.* **84**: 47929).
1090. Pekcan, Ö., Excitation probabilities and intermolecular interaction of host and guest molecules of a paired centre in a mixed organic crystal system, *J. Phys. C: Solid State Phys.* **14**, No. 27, 3957–3964 (1981) (Eng).
1091. Port, H., Rund, D., and Wolf, H. C., Triplet states in isotopically mixed anthracene crystals: high resolution optical spectroscopy, *Chem. Phys.* **60**, No. 1, 81–98 (1981) (Eng) (*P. A.* **84**: 101127).
1092. Sinai, J. J., Wu, S.-Y., and Chen, Y. C., Excitation spectra of disordered systems. 2. Two- and three-dimensional disordered systems, *Phys. status solidi (b)* **107**, No. 1, 367–374 (1981) (Eng).
1093. Skinner, J. L., Andersen, H. C., and Fayer, M. D., Theory of photon echoes from a pair of coupled two-level systems: Impurity dimers and energy transfer in molecular crystals, *J. Chem. Phys.* **75**, No. 7, 3195–3202 (1981) (Eng).
1094. Soukoulis, C. M., and Economou, E. N., Off-diagonal disorder in one-dimensional systems, *Phys. Rev. B* **24**, No. 10, 5698–5702 (1981) (Eng).
1095. Swanson, B. I., and Jones, L. H., Matrix-molecule interactions, dynamics, and exchange phenomena in low temperature matrices: SF_6 in argon and krypton, *J. Chem. Phys.* **74**, No. 6, 3205–3215 (1981) (Eng) (*P. A.* **84**: 59512).
1096. Valkunas, L., and Sugakov, V. I., Effects of interband coupling in the theory of impurity centers in molecular crystals, *Litov. Fiz. Sb.* **20**, No. 3, 13–22 (1980) (Russ) (*P. A.* **85**: 30831).
1097. Van der Rest, J., Lambin, Ph., and Brouers, F., On the homomorphic cluster CPA, *Solid State Commun.* **38**, No. 12, 1139–1141 (1981) (Eng) (*P. A.* **84**: 92075).
1098. Vollmann, W., Theory of spin-lattice relaxation in the triplet state of naphthalene in durene, *Chem. Phys.* **57**, No. 1, 2, 157–166 (1981) (Eng).
1099. Wertheimer, R., and Silbey, R., Theoretical studies of relaxation processes in excited state impurity molecules: Application to naphthalene dimers, *J. Chem. Phys.* **74**, No. 1, 686–702 (1981) (Eng) (*P. A.* **84**: 47532).
1100. Wu, S. Y., and Zheng, Z.-b., Amplitude analysis of localization in one-dimensional disordered systems. Vibrational states of an isotopically disordered binary chain, *Phys. Rev. B* **24**, No. 8, 4787–4794 (1981) (Eng).
1101. Zagainova, L. I., Klimusheva, G. V., Kurmey, N. D., and Soroka, G. M., Energy spectrum of molecular clusters. In: Spectroscopy of molecules and crystals. Pt. 2. Kiev, 118–127 (1980) (Russ).

7.6. Excitonic mechanism of energy migration

1102. Ahlgren, D. C., and Kopelman, R., Universality and critical exponents of energy transport in binary crystals: $^3B_{2u}$ naphthalene, *Chem. Phys. Lett.* **77**, No. 1, 135–138 (1981) (Eng) (*P. A.* **84**: 30639).

1103. Berkovic, G. E., and Ludmer, Z., Electronic energy trapping in a crystal due to a dopant of higher excitation energy than the host, *Chem. Phys.* **58**, No. 1, 57–64 (1981) (Eng) (*P.A.* **84**: 74125).
1104. Berkovic, G. E., Ludmer, Z., and Haas, E., Electronic energy trapping in a crystal with a dopant of higher singlet level than the host, *J. Lumin.* **24/25**, pt. 2, 543–546 (1981) (Eng) (*P.A.* **85**: 51673).
1105. Capek, V., and Munn, R. W., From band to hopping diffusion of excitons and charge carriers in molecular crystals. 1. Principles, *Phys. status solidi* (b) **108**, No. 2, 521–530 (1981) (Eng) (*P.A.* **85**: 40798).
1106. Gaididei, Yu. B., Annihilation of excitons in quasionedimensional crystals, *Theor. and Mat. Fiz.* **48**, No. 3, 410–415 (1981) (Russ).
1107. Grigoriev, V. I., On the radiation migration in crystal, *Vestn. Moskov. Univ. Fiz., astron.* **22**, No. 4, 13–18 (1981) (Russ).
1108. Huber, D. L., Further comments on the dynamics of excitation trapping, *J. Chem. Phys.* **75**, No. 9, 4749–4751 (1981) (Eng).
1109. Kenkre, V. M., Determination of the exciton diffusion constant from variation of quantum yield with penetration length, *Chem. Phys. Lett.* **82**, No. 2, 301–304 (1981) (Eng) (*P.A.* **84**: 105659).
1110. Kenkre, V. M., and Wong, Y. M., Effect of transport coherence on trapping: Quantum-yield calculations for excitons in molecular crystals, *Phys. Rev. B* **23**, No. 8, 3748–3755 (1981) (Eng) (*P.A.* **84**: 78198).
1111. Kenkre, V. M., Validity of the bilinear rate equation for exciton annihilation and expressions for the annihilation constant, *Z. Phys. B* **43**, No. 3, 221–227 (1981) (Eng).
1112. Kurik, M. V., Peculiarities of coherent and incoherent transfer of excitons and charge carriers in organic molecular crystals, *Latv. PSR Zinat. Akad. Vestis Fiz. Teh. Zinat. Ser.* No. 5, 40–47 (1981) (Russ) (*P.A.* **85**: 36042).
1113. Millar, D. P., Robbins, R. J., and Zewail, A. H., Picosecond dynamics of electronic energy transfer in condensed phases, *J. Chem. Phys.* **75**, No. 8, 3649–3659 (1981) (Eng).
1114. Skinner, J. L., Andersen, H. C., and Fayer, M. D., Theory of photon echoes from a pair of coupled two-level systems: Impurity dimers and energy transfer in molecular crystals, *J. Chem. Phys.* **75**, No. 7, 3195–3202 (1981) (Eng).

8. PHOTOCONDUCTIVITY OF MOLECULAR CRYSTALS. PHOTOELECTRONIC EMISSION

1115. Akimov, I., The sensitized photoeffect, *Latv. PSR Zinat. Akad. Vestis Fiz. Teh. Zinat. Ser.* No. 5, 48–54 (1981) (Russ).
1116. Bader, G., Caron, L., and Sanche, L., Electron-exciton complex formation in organic solids, *Solid State Commun.* **38**, No. 9, 849–851 (1981) (Eng) (*P.A.* **84**: 92039).
1117. Bässler, H., Localized states and electronic transport in single component organic solids with diagonal disorder, *Phys. status solidi* (b) **107**, No. 1, 9–54 (1981) (Eng).
1118. Burshtein, Z., Photoinjection of holes from 9,10-dichloroanthracene and 9,10-dibromoanthracene into para-terphenyl single crystals, *Mol. Cryst. and Liquid Cryst.* **71**, No. 3–4, 157–172 (1981) (Eng).
1119. Cehak, A., and Zboinski, Z., Temperature dependence and anisotropy of the hole drift mobility in dibenzothiophene, *Chem. Phys.* **62**, No. 3, 333–337 (1981) (Eng).
1120. Clar, E., Roberston, J. M., Schlogl, R., and Schmidt, W., Photoelectron spectra of polynuclear aromatics. 6. Applications to structural elucidation: 'circumthracene', *J. Amer. Chem. Soc.* **103**, No. 6, 1320–1328 (1981) (Eng) (*P.A.* **84**: 99825).

1121. Colonna, F. P., Distefano, G., Jones, D., and Modelli, A., Analysis of the electronic factors controlling the N_{1s} and the first two π (a_2 , b_1) photoelectron ionization in N -containing monosubstituted benzenes ($\text{Ph}-\text{NRR}'$ and $\text{Ph}-\text{N}=\text{X}$), *Z. Naturforsch.* **36A**, No. 4, 385–390 (1981) (Eng) (*P.A.* **84**: 64113).
1122. Di Marco, P. G., and Giro, G., Holes and electrons mobilities in 9-methylanthracene single crystals, *Mol. Cryst. and Liquid Cryst.* **69**, No. 3–4, 193–198 (1981) (Eng).
1123. Duncan, M. A., Dietz, T. G., and Smalley, R. E., Two-color photoionization of naphthalene and benzene at threshold, *J. Chem. Phys.* **75**, No. 5, 2118–2125 (1981) (Eng) (*P.A.* **84**: 99844).
1124. Eley, D. D., Kinnear, S., and Willis, M. R., Real and apparent photoconduction in single crystals of methyltriphenylphosphonium $(\text{TCNQ})_2^-$, *Phys. status solidi* (b) **105**, No. 2, 677–683 (1981) (Eng).
1125. Enoki, T., and Inokuchi, H., Hydrogen in aromatics. 1. Electrical conductivity and electron paramagnetic resonance of triphenylene-potassium complexes under hydrogen atmosphere, *J. Chem. Phys.* **74**, No. 11, 6440–6447 (1981) (Eng).
1126. Ewert, T., Excitation of molecules in inelastic electron tunneling spectroscopy. *Appl. Phys. A* **26**, No. 2, 63–82 (1981) (Eng).
1127. Godlewski, J., Influence of the patch effect and near-contact trapped charge on electrode-limited current flow in molecular crystals, *Mol. Cryst. and Liquid Cryst.* **71**, No. 1–2, 19–33 (1981) (Eng).
1128. Haarer, D., Optical and photoelectric properties of organic charge transfer crystals. In: *Festkörperprobleme (Advances in Solid State Physics)*. Vol. 20. Braunschweig, Vieweg, 341–367 (1980) (Eng).
1129. Hilti, B., Mayer, C. W., and Rihs, G., 3,4,9,10-tetrathioperylene-1,12,8, a new highly conducting, incommensurate organic charge transfer salt, *Solid State Commun.* **38**, No. 12, 1129–1134 (1981) (Eng).
1130. Honegger, E., and Heilbronner, E., The analysis of conformational equilibria by variable temperature photoelectron spectroscopy: a comment, *Chem. Phys. Lett.* **81**, No. 3, 615–619 (1981) (Eng).
1131. Karl, N., The influence of doping on charge carrier transport in organic molecular crystals and relevance to one-dimensional conductors, *Chem. Scr.* **17**, No. 1–5, 201–202 (1981) (Eng) (*P.A.* **85**: 30885).
1132. Klein, J., Martin, P., and Voltz, R., Photoionization and magnetic field modulated recombination in crystalline anthracene, *J. Lumin.* **24/25**, pt. 1, 99–102 (1981) (Eng) (*P.A.* **85**: 46680).
1133. Kubota, H., Hirooka, T., Fukuyama, T., Kondow, T., Kuchitsu, K., and Yench, A. J., Penning ionization electron spectroscopy and photoelectron spectroscopy of molecular solids. 1. Apparatus and measurements of benzene, *J. Electron Spectrosc. and Relat. Phenom.* **23**, No. 4, 417–429 (1981) (Eng) (*P.A.* **84**: 90622).
1134. Kühne, R., Reineker, P., and Kenkre, V. M., Calculation of the frequency-dependent photoconductivity of organic molecular crystals, *Z. Phys. B* **41**, No. 2, 181–186 (1981) (Eng).
1135. Lovtysus, V. A., Petrov, V. V., and Zagrubskii, A. A., Photoemission data analysis. Tetracene, *Fiz. Tverd. Tela* **23**, No. 8, 2501–2504 (1981) (Russ).
1136. Lukin, L. V., Tolmachev, A. V., and Yakovlev, B. S., The photoexcitation of trapped electrons produced in the photoionization of anthracene in liquid n -hexane, *Chem. Phys. Lett.* **81**, No. 3, 595–598 (1981) (Eng) (*P.A.* **84**: 100866).
1137. Maruyama, Y., and Bässler, H., Mobility and recombination coefficient of charge carriers in disordered tetracene, *Phys. status solidi* (b) **103**, No. 1, 263–268 (1981) (Eng).
1138. Mazumdar, S., and Soos, Z. G., Valence-bond analysis of extended Hubbard models: Charge-transfer excitations of molecular conductors, *Phys. Rev. B* **23**, No. 6, 2810–2823 (1981) (Eng).
1139. Millefiori, S., Ciliberto, E., Millefiori, A., and Zerbo, M. A., Gas phase u.v.

- photoelectron investigation of azoxybenzene and 4,4'-di(*n*-alkoxy) azoxybenzenes, *Spectrochim. acta* **37A**, No. 8, 605–608 (1981) (Eng).
1140. Miller, J. C., and Compton, R. N., Multiphoton ionization of iodine and benzene: Photoelectron and ion kinetic energy distributions, *J. Chem. Phys.* **75**, No. 4, 2020–2021 (1981) (Eng) (*P. A.* **84**: 95769).
 1141. Miniewicz, A., Nowak, R., Samoc, M., and Sworakowski, J., Electroluminescence in the anthracene-trinitrobenzene system, *Acta phys. pol.* **A60**, No. 5, 715–722 (1981) (Eng).
 1142. Munakata, T., Ohno, K., Harada, Y., and Kuchitsu, K., Assignment of photoelectron bands for naphthalene and anthracene by penning ionization electron spectroscopy, *Chem. Phys. Lett.* **83**, No. 2, 243–245 (1981) (Eng).
 1143. Munakata, T., Harada, Y., Ohno, K., and Kuchitsu, K., Penning electron spectrum of ferrocene. Evidence for steric effect on the electronic interaction causing Penning ionization, *Chem. Phys. Lett.* **84**, No. 1, 6–8 (1981) (Eng).
 1144. Nowak, R., Miniewicz, A., Samoc, M., and Sworakowski, J., Steady-state electroluminescence in perylene-doped anthracene crystals, *Mol. Cryst. and Liquid Cryst. Lett.* **72**, No. 4, 113–118 (1981) (Eng).
 1145. Prock, A., Walker, J. K., and Melman, P., Extrinsic photoconductivity shadowing (EPS) as a method to study triplet energy migration in molten naphthalene, *J. Chem. Phys.* **74**, No. 12, 6965–6974 (1981) (Eng) (*P. A.* **84**: 82211).
 1146. Reineker, P., Kenkre, V. M., and Kühne, R., Drift mobility of photo-electrons in organic molecular crystals: quantitative comparison between theory and experiment, *Phys. Lett.* **84A**, No. 5, 294–296 (1981) (Eng).
 1147. Ruscic, B., Klasinc, L., Wolf, A., and Knop, J. V., Photoelectron spectra of and ab initio calculations on chlorobenzenes. 1. Chlorobenzene and dichlorobenzenes, *J. Phys. Chem.* **85**, No. 11, 1486–1489 (1981) (Eng).
 1148. Ruscic, B., Klasinc, L., Wolf, A., and Knop, J. V., Photoelectron spectra of and ab initio calculations on chlorobenzenes. 2. Trichlorobenzenes, tetrachlorobenzenes, and pentachlorobenzene, *J. Phys. Chem.* **85**, No. 11, 1490–1495 (1981) (Eng) (*P. A.* **85**: 29657).
 1149. Ruscic, B., Klasinc, L., Wolf, A., and Knop, J. V., Photoelectron spectra of and ab initio calculations on chlorobenzenes. 3. Hexachlorobenzene, *J. Phys. Chem.* **85**, No. 11, 1495–1497 (1981) (Eng).
 1150. Scher, H., and Wu, C. H., The transient current in a one-dimensional molecular crystal with traps, *J. Chem. Phys.* **74**, No. 10, 5366–5370 (1981) (Eng).
 1151. Sebastian, L., Weiser, G., and Bässler, H., Charge transfer transitions in solid tetracene and pentacene studied by electroabsorption, *Chem. Phys.* **61**, No. 1, 2, 125–135 (1981) (Eng) (*P. A.* **85**: 30837).
 1152. Signerski, R., and Kalinowski, J., On action spectra of the photocurrent in polycrystalline tetracene films, *Thin Solid Films* **75**, No. 2, 151–156 (1981) (Eng) (*P. A.* **84**: 34749).
 1153. Silinsh, E. A., Kolesnikov, V. A., Muzikante, I. Ya., Balode, D. R., and Gailis, A. K., On charge carrier photogeneration mechanisms in organic molecular crystals, *Latv. PSR Zinat. Akad. Vestis Fiz. Teh. Zinat. Ser.* No. 5, 14–28 (1981) (Russ).
 1154. Singh, J., Formation of a complex charge carrier due to the interaction between a free Frenkel exciton and excess electron in molecular crystals, *Phys. status solidi* (b) **103**, No. 1, 423–428 (1981) (Eng) (*P. A.* **84**: 47496).
 1155. Singh, J., Generation of hot and complex charge carriers due to the interaction between excitons and free charge carriers in molecular crystals, *J. Chem. Phys.*, **75**, No. 9, 4603–4611 (1981) (Eng).
 1156. Sinha, N. P., Misra, Y., Tripathi, L. N., and Misra, M., Electro-optical properties of doped anthracene films, *Solid State Commun.* **39**, No. 1, 89–91 (1981) (Eng) (*P. A.* **84**: 97661).
 1157. Sumi, H., Theory of electrical conduction in organic molecular crystals. 3. Temperature-independent mobilities in naphthalene, *J. Chem. Phys.* **75**, No. 6,

- 2987–2993 (1981) (Eng).
1158. Webb, J. B., Samoc, M., and Williams, D. F., Field dependence of 1 and 2 photon charge generation in anthracene and phenazine, *Mol. Cryst. and Liquid Cryst.* **78**, No. 1–4, 31–33 (1981) (Eng) (*P.A.* **85**: 51231).
1159. Zagrubskii, A. A., Petrov, V. V., and Lovtsyus, V. A., Investigation of photoemission from organic semiconductors, *Latv. PSR Zinat. Akad. Vestis Fiz. Teh. Zinat. Ser.* No. 5, 29–39 (1981) (Russ).

9. EFFECTS OF HIGH EXCITON CONCENTRATION IN NON-METALLIC CRYSTALS

1160. Fox, D., Interactions between Frenkel excitons. 1. Formalism and preliminary results, *Chem. Phys.* **61**, No. 3, 477–489 (1981) (Eng).
1161. Gaididei, Yu. B., and Onipko, A. I., About limit concentration of excitons in molecular crystals. In: Spectroscopy of molecules and crystals. Pt. 1. Kiev, 36–40 (1981) (Russ).
1162. Gaididei, Yu. B., and Trofimov, A. S., Kinetics of electronic excitations in critical region. In: Spectroscopy of molecules and crystals. Pt. 1. Kiev, 40–47 (1981) (Russ).
1163. Ivanova, E. P., Exciton-exciton annihilation kinetics in molecular crystals, *Fiz. Tverd. Tela* **23**, No. 2, 547–551 (1981) (Russ) (*P.A.* **85**: 2344).
1164. Kenkre, V. M., Validity of the bilinear rate equation for exciton annihilation and expressions for the annihilation constant. *Z. Phys. B* **43**, No. 3, 221–227 (1981) (Eng).
1165. Lesin, V. I., Nikolaev, E. N., and Sakun, V. P., Resonant enhancement of annihilation velocity for triplet excitons due to contact-pair spin-state degeneracies in a strong magnetic field, *Opt. and Spektrosk.* **50**, No. 6, 1019–1021 (1981) (Russ) (*P.A.* **85**: 51697).
1166. Matsui, A., Iemura, M., and Nishimura, H., Dynamical behavior of excitons in pyrene, *J. Lumin.* **24/25**, Pt. 1, 445–448 (1981) (Eng) (*P.A.* **85**: 46698).

10. MOLECULAR CRYSTAL STRUCTURE. THERMODYNAMIC DATA

1167. Abramczyk, H., Jaruga, Z., and Reimschuessel, W., Molecular motion in the benzene-aniline system. *Chem. Phys.* **59**, No. 1, 2, 177–182 (1981) (Eng) (*P.A.* **84**: 92733).
1168. Abu-Zeid, M. E., Lopez, J. R., and Marafi, M. A., Thermodynamic and other characteristics properties of benzopyrene trimer exciplex, *J. Chem. Phys.* **75**, No. 5, 2237–2241 (1981) (Eng).
1169. Alexandrov, S. B., Structural defects in organic semiconductor crystals. Part. 1. Tetracene crystal orientation by Laue method, *Latv. PSR Zinat. Akad. Vestis Fiz. Teh. Zinat. Ser.* No. 4, 32–38 (1981) (Russ).
1170. Amoureux, J. P., Castelain, M., Bee, M., Arnaud, B., and Shouteenten, M. L., An NMR study of molecular motions in the plastic phases of 1-cyanoadamantane, *Mol. Phys.* **42**, No. 1, 119–127 (1981) (Eng) (*P.A.* **84**: 43023).
1171. Amoureux, J. P., Sauvajol, J. L., and Bee, M., A symmetry-adapted-function analysis of plastic crystals. Application to 1-cyanoadamantane at room temperature, *Acta Crystallogr.* **A37**, No. 1, 97–104 (1981) (Eng).
1172. Ancian, B., Tiffon, B., and Dubois, J.-E., ^2H nuclear magnetic relaxation study

- of the rotation of adamantane in *n*-alkanes, *J. Chem. Phys.* **74**, No. 10, 5857–5862 (1981) (Eng) (*P.A.* **84**: 76830).
1173. Arendt, P., Koswig, H. D., Pilz, W., and Reich, P., Raman evidence for the existence of three solid modifications in MBBA, *Mol. Cryst. and Liquid Cryst.* **75**, No. 1–4, 295–301 (1981) (Eng) (*P.A.* **85**: 22020).
 1174. Aronson, M., Beckmann, P., Ross, B., and Tan, S. L., Intramolecular reorientations and the effects of thermal history and hydrogen bonding in four closely related organic molecular solids, *Chem. Phys.* **63**, No. 3, 349–358 (1981) (Eng) (*P.A.* **85**: 36461).
 1175. Barr, I. A., Matthews, G. P., Smith, E. B., and Tindell, A. R., Intermolecular forces and the gaseous viscosities of argon-xenon mixtures, *J. Phys. Chem.* **85**, N22, 3342–3347 (1981) (Eng).
 1176. Bhattacharjee, S. K., and Ammon, H. L., Crystallographic studies of high-density organic crystals, 3,5-diamino-2,4,6-trinitrophenol, *Acta Crystallogr.* **B37**, No. 11, 2082–2085 (1981) (Eng).
 1177. Braam, A. W. M., Eshuis, A., and Vos, A., Tetramethylpyrazine at 300 and 100 K, *Acta Crystallogr.* **B37**, No. 3, 730–732 (1981) (Eng).
 1178. Britcher, A. R., and Strange, J. H., Molecular motion in binary systems of molecular crystals, *J. Chem. Phys.* **75**, No. 5, 2029–2040 (1981) (Eng).
 1179. Britton, D., 2,4,6-trichloro-1,3,5-tricyanobenzene, $\text{Cl}_3\text{C}_6(\text{CN})_3$, *Cryst. Struct. Commun.* **10**, No. 3, 1061–1064 (1981) (Eng).
 1180. Burgos, E., Halac, E., and Bonadeo, H., Vibrational spectra and phase transitions of crystalline bromoform, *J. Chem. Phys.* **74**, No. 3, 1546–1551 (1981) (Eng).
 1181. Cammenga, H. K., Petrick, H.-J., and Schulze, F. W., Sublimation kinetics of organic molecular crystals, *J. Cryst. Growth* **55**, No. 2, 351–362 (1981) (Eng).
 1182. Chandra, B. P., Mechanoluminescence and piezoelectric behavior of molecular crystals, *Phys. status solidi (a)* **64**, No. 1, 395–405 (1981) (Eng) (*P.A.* **84**: 61413).
 1183. Chanh, N. B., Haget, Y., Meresse, A., Louer, D., and Shirley, R., Destructive and nondestructive phase transitions in the molecular crystal *Z*-bromonaphthalene, *J. Phys. and Chem. Solids* **42**, No. 3, 217–225 (1981) (Eng) (*P.A.* **84**: 73534).
 1184. Chaplot, S. L., McIntyre, G. J., Mierzejewski, A., and Pawley, G. S., The high-temperature phase of 1,2,4,5-tetrafluoro-3,6-diiodobenzene and the phase transition, *Acta Crystallogr.* **B37**, No. 12, 2210–2214 (1981) (Eng).
 1185. Chaplot, S. L., McIntyre, G. J., Mierzejewski, A., and Pawley, G. S., Structure of 1,3,5-trichloro-2,4,6-trifluorobenzene, *Acta Crystallogr.* **B37**, No. 10, 1896–1900 (1981) (Eng).
 1186. Chatterjee, S., and Chakraborty, S., Elastic constants of acenaphthene determined from studies of thermal diffuse scattering of X-rays, *Acta crystallogr.* **A37**, No. 5, 645–649 (1981) (Eng).
 1187. Chetkina, I. A., Zavodnik, V. E., and Bepalov, B. P., The crystal and molecular structure of 1-tricyanovinylazulene, *Kristallografiya* **26**, No. 4, 729–734 (1981) (Russ).
 1188. Chiang, C., Polymer-monomer conversion in anthracene thin films as a switching and memory device, *Solid State Commun.* **39**, No. 1, 111–115 (1981) (Eng).
 1189. Chopra, M., and Singh, N. B., Zone-melting studies of phenanthrene in presence of naphthalene impurity, *Cryst. Res. and Technol.* **16**, No. 1, K10–K12 (1981) (Eng).
 1190. Collins, M. A., and Craig, D. P., A simple model of photoinduced lattice instability, *Chem. Phys.* **54**, No. 3, 305–321 (1981) (Eng) (*P.A.* **84**: 38475).
 1191. Costines, M., Pies, W., and Weiss, A., Polymorphism and phase transformation of substituted benzenes. 3. 1,3-dichloro-2-bromobenzene, *Z. Phys. Chem.* **128**, No. 1, 73–92 (1981) (Eng).
 1192. Dandoloff, R., and Zeyher, R., The third law of thermodynamics and the low

- temperature properties of disordered solids, *J. Phys. Colloq. C4*, **42**, C4-205–C4-208 (1981) (Eng).
1193. Descamps, M., and Coulon, G., Intermolecular correlations in plastic crystals: one more step in the calculation of the static susceptibility $\chi(q)$, *J. Phys. C: Solid State Phys.* **14**, No. 17, 2297–2304 (1981) (Eng).
 1194. Donati, D., Guarini, G. G. T., and Sarti-Fantoni, P., Evaluation of the enthalpic change during the monomerization reaction of crystalline anthracene photodimer (AD), *Mol. Cryst. and Liquid Cryst.* **69**, No. 3–4, 241–243 (1981) (Eng).
 1195. Draeger, J. A., and Scott, D. W., Ideal gas thermodynamic properties of 1,4-dimethylbenzene, *J. Chem. Phys.* **74**, No. 8, 4748–4749 (1981) (Eng).
 1196. Dubrovskii, I. M., and Krivoglaz, M. A., X-ray and thermal neutron scattering near the second order phase transition in crystals with dislocations, *Fiz. Tverd. Tela* **23**, No. 3, 762–773 (1981) (Russ).
 1197. Esteve, D., and Sullivan, N. S., N.M.R. study of self-diffusion in solid N_2 , *Solid State Commun.* **39**, No. 9, 969–971 (1981) (Eng).
 1198. Fernholt, L., Romming, C., and Samdal, S., On the structure of 2,2'-bipyrimidine. Gas and solid phase structure and barrier to internal rotation, *Acta chem. scand.* **A35**, No. 9, 707–715 (1981) (Eng).
 1199. Filipenko, O. S., Atovmyan, L. O., Bolotin, B. M., and Ponomarev, V. I., The crystal and molecular structure of organic luminophor 2-(2-tosylamino-4-nitrophenyl)-4H-3, 1-benzoxazine-4-one, *Kristallografiya* **26**, No. 4, 711–716 (1981) (Russ).
 1200. Finger, L. W., Hazen, R. M., Zou, G., Mao, H. K., and Bell, P. M., Structure and compression of crystalline argon and neon at high pressure and room temperature, *Appl. Phys. Lett.* **39**, No. 11, 892–894 (1981) (Eng).
 1201. Fischer, A., Heithier, H., Knoll, W., and Mohwald, H., Pressure induced reorientation and aggregation of pheophytin in monomolecular layers, *Ber. Bunsenges. Phys. Chem.* **85**, No. 3, 195–199 (1981) (Eng) (*P. A.* **84**: 82933).
 1202. Follner, H., On crystal chemistry and morphology of extended organic molecules, *Cryst. Res. and Technol.* **16**, No. 11, 1217–1227 (1981) (Eng).
 1203. Gabrys, B., and Van Gerven, L., Rotational tunneling of methyl groups in pentamethylbenzene studied by NMR relaxation resonance, *Chem. Phys. Lett.* **82**, No. 2, 260–263 (1981) (Eng).
 1204. Gaididei, Yu. B., and Loktev, V. M., On the theory of α - β -transition in solid oxygen, *Fiz. Nizk. Temp.* **7**, No. 10, 1305–1313 (1981) (Russ).
 1205. Gallier, J., Radomski, R., and Strange, J. H., N.M.R. investigations of phase transitions in pure and mixed crystals of pentachlorophenol, *Mol. Cryst. and Liquid Cryst.* **76**, No. 1–2, 1–18 (1981) (Eng).
 1206. Garland, C. W., Kwiecien, J. Z., Leung, R. C., and Damien, J. C., Critical behaviour in the shear elasticity of adamantane in the plastic phase, *Solid State Commun.* **37**, No. 4, 359–363 (1981) (Eng).
 1207. Granfors, P. R., Macrander, A. T., and Simmons, R. O., Crystalline xenon: Lattice parameters, thermal expansion, thermal vacancies, and equation of state, *Phys. Rev. B* **24**, No. 8, 4753–4763 (1981) (Eng).
 1208. Gribenyuk, E. E., Lisovenko, V. A., and Shpak, M. T., Low-temperature phototransformations in anthracene crystals, *Ukr. Fiz. Zh.* **26**, No. 9, 1567–1569 (1981) (Russ).
 1209. Heidemann, A., Press, W., Lushington, K. J., and Morrison, J. A., Study of the tunneling rotations in phase II of solid CH_4 with high resolution neutron spectroscopy, *J. Chem. Phys.* **75**, No. 8, 4003–4009 (1981) (Eng).
 1210. Hinchliffe, A., Munn, R. W., and Spicer, C. J., Calculation of birefringence changes in the carbazole crystal, *Mol. Cryst. and Liquid Cryst.* **73**, No. 3–4, 181–191 (1981) (Eng).
 1211. Hohlwein, D., Numerical structure factor calculation of orientationally disordered molecules, *Acta crystallogr.* **A37**, No. 6, 899–903 (1981) (Eng).
 1212. Human, H. J., Van der Eerden, J. P., Jetten, L. A. M. J., and Odekerken,

- J. G. M., On the roughening transition of biphenyl: transition of faceted to non-faceted growth of biphenyl for growth from different organic solvents and the melt, *J. Cryst. Growth* **51**, No. 3, 589–600 (1981) (Eng).
1213. Isenberg, I. A., and Chernov, A. A., Nucleation of some molecular crystals from vapour on anthracene microcrystals and UV radiation effect, *J. Cryst. Growth* **55**, No. 2, 345–350 (1981) (Eng).
1214. Ishibashi, Y., A tentative phenomenological theory of incommensurate phase transitions in biphenyl, *J. Phys. Soc. Jap.* **50**, No. 4, 1255–1258 (1981) (Eng).
1215. Ivanov, Yu. P., Antipin, M. Yu., Pertsin, A. J., and Struchkov, Yu. T., Calculation of thermodynamic functions of solid naphthalene and pyrene, *Mol. Cryst. and Liquid Cryst.* **71**, No. 3–4, 181–187 (1981) (Eng).
1216. Karl, N., Comparison of different methods for the detection of ppm impurities in organic molecular crystals, *J. Cryst. Growth* **51**, No. 3, 509–517 (1981) (Eng).
1217. Karl, N., Port, H., and Schrof, W., Computer-assisted orientation of low symmetry crystals, *Mol. Cryst. and Liquid Cryst.* **78**, No. 1–4, 55–65 (1981) (Eng).
1218. Kihara, T., Matsuoka, O., and Aoyama, T., Molecular shapes and crystal structures of cyanogen and benzene, *Chem. Phys. Lett.* **84**, No. 1, 68–70 (1981) (Eng).
1219. Kirov, N., Fontana, M. P., Cavatorta, F., and Ratajczak, H., IR, FIR, Raman and thermodynamic investigation of *p*-*n*-alkoxybenzoic acids in their solid, mesomorphic and isotropic phases, *Mol. Cryst. and Liquid Cryst.* **85**, No. 1–4, 303–320 (1981) (Eng) (*P. A.* **85**: 22021).
1220. Kojima, K., Photoplastic effect in anthracene crystals, *Appl. Phys. Lett.* **38**, No. 7, 530–531 (1981) (Eng).
1221. Kuleshova, L. N., and Zorkii, P. M., Hydrogen-bond length in homomolecular organic crystals, *Acta Crystallogr.* **B37**, No. 7, 1363–1366 (1981) (Eng).
1222. Lara, J., Perron, G., and Desnoyers, J. E., Heat capacities and volumes of the ternary system benzene-water-2-propanol, *J. Phys. Chem.* **85**, No. 11, 1600–1605 (1981) (Eng).
1223. Lowe-ma, C., Williams, R., and Samson, S., Structural studies of (tetrathio-tetracene)₂ (iodide)₃ at room temperature and low temperatures, *J. Chem. Phys.* **74**, No. 3, 1966–1979 (1981) (Eng).
1224. Lushington, K. J., Maki, K., Morrison, J. A., Heidemann, A., and Press, W., Tunneling states in phase III of solid partially deuterated methanes. Determination by inelastic neutron scattering and correlation with thermodynamic data, *J. Chem. Phys.* **75**, No. 8, 4010–4024 (1981) (Eng).
1225. Malinowska-Adamska, C., Thermodynamic and transport properties in crystals in anharmonic approximation, *Phys. status solidi (b)* **105**, No. 1, 359–367 (1981) (Eng) (*P. A.* **84**: 77989).
1226. Marsh, P., and Williams, D. E., The structure of pentachlorobenzene, *Acta Crystallogr.* **B37**, No. 3, 705–706 (1981) (Eng).
1227. Mayer, G., Thermodynamical meaning of line shifts, *J. Phys.* **42**, No. 5, 679–691 (1981) (Fr).
1228. Mootz, D., and Wussow, H.-G., Crystal structures of pyridine and pyridine trihydrate, *J. Chem. Phys.* **75**, No. 3, 1517–1522 (1981) (Eng).
1229. Moss, G., and Feil, D., Electrostatic molecular interaction from x-ray diffraction data. 1. Development of the method; test on pyrazine, *Acta Crystallogr.* **A37**, No. 3, 414–421 (1981) (Eng).
1230. Murdoch, J. R., and Streitwieser, A., Jr., Hydrogen bonding between pentafluorobenzene and pyridine-d₅, *J. Phys. Chem.* **85**, No. 22, 3352–3354 (1981) (Eng) (*P. A.* **85**, 43761).
1231. Nath, J., and Dubey, S. N., Binary systems of trichloroethylene with benzene, toluene, *p*-xylene, carbon tetrachloride, and chloroform. 2. Viscosities at 303.15 K, *J. Phys. Chem.* **85**, No. 7, 886–889 (1981) (Eng).
1232. Ogasahara, K., Sorai, M., and Suga, H., Thermodynamic properties of ferrocene

- crystal, *Mol. Cryst. and Liquid Cryst.* **71**, No. 3–4, 189–211 (1981) (Eng).
1233. Ovander, L. N., and Tyu, N. S., Theory of photoelastic effect in molecular crystals, *Ukr. Fiz. Zh.* **26**, No. 4, 566–571 (1981) (Russ).
 1234. Pawley, G. S., Molecular dynamics simulation of the plastic phase; a model for SF_6 , *Mol. Phys.* **43**, No. 6, 1321–1330 (1981) (Eng) (*P.A.* **84**: 105292).
 1235. Pertsin, A. I., Ivanov, Yu. P., and Kitaigorodsky, A. I., Calculation of the entropy of solid toluene and hexamethylbenzene, *J. Phys. Chem.* **85**, No. 11, 1546–1548 (1981) (Eng).
 1236. Pertsin, A. I., Ivanov, Yu. P., and Kitaigorodsky, A. I., Thermodynamical model of an organic crystal, *Kristallografiya* **26**, No. 1, 115–124 (1981) (Russ).
 1237. Pestryakov, G. M., Exciton-phonon interaction and stability of molecular lattices. In: Spectroscopy of molecules and crystals. Pt. 1. Kiev, 30–36 (1981) (Russ).
 1238. Pies, W., and Weiss, A., Polymorphism and phase transformation of substituted benzenes. 2. NQR study of order-disorder phenomena in bromochlorobenzenes, $\text{C}_6\text{H}_{6-x-y}\text{Br}_x\text{Cl}_y$, chloriodobenzenes, $\text{C}_6\text{H}_{5-x}\text{Cl}_x\text{I}$, and bromochloriodobenzenes, $\text{C}_6\text{H}_{5-x-y}\text{Br}_x\text{Cl}_y\text{I}$, *Z. Phys. Chem. Neue Folge* **127**, Teil II, 147–166 (1981) (Eng).
 1239. Prandl, W., The structure factor of orientationally disordered crystals: the case of arbitrary space, site, and molecular point group, *Acta Crystallogr.* **A37**, No. 6, 811–818 (1981) (Eng) (*P.A.* **85**: 25674).
 1240. Prasad, K. N., 1-bromoacetyl-4-chlorobenzene, $\text{C}_8\text{H}_6\text{BrClO}$, *Cryst. Struct. Commun.* **10**, No. 3, 879–882 (1981) (Eng).
 1241. Prasad, S. M., Rac, A. I. M., Hewat, A. W., and Pawley, G. S., The crystal structure of *s*-triazine at 5 K, *J. Phys. C: Solid State Phys.* **14**, No. 31, L929–L931 (1981) (Eng).
 1242. Rastogi, R. P., Singh, D. P., Singh, N., and Singh, N. B., Chemistry of binary and ternary organic eutectics, *Mol. Cryst. and Liquid Cryst.* **73**, No. 1–2, 7–34 (1981) (Eng).
 1243. Rerat, B., and Rerat, C., Interpretation and reconstitution of benzene crystalline structure at -3°C by analysis of the molecular rapprochement in classical dynamics, *J. chim. phys. et phys.-chim. biol.* **78**, No. 2, 109–117 (1981) (Fr) (*P.A.* **84**: 91596).
 1244. Ross, R. G., and Andersson, P., Thermal conductivity, heat capacity and phase diagram of tetrahydrofuran under pressure, *Mol. Cryst. and Liquid Cryst.* **78**, No. 1–4, 35–40 (1981) (Eng).
 1245. Samoc, M., Williams, J. O., and Williams, D. F., Molecular organic crystals: A survey of their purification, growth and characterization, *Progr. Cryst. Growth and Charact.* **4**, No. 1/2, 149–172 (1981) (Eng).
 1246. Scheffen-Lauenroth, Th., Klapper, H., and Becker, R. A., Growth and perfection of organic crystals from undercooled melt. 1. Benzil, *J. Cryst. Growth* **55**, No. 3, 557–570 (1981) (Eng).
 1247. Sellers, H., and Boggs, J. E., The structure of naphthalene, *J. Mol. Struct.* **74**, No. 1, 137–142 (1981) (Eng) (*P.A.* **84**: 72337).
 1248. Shabanov, V. F., Podoprigo, V. G., Botvich, A. N., and Ermakov, V. P., On the possibility of calculating local fields of susceptibilities in molecular crystals, *Kristallografiya* **26**, No. 4, 677–681 (1981) (Russ).
 1249. Shibaev, V. P., Moiseenko, V. M., Smolyanskii, A. L., and Plate, N. A., Crystalline and liquid-crystalline structure of polymers with biphenyl fragments in side branchings, *Vysokomol. Soedin. Ser. A* **23**, No. 9, 1969–1977 (1981) (Russ) (*P.A.* **85**: 21047).
 1250. Smith, G. W., Phase behavior of some condensed polycyclic aromatics, *Mol. Cryst. and Liquid Cryst. Lett.* **64**, No. 1, 15–17 (1980) (Eng).
 1251. Stalhandske, C., 1, 2-diaminobenzene, $\text{C}_6\text{H}_4(\text{NH}_2)_2$, *Cryst. Struct. Commun.* **10**, No. 3, 1081–1086 (1981) (Eng).
 1252. Thomas, M. M., and Drickamer, H. G., High pressure study of viscosity and

- temperature effects on tetracyanobenzene EDA complexes, *J. Chem. Phys.* **75**, No. 11, 5246–5249 (1981) (Eng) (*P.A.* **85**: 20113).
1253. Tretyakov, A. G., and Beloshapkin, V. V., On possibility of modulated structure creation in molecular crystals, *Fiz. Tverd. Tela* **23**, No. 5, 1529–1530 (1981) (Russ).
 1254. Valle, G., Busetti, V., and Galianzo, G., Dimethyl-stilbene, $C_{16}H_{16}$, *Cryst. Struct. Commun.* **10**, No. 3, 867–870 (1981) (Eng).
 1255. Van der Waal, B. W., Significance of calculated cluster conformations of benzene: comment on a publication by D. E. Williams, *Acta crystallogr.* **A37**, No. 5, 762–764 (1981) (Eng).
 1256. Vekilov, Yu. Kh., and Kimlat, L. Z., On the transition of rare-gas crystals into metallic state, *Dokl. Akad. Nauk, SSSR* **257**, No. 3, 590–591 (1981) (Russ).
 1257. Vertzimakha, Ya. I., Gorishny, M. P., Kurik, M. V., and Libera, L., The influence of the structure of the tetrathiotetracene films on their electrophysical properties, *Ukr. Fiz. Zh.* **26**, No. 10, 1704–1709 (1981) (Russ).
 1258. Wada, M., Sawada, A., and Ishibashi, Y., Soft modes associated with incommensurate phase transitions in biphenyl, *J. Phys. Soc. Jap.* **50**, No. 3, 737–738 (1981) (Eng).
 1259. Williams, D. E., Force-free and other models for the crystal structures of molecular chlorine and hexachlorobenzene, *Chem. Phys.* **55**, No. 2, 163–167 (1981) (Eng).
 1260. Yudovich, M. E., and Saidov, G. V., Dichroism of pentacene polycrystalline films and effect of substrates on crystallite orientation, *Opt. and Spektrosk.* **50**, No. 5, 916–921 (1981) (Russ).
 1261. Zhilich, A. G., Kiselev, A. A., and Smirnov, V. P., Symmetry group of non-rigid crystal, *Fiz. Tverd. Tela* **23**, No. 3, 808–814 (1981) (Russ).
 1262. Zorkii, P. M., and Kukina, T. N., Supersymmetry in tolane structural class, *Vestn. Moskov. Univ. Khim.* **22**, No. 2, 137–140 (1981) (Russ).

11. NEUTRON SPECTROSCOPY OF CRYSTALS

1263. Adamyan, V. M., and Mitler, A. L., Calculation of soliton contribution to cross-section of elastic neutron scattering by molecular chains, *Ukr. Fiz. Zh.* **26**, No. 2, 317–322 (1981) (Russ).
1264. Belushkin, A. V., Bokhenkov, E. L., Kolesnikov, A. I., Natkaniec, I., Rigini, R., and Sheka, E. F., External phonon spectrum of naphthalene crystal at 5 K, *Fiz. Tverd. Tela* **23**, No. 9, 2607–2613 (1981) (Russ) (*P.A.* **85**: 71596).
1265. Bielushkin, A. V., Natkaniec, I., Kolganov, V. K., and Sheka, E. F., Vibrational density of states of amorphous and crystalline liquid crystal substances, *J. Phys. Colloq.* **42**, No. C-6 34–36 (1981) (Eng) (*P.A.* **85**: 56141).
1266. Buchenau, U., Schober, H. R., and Wagner, R., Coherent neutron scattering from polycrystals, *J. Phys. Colloq.* **42**, No. C-6, 395–397 (1981) (Eng) (*P.A.* **85**: 56120).
1267. Chaplot, S. L., Pawley, G. S., Bokhenkov, E. L., Sheka, E. F., Dorner, B., Kalus, J., Jindal, V. K., and Natkaniec, I., Eigenvectors of low frequency internal phonons in crystalline anthracene- d_{10} , *Chem. Phys.* **57**, No. 3, 407–414 (1981) (Eng) (*P.A.* **84**: 77977).
1268. Clough, S., Horsewill, A. J., Heidemann, A., Neutron scattering study of methyl tunneling in pentamethylbenzene, *Chem. Phys. Lett.* **82**, No. 2, 264–266 (1981) (Eng).
1269. Danner, H. R., Kim, H., and Sharma, Y. P., Low frequency skeletal vibrations in solid *n*-alkyl bromides by neutron inelastic scattering: *n*-pentyl, *n*-hexyl,

- n*-heptyl and *n*-octyl bromides, *Spectrochim. acta* **37A**, No. 4, 219–223 (1981) (Eng).
1270. Dolganov, V. K., Kroo, N., Rosta, L., and Sheka, E. F., Structural and spectral studies of glassy MBBA, *Mol. Cryst. and Liquid Cryst. Lett.* **64**, No. 4, 115–120 (1980) (Eng).
 1271. Dorner, B., Bokhenkov, E. L., Sheka, E. F., Chaplot, S. L., Pawley, G. S., Kalus, J., Schmelzer, U., and Natkaniec, I., Phonon dispersion curves in the molecular crystals naphthalene and anthracene measured by inelastic neutron scattering, *J. Phys. Colloq.* **42**, No. C–6, 602–604 (1981) (Eng) (*P.A.* **85**: 50791).
 1272. Dorner, B., Chernyshov, A. A., Pushkarev, V. V., Rumyantsev, A. Yu., and Pynn, R., Phonons in cadmium at 80 K, *J. Phys. F: Met. Phys.* **11**, No. 2, 365–376 (1981) (Eng) (*P.A.* **84**: 42487).
 1273. Dubrovskii, I. M., and Krivoglaz, M. A., X-ray and thermal neutron scattering near the second order phase transition in crystals with dislocations, *Fiz. Tverd. Tela* **23**, No. 3, 762–773 (1981) (Russ).
 1274. Gaevskii, A. Yu., and Kaplan, I. G., About the possibility of electron excitation registration in process of neutron inelastic scattering in molecular liquid, *Pis'ma v Zh. Tekhn. Fiz.* **7**, No. 8, 500–502 (1981) (Russ).
 1275. Gaevskii, A. Yu., Kaplan, I. G., and Ruvinskii, M. A., Scattering of neutrons in molecular crystals with a high level of optical pumping of excitons, *Zh. Eksp. and Teor. Fiz.* **80**, No. 3, 1149–1162 (1981) (Russ) (*P.A.* **84**: 60311).
 1276. Griffin, A., and Jobic, H., Theory of the effective Debye-Waller factor in neutron scattering from high frequency molecular modes, *J. Chem. Phys.* **75**, No. 12, 5940–5943 (1981) (Eng).
 1277. Heidemann, A., Press, W., Lushington, K. J., and Morrison, J. A., Study of the tunneling rotations in phase II of solid CH₄ with high resolution neutron spectroscopy, *J. Chem. Phys.* **75**, No. 8, 4003–4009 (1981) (Eng).
 1278. Izyumov, Yu. A., Symmetry and critical neutron scattering in crystal, *Fiz. Tverd. Tela* **23**, No. 3, 796–802 (1981) (Russ).
 1279. Jobic, H., Ghosh, R. E., and Renouprez, A., The limited influence of the Debye-Waller factor on the intensities of high frequency molecular modes measured by neutron inelastic spectroscopy, *J. Chem. Phys.* **75**, No. 8, 4025–4030 (1981) (Eng) (*P.A.* **85**: 21262).
 1280. Krivoglaz, M. A., X-ray and thermal neutron scattering by imperfect quasi-two-dimensional crystals, *Fiz. Tverd. Tela* **23**, No. 9, 2720–2731 (1981) (Russ).
 1281. Levelut, A. M., Moussa, F., Doucet, J., Benattar, J. J., Lambert, M., and Dorner, B., Local order and lattice dynamics in the ordered phases of TBBA (terephthal-bis-butyl-aniline), *J. Phys.* **42**, No. 12, 1651–1663 (1981) (Eng) (*P.A.* **85**: 25724).
 1282. Lushington, K. J., Maki, K., Morrison, J. A., Heidemann, A., and Press, W., Tunneling states in phase III of solid partially deuterated methanes. Determination by inelastic neutron scattering and correlation with thermodynamic data, *J. Chem. Phys.* **75**, No. 8, 4010–4024 (1981) (Eng).
 1283. Merkle, L. D., Spain, I. L., and Powell, R. C., Effects of pressure on the spectra and lifetimes of Nd_xY_{1-x}P₅O₁₄ and ruby, *J. Phys. C: Solid State Phys.* **14**, No. 14, 2027–2038 (1981) (Eng).
 1284. Nicholson, L. K., The neutron spin-echo spectrometer: A new high resolution technique in neutron scattering, *Contemp. Phys.* **22**, No. 4, 451–475 (1981) (Eng).
 1285. Schmelzer, U., Bokhenkov, E. L., Dorner, B., Kalus, J., Mackenzie, G. A., Natkaniec, I., Pawley, G. S., and Sheka, E. F., Pressure dependence of phonon energies in d₈-naphthalene, *J. Phys. C: Solid State Phys.* **14** No. 7, 1025–1041 (1981) (Eng) (*P.A.* **84**: 47186).
 1286. Windsor, C. G., Damien, J. C., Lefebvre, J., and Richardson, R. M., The neutron scattering function *S*(*Q*, *ω*) from adamantane, *J. Phys. C: Solid State Phys.* **14**, No. 11, 1555–1567 (1981) (Eng) (*P.A.* **84**: 65004).

12. AUTHOR INDEX

- Aaron, J.-J., 511
 Abbott, G. D., 717
 Abramczyk, H., 851, 1167
 Abu-Eittah, R., 32
 Abu-Zeid, M. E., 1168
 Ackroyd, R., 508
 Adamyan, V. M., 1263
 Afanas'eva, N. I., 744
 Agarwal, M. L., 298, 337
 Agarwala, B. V., 692
 Ageev, L. A., 512, 513
 Agostini, G., 636
 Agranovich, V. M., 932, 996, 997, 998, 1065
 Ahlgren, D. C., 852, 1066, 1102
 Aihara, J.-i., 33
 Akhmanov, S. A., 1, 270
 Akimov, A. I., 514, 605, 609
 Akimov, A. V., 853, 881
 Akimov, I., 1115
 Akopyan, M. E., 624
 Aksnes, D. W., 64
 Alameddine, M. A., 224
 Al'bert, F. M., 693
 Albini, A., 637
 Albrecht, A. C., 364, 840
 Alcock, A. J., 539
 Aleksandrov, Yu. A., 2
 Aleksandrovskaya, N. G., 854, 862, 863
 Alexandrov, S. B., 1169
 Alfimov, M. V., 668
 Aliev, M. R., 271
 Allan, S. H., 34
 Allavena, M., 771
 Allen, G., 786
 Allgeier, J., 694, 792
 Allnatt, A. R., 995
 Altwegg, L., 1030
 Aminoff, C. G., 515
 Amirav, A., 35, 126, 127, 272, 273, 412, 413
 Ammon, H. L., 1176
 Amoureux, J. P., 1170, 1171
 Amouyal, E., 81
 Anastassakis, E., 933
 Ancian, B., 1172
 Andersen, H. C., 1093, 1114
 Anderson, A., 745
 Anderson, R. W., 349
 Andersson, K., 643
 Andersson, P., 1244
 Andrews, B., 745
 Andrews, J. R., 274, 746, 747, 846
 Andrews, L., 897
 Andritsopoulos, G., 89, 90, 134
 Angelelli, J. M., 190
 Anoshin, A. N., 191, 212, 213
 Antipin, M. Yu., 1215
 Antonov, V. S., 36
 Antsygina, T. N., 934, 1067
 Aono, S., 292
 Aoyagi, Y., 516
 Aoyama, T., 1218
 Arendt, P., 748, 1173
 Ar'ev, I. A., 128, 192
 Argyrakis, P., 855, 1068
 Aristov, A. V., 517
 Arkhangel'skii, V. V., 129
 Arnaud, B., 1170
 Arnaud, R., 518
 Arnold, S., 813, 1031
 Aronson, M., 1174
 Arora, A. K., 784
 Artemova, L. K., 130, 856
 Arya, K., 275
 Arzamanova, I. G., 276
 Asano, M., 350, 414
 Asbjørnsen, A. P., 309
 Asenbaum, A., 415
 Asimov, M. M., 519
 Aslangul, C., 793, 999
 Atovmian, L. O., 1199
 Auerbach, R. A., 251
 Augustin, S. D., 430
 Auweter, H., 734
 Avignon, T., 48
 Avouris, Ph., 37, 131, 277, 638
 Azarov, V. Yu., 351
 Azumi, T., 405, 411
 Baba, H., 477, 496, 507
 Bader, G., 1000, 1116
 Bagdanskis, N. I., 744
 Bakhshiev, N. G., 520, 620
 Balakin, A. A., 639
 Baldo, M., 38
 Ballhausen, C. J., 944
 Balode, D. R., 1153
 Baltera, S21
 Baluk, P., 857
 Bancewicz, T., 193
 Band, Y. B., 488, 640, 657
 Baradit, E., 151
 Baranov, A. V., 278
 Baranov, V. I., 194, 195

- Barbara, P. F., 455, 641
 Barbe, J., 55
 Barigelletti, F., 642
 Barker, J. R., 493
 Barr, I. A., 1175
 Basilevsky, M. V., 39
 Basov, Yu. G., 522
 Bassett, R. L., 603
 Bässler, H., 1069, 1117, 1137, 1151
 Bastiansen, O., 40
 Basting, D., 622
 Battaglia, M. R., 41
 Bauman, R. P., 985
 Bauman, W., 718
 Baumgartel, H., 73
 Baumgartner, R., 749
 Baxendale, J. H., 485
 Bazemlal, O., 532
 Bazyl', O. K., 523, 524
 Beauchamp, J. L., 688
 Beck, S. M., 196
 Becker, H.-D., 352, 353, 643
 Becker, R. A., 1246
 Beckmann, P., 1174
 Beddard, G. S., 354, 550
 Bee, M., 1170, 1171
 Behlen, F. M., 355, 416
 Bell, P. M., 1200
 Beloshapkin, V. V., 1253
 Belous, V. M., 356
 Belousov, M. V., 750
 Belov, A. G., 1042
 Belushkin, A. V., 751, 752, 935, 1264
 Benattar, J. J., 965, 1281
 Benderskii, V. A., 814
 Bendig, J., 132, 357
 Benoit, C., 953
 Ben-Shaul, A., 97, 98
 Berens, P. H., 197
 Berges, J., 42, 43, 88
 Berk, N. F., 794, 795, 1032, 1033, 1040
 Berkovic, G. E., 644, 719, 1103, 1104
 Berne, B. J., 946
 Bernhardt, A. F., 525
 Berns, R. M., 968
 Bernstein, E. R., 133
 Bernstein, J., 44
 Bernstein, R. B., 75
 Berry, S. D., 526
 Bertholon, G., 45
 Bertie, J. E., 753
 Bertucci, C., 645
 Besspalov, B. P., 1187
 Beswick, J. A., 297, 417
 Bettinetti, G. F., 637
 Beugelmans-Verrier, M., 681
 Bhatnagar, A. K., 108
 Bhattacharjee, S. K., 1176
 Bhattacharyya, S. K., 527
 Bhattacharyya, S. N., 648
 Bhowmik, B. B., 695, 696
 Bielushkin, A. V., 858, 972, 1265
 Biemond, J., 120
 Bigelow, R. W., 46
 Bilz, H., 936, 1001
 Bingel, W. A., 279
 Birke, R. L., 254
 Bischof, H., 718
 Biswas, S. C., 992
 Bizzaro, W., 794, 795, 1032, 1033
 Blaz, N. A., 285
 Blazevic, J., 280
 Blokhin, A. P., 358
 Blonskii, I. V., 1055
 Bobovich, Ya. S., 278
 Bobrov, A. V., 3
 Boczar, B. P., 366, 423
 Bogatyryova, I. K., 281
 Bogdanov, V. L., 359, 360, 859
 Boggs, J. E., 329, 1247
 Bogner, U., 528, 529, 860
 Boichuk, V. I., 1027
 Bojarski, C., 530
 Bokhenkov, E. L., 751, 761, 765, 782,
 935, 937, 938, 942, 986, 1264, 1267,
 1271, 1825
 Boldeskul, I. E., 47
 Bolotin, B. M., 1199
 Bolotko, L. M., 418
 Bolovinos, A., 89, 90, 134
 Bonadeo, H., 759, 941, 954, 1180
 Bonch-Bruevich, A. M., 198, 531
 Bondar, V. V., 796
 Bondybey, V. E., 375, 815
 Bonneau, R., 649
 Boquillon, J. P., 532
 Bor, Zs., 533
 Borisenko, V. E., 534
 Borisevich, N. A., 361, 418, 535
 Borod'ko, Yu. G., 800
 Borowski, K. J., 419
 Bortolus, P., 81
 Bottcher, C., 526
 Böttger, H., 1070
 Botvich, A. N., 981, 1248
 Bouas-Laurent, H., 655
 Bouchriha, H., 821, 1034
 Bouin-Roubaud, D., 48
 Bounds, D. G., 956
 Bounds, P. J., 939, 940, 1002
 Bouscasse, L., 48
 Braam, A. W. M., 1177

- Bramley, R., 216
 Brand, J., 861, 1043
 Braswell, E. H., 536
 Bratos, S., 4
 Brauchle, Chr., 166
 Bräuchle, Chr., 403
 Brauer, H.-D., 646
 Braun, A., 734
 Brazdil, J. F., 282
 Bree, A., 283, 816
 Brehat, F., 754
 Brenner, H. C., 179
 Brenner, K., 49
 Brikshtein, V. Kh., 814
 Britcher, A. R., 1178
 Brito Cruz, C. H., 537
 Britton, D., 1179
 Brivina, L. P., 110, 258, 396, 697, 755, 756, 843
 Bron, W. E., 757
 Brondijk, J. J., 120
 Brophy, J. H., 604
 Broude, V. L., 5
 Brouers, F., 1097
 Brumbaugh, D. V., 199, 220, 363, 420, 729
 Brunvoll, J., 284, 288
 Bubanec, J., 921
 Buchenau, U., 1266
 Buckingham, A. D., 41
 Bueno, W. A., 285
 Bugueno-Hoffman, R., 758
 Bukatin, A. F., 200, 286
 Bulsink, H., 92
 Bulska, H., 686
 Bunker, P. R., 6
 Burfoot, J. C., 7
 Burger, D., 849
 Burgos, E., 759, 941, 1180
 Burkhart, R. D., 684
 Burkstrand, J. M., 139, 205
 Burlakov, V. M., 744
 Burshtein, Z., 1118
 Burstein, E., 606
 Busetti, V., 1254
 Bush, T. E., 363
 Bushaw, B. A., 401
 Busse, R., 167, 720
 Bussemer, P., 1044, 1071
 Bussmann-Holder, A., 936
 Büttner, H., 936, 1001
 Bykov, A. D., 50
 Caballero, J. F., 647
 Cahen, C., 538
 Cairns, T., 54
 Callis, P. R., 364
 Cameron, D. G., 714, 925
 Cammenga, H. K., 1181
 Campbell, J. C., 51
 Capek, V., 1105
 Capellos, C., 421
 Cardona, M., 933
 Cardoso, A. C., 439
 Carius, W., 334
 Carlini, C., 645
 Carione, C., 760, 762
 Caron, L., 1000, 1116
 Cassard, P., 539
 Castelain, M., 1170
 Castella, M., 652
 Castellan, A., 655
 Castellucci, E., 365, 776
 Cataliotti, R., 319
 Cavatorta, F., 1219
 Cehak, A., 1119
 Chablo, A., 52
 Chabr, M., 817
 Chaikovsky, V. K., 523
 Chakraborty, S., 1186
 Chakravarty, S. C., 1088
 Chakraborty, H., 771
 Chalvet, O., 68
 Chandra, A. K., 464
 Chandra, B. P., 818, 819, 1182
 Chandrasekhar, J., 328
 Chanh, N. B., 1183
 Chaplot, S. L., 761, 765, 942, 943, 1184, 1185, 1267, 1271
 Chapuisat, X., 287
 Chatterjee, S., 1186
 Chattopadhyay, S., 696
 Chattopadhyay, S. P., 695
 Chattopadhyay, T., 762
 Chaudhuri, M. K., 1088
 Chekalyuk, A. M., 422
 Chekan, A. V., 542
 Chen, Y. C., 1072, 1092
 Chepilko, N. M., 1024
 Chepur, D. V., 783
 Cher, L., 2
 Cherkasov, A. S., 236
 Chernega, A. N., 146
 Chernomorets, M. P., 804, 1056
 Chernov, A. A., 1213
 Chernyak, V. Ya., 997
 Chernyshov, A. A., 1272
 Chetkina, L. A., 1187
 Chewter, L., 717, 721
 Chhor, K., 763
 Chiang, C., 1188
 Chibisov, A. K., 509

- Chigirev, A. R., 1087
 Chizhov, Yu., V., 624
 Choi, K.-J., 366, 398, 423
 Choi, P.-K., 424
 Chopra, M., 1189
 Chou, C.-C., 264
 Chouteau, J., 190
 Chow, M.-F., 684
 Chrisman, R. W., 318
 Chukanova, I. N., 854, 862, 863, 900
 Chursinova, L. V., 541
 Ciardelli, F., 645
 Ciliberto, E., 1139
 Cimiraglia, R., 864
 Claessen, V. W. M., 120
 Clar, E., 1120
 Clark, J. B., 540
 Cline Love, L. J., 407
 Clough, S., 1268
 Clyde, W. C., 118
 Collins, M. A., 1190
 Collins, M. P. S., 53
 Colombo, L., 280
 Colonna, F. P., 1121
 Compton, R. N., 1140
 Connors, R. E., 419
 Corkum, P. B., 539
 Corvaja, C., 706, 1036
 Costines, M., 1191
 Coulon, G., 1193
 Courtens, E., 971
 Coveleskie, R., 202
 Coveleskie, R. A., 201, 367
 Cox, P. A., 944
 Cox, S. R., 945
 Craig, D. P., 1045, 1190
 Crawford, M. K., 698
 Cruickshank, D. W. J., 52
 Cyvin, B. N., 284, 288, 289, 309
 Cyvin, S. J., 284, 288, 289, 309

 Da Silva, A. M., 425
 Dabu, G. H., 402
 Dagher, M., 224
 Dähne, S., 623
 Dalal, N. S., 710
 Damien, J. C., 1206, 1286
 Danchinov, K. M., 290, 291
 Dandoloff, R., 1192
 Danielius, R. V., 483, 680, 737
 Daniels, W. B., 789
 Danilova, V. I., 523, 524, 558
 Danner, H. R., 1269
 Darmanyan, S. A., 998
 Das, P. K., 648
 Dattagupta, S., 1061

 Daunt, S. J., 313
 Davidovich, M. A., 1084
 Davidson, E. R., 83
 Davidson, R. S., 649
 Davis, A., 426
 Davydov, S. V., 557
 Day, P., 944
 De Boer, E., 119
 De Bont, R., 571
 De Leon, N., 946
 Della Valle, R. G., 947
 Decola, P. L., 846
 Decoret, C., 45
 Dederen, J. C., 427
 Deflandre, A., 518
 Deguchi, K., 292
 Deimling, M., 797
 Delaire, J. A., 652
 Delgado-Barrio, G., 297
 Dellonte, S., 642
 De Martini, F., 537
 Demchenkov, V. P., 542
 Demchuk, Yu. S., 368
 Dement'ev, V. A., 11
 Dementjev, V. A., 937
 Demuth, J. E., 37, 131, 277, 638
 Demyashkevich, A. B., 490
 Denisov, L. K., 522, 541, 605, 609
 Deparasinska, I., 722
 Derbov, V. L., 200, 286
 Deryugin, L. N., 542
 De Schryver, F. C., 427, 652
 Descamps, M., 1193
 Deshpande, D. K., 135
 Desnoyers, J. E., 1222
 Despres, A., 650, 865
 Desvergne, J.-P., 655
 D'Hooge, L., 203
 Dianoux, A. J., 786
 Dick, B., 136, 137
 Dicker, A. I. M., 866
 Dickinson, C., 459
 Dietz, T. G., 431, 1123
 Dietzel, U., 183
 Di Lauro, C., 764
 Dilung, I. I., 727
 Di Marco, P. G., 1122
 Dinh-Cao, M., 463, 731
 Dinse, K.-P. (Dinse, K. P.), 168, 189, 797
 Distefano, G., 1121
 Dobkowski, J., 866
 Dobrokhotova, V. K., 854, 862, 863
 Dolganov, V. K., 752, 858, 867, 1265, 1270
 Dolgov, A. S., 948, 949

- Dolson, D. A., 202, 428
 Donati, D., 651, 1194
 Dorfmueller, Th., 143
 Dorner, B., 761, 765, 782, 942, 965,
 986, 1267, 1271, 1272, 1281, 1285
 Dorofeev, S. N., 543
 Dorokhin, A. V., 404
 Dote, J. L., 429
 Doucet, J., 965, 1281
 Doucet, J. P., 101
 Dougherty, E. P., Jr., 430
 Doust, T., 354
 Draeger, J. A., 1195
 Drago, R. S., 8
 Dransfeld, K., 1073
 Dresner, J., 623
 Drews, W., 646
 Drexhage, K. H., 615
 Drickamer, H. G., 386, 711, 742, 1252
 Drullinger, R. E., 544
 Druzhinin, A. A., 1074, 1075
 Dubey, S. N., 1231
 Dubois, J.-E., 1172
 Dubovskii, O. A., 932, 1065
 Dubrovkin, I. M., 138
 Dubrovskii, I. M., 1196, 1273
 Duignan, M. T., 394
 Duke, B. J., 53
 Dulcic, A., 545
 Dumetz, J., 766
 Dunbar, R. C., 462
 Duncan, M. A., 431, 1123
 Duncanson, J. A., Jr., 546
 Dupaix, A., 237, 238
 Duppen, K., 767, 868
 Durand, G., 287
 Durig, J. R., 266, 346
 Dyadyusha, G. G., 128
 Dynin, E. A., 472
 Dyumaev, K. M., 432
 Dzhidzhoev, M. S., 270
 Dzhurdzhinka, M., 693

 Economou, E. N., 1094
 Edelson, M., 283
 Eesley, G. L., 139, 204, 205
 Eggett, P., 527
 Egri, I., 1003
 Eisenthal, K. B., 63, 698
 Elbert, M., 760
 Eley, D. D., 1124
 El'kin, M. D., 206, 293, 294, 295
 Elliot, D. A., 879
 El-Sayed, M. A., 912
 Elyutin, P. V., 1074
 Engel, Y. M., 44

 Engelhardt, M., 749
 English, J. H., 815
 Englman, R., 433
 Enoki, T., 1125
 Erdevdi, N. M., 547
 Eremenko, A. M., 369
 Erenburg, A. I., 934
 Ericsson, A., 434
 Ermachenko, V. M., 548
 Ermakov, V. P., 1248
 Eshuis, A., 1177
 Esipov, S. E., 768
 Esteve, D., 1197
 Evans, F. E., 54
 Evans, G. J., 296, 370
 Evans, M. W., 296, 370
 Even, U., 35, 126, 127, 272, 273, 412
 Evseev, A. V., 548
 Evseev, I. V., 548
 Ewert, S., 1126
 Ewing, G. E., 435
 Excoffon, P., 769

 Fadeev, V. V., 422
 Faessler, A., 115
 Faidysh, A. N., 835, 893, 894, 895
 Fainberg, B. D., 207, 595, 617, 618
 Falenchuk, V. D., 1046
 Farafonov, V. G., 129
 Fasani, E., 637
 Faure, J., 68, 652
 Faure, R., 55
 Favaro, G., 653, 654
 Fave, J. L., 820, 821, 1034
 Fayer, M. D., 583, 736, 906, 908, 1093,
 1114
 Fedorov, V. A., 543
 Fedorov, V. P., 886
 Feil, D., 1229
 Feldmann, D., 465
 Felker, P. M., 461
 Fendt, A., 436, 437
 Fenkataraman, G., 784
 Ferber, S. D., 315
 Ferguson, A. I., 549
 Ferguson, J., 655
 Fernholt, L., 1198
 Ferrario, M., 296, 370
 Fetizon, M., 545
 Filipenko, O. S., 1199
 Filippini, G., 950, 951
 Filippov, P. G., 814
 Filippova, T. P., 327
 Finger, L. W., 1200
 Finkelberg, V. M., 472
 Fischer, A., 1201

- Fischer, E., 371
 Fischer, G., 140, 169, 208, 802
 Fischer, S. F., 209, 436, 437, 501, 1064
 Fitch, P. S. H., 438
 Flakus, H. T., 770
 Flamigni, L., 642
 Fleming, G. R., 470, 503, 550
 Fleury, G., 766
 Flynn, G., 489
 Flytzanis, C., 545
 Fogarasi, G., 329
 Foggi, P., 365
 Follner, H., 1202
 Fomin, G. V., 1053
 Fondere, F., 771
 Fong, C. Y., 959
 Fontana, M. P., 1219
 Formosinho, S. J., 425, 439
 Fournier de Violet, P., 649
 Fouassier, J. P., 669, 732
 Fox, D., 1004, 1160
 Fracassi, P. F., 947
 Francis, B. F., 753
 Frank, R., 656
 Frankevich, E. L., 832
 Frank-Kamenetskii, M. D., 228, 229
 Franks, L. A., 220
 Fraser, S. J., 952
 Freed, K. F., 626, 640, 657
 Freedman, P. A., 58, 709
 Freedman, T. B., 239, 317
 Freiman, Yu. A., 934
 Freund, H.-J., 46
 Friedrich, D. M., 141
 Friedrich, J., 123, 658, 659, 662, 861, 869, 928, 929, 1043
 Friesner, R., 723, 1047, 1076, 1077
 Fröhlich, H., 1001
 Fröhling, J. C., 718
 Fröhling, W., 170
 Fu, P. P., 54
 Fugol', I. Ya., 798, 822, 823, 826, 839, 1005, 1048
 Fuhr, P. L., 578
 Fuhrhop, J.-H., 740
 Fujara, F., 913
 Fujimura, Y., 142, 210, 372, 772
 Fujita, M., 507
 Fujiwara, Y., 71
 Fukuyama, T., 1133
 Fünfschilling, J., 817, 870, 871
 Furrer, R., 171
 Fuss, I., 56
 Fytas, G., 143
 Gabrys, B., 1203
 Gadonas, R. A., 483, 680, 737
 Gaevskii, A. Yu., 1006, 1274, 1275
 Gafni, A., 408
 Gaididei, Yu. B., 1106, 1161, 1162, 1204
 Gailis, A. K., 1153
 Gaisenok, V. A., 520
 Galianzo, G., 1254
 Gallier, J., 1205
 Galtier, M., 953
 Galuza, A. I., 57, 799
 Galy, A.-M., 55
 Galy, J.-P., 55
 Gamba, Z., 954
 Gambaro, A., 636
 Gangola, P., 724
 Gardini, E., 81
 Garg, R. K., 660
 Garland, C. W., 1206
 Garoff, S., 504, 551
 Gastilovich, E. A., 191, 211, 212, 213, 399
 Gauglitz, G., 656
 Gavrilenko, V. N., 519
 Gavva, S. P., 206, 295
 Geacintov, N. E., 552
 Gelbart, W. M., 297, 342
 Gennari, G., 636
 Georgiev, G. M., 422
 Gersten, J. I., 504
 Ghosh, R. E., 775, 957, 1279
 Giacometti, G., 636
 Gil, V. M. S., 78
 Gildwarg, P., 538
 Gillbro, T., 440, 621
 Gillies, R., 824
 Ginzburg, V. L., 773
 Girin, O. P., 520
 Giro, G., 1122
 Glagolev, V. L., 172
 Glinski, J., 825
 Gochanour, C. R., 583
 Godlewski, J., 1127
 Goel, R. K., 144, 298, 299, 336, 337
 Goethals, G., 300
 Goimann, E., 145
 Goncalves da Silva, C. E. T., 1084
 Goncharuk, V. V., 146
 Goodman, C. H. L., 10
 Goodman, L., 147, 148, 249
 Goodman, M. F., 495
 Gorban', K. N., 1078
 Gorchev, V. F., 146
 Gorelik, M. V., 191, 258, 755, 843
 Gorelov, B. M., 800
 Gorishny, M. P., 1257
 Görner, H., 173, 174
 Gorobchenko, V. S., 553, 872
 Gorobei, N. N., 214

- Gorokhovskii, A. A., 873
 Goryaev, M. A., 554
 Govindanunny, T., 555
 Goyal, M. L., 103
 Grabowska, A., 661, 673
 Grabowska, E., 530
 Grabowski, Z. R., 455
 Graham, D. J., 836
 Gramaccioli, C. M., 950, 951
 Gramila, T. J., 504
 Grandberg, I. I., 541
 Graneß, A., 572
 Granfors, P. R., 1207
 Grant, P., 252
 Grassi, A., 38
 Grattan, K. T. V., 556
 Grebenshchikov, D. M., 920
 Grebenyuk, A. G., 146
 Grethen, H., 634
 Gribenyuk, E. E., 1208
 Gribov, L. A., 11, 194, 195, 215, 301, 302, 320
 Griessner, H. J., 216
 Griffin, A., 955, 1276
 Griffiths, A. M., 58, 709
 Grigorashchenko, O. N., 798, 826
 Grigoriev, V. I., 1107
 Grundfelt-Forsius, C., 312
 Grunwald, E., 149, 394
 Gruzinskii, V. V., 557, 558
 Gryczynski, I., 441
 Guarini, G. G. T., 651, 1194
 Guella, G., 706, 1036
 Guerra Perez, J. M., 613
 Guiliano, M., 190
 Guillory, W. A., 180
 Gumbs, G., 1007
 Gundermann, K.-D., 59
 Gupta, S. K., 144, 298, 299
 Gurinovich, G. P., 442
 Gursky, S. Yu., 534
 Gurvich, Ya. A., 276
 Guryanova, E. N., 276
 Gustav, K., 111
 Güsten, H., 373, 443
 Guthmann, C., 820, 821, 1034
 Gutierrez, A. R., 662
 Gutsche, E., 444
 Gutsze, A., 694, 792
 Gyl'maliev, A. M., 60
 Ha, T.-K., 61
 Haarer, D., 658, 659, 662, 801, 869, 1008, 1128
 Haas, E., 1104
 Hack, W., 374
 Hadni, A., 754
 Haget, Y., 1183
 Hagler, A. T., 44
 Halac, E., 759, 941, 1180
 Haley, L. V., 714, 925
 Halperin, A. M., 445
 Hama, Y., 453
 Hamanoue, K., 725
 Hamed, M. M., 32
 Hamilton, T. D. S., 89, 901, 902
 Hammond, G. S., 381
 Hanamura, E., 1052
 Hangyo, M., 812
 Hanson, C. D., 504, 551
 Hanson, D. M., 124, 805, 806
 Harada, Y., 1142, 1143
 Harris, S. J., 559
 Hartl, R. A., 184
 Hassing, S., 217
 Hatano, M., 113
 Hatano, Y., 726
 Havel, H. A., 315
 Hayes, J. M., 874
 Haynam, C. A., 438, 729
 Hays, T. R., 699
 Hazen, R. M., 1200
 Heaven, M., 375
 Heidemann, A., 774, 1209, 1224, 1268, 1277, 1282
 Heilbronner, E., 1130
 Heithier, H., 1201
 Heldt, J., 560
 Heldt, J. R., 560
 Helfrich, W., 12
 Hemley, R. J., 153
 Hemminger, J. C., 264
 Henke, W., 699
 Henneker, W. H., 218
 Heppke, G., 12
 Hering, P., 62
 Herkstroeter, W. G., 175
 Hermann, J., 628
 Hesp, B. M. M., 767
 Hesselink, W. H., 875, 1049, 1079
 Hetherington, W. M., 111, 63
 Heumann, E., 150
 Hewat, A. W., 1241
 Hidaka, T., 725
 Higashigaki, Y., 303
 Higuchi, F., 561, 562
 Hilal, R., 32
 Hill, I. R., 304
 Hillier, I. H., 51
 Hilti, B., 1129
 Hinchliffe, A., 52, 956, 1080, 1210
 Hippler, H., 446, 447
 Hirayama, S., 448
 Hirooka, T., 1133

- Hirose, C., 449
 Hirth, A., 563
 Hishikawa, Y., 812
 Hizhnjakov, V., 219
 Hizhnyakov, V. V., 1050
 Ho, F., 450
 Hochheimer, H. D., 760
 Hochstrasser, R. M., 274, 450, 746, 747, 846
 Hohlneicher, G., 136, 137
 Hohlwein, D., 1211
 Holak, T. A., 64
 Holtzclaw, K. W., 451
 Holzwarth, A. R., 452
 Honegger, E., 1130
 Honner, W., 377
 Hopkins, J. B., 65, 196
 Hoppilliard, Y., 545
 Hörmann, M., 679
 Horsewill, A. J., 1268
 Hoshino, M., 453
 Hota, N. K., 760
 Hsu, L.-Y., 945
 Hu, P., 964
 Huang, K., 454
 Huang, M.-J., 122
 Huang, T.-H., 66
 Huber, D. L., 1108
 Huber, J. R., 186
 Huber, R. A., 184
 Hudson, B., 269
 Hüffer, W., 622
 Human, H. J., 1212
 Huppert, D., 455
 Hutchison, C. A., Jr., 67, 876, 1081
 Huvenne, J. P., 766
 Ichimura, S., 265
 Iemura, M., 807, 1013, 1166
 Ignatova, V. A., 534
 Ikehara, K., 453
 Imamura, M., 453, 674
 Inglesfield, J. E., 1017
 Ingold, C. F., 714, 925
 Innes, K. K., 199, 220, 362, 420
 Inokuchi, H., 1125
 Ioannidou, A., 90
 Ipatova, I. P., 214
 Iqbal, Z., 781
 Isenberg, I. A., 1213
 Ishibashi, Y., 788, 1214, 1258
 Ishida, Y., 564
 Itagi, S., 565
 Itagi, V. V., 565
 Ito, C., 591
 Ito, M., 158, 384
 Ito, O., 663
 Ivan, G., 693
 Ivanov, Yu. P., 980, 1215, 1235, 1236
 Ivanova, E. P., 1163
 Ivanova, S. Yu., 93
 Izyumov, Yu. A., 1278
 Jäckle, J., 877
 Jackson, B., 1051
 Jacobs, S. M., 753
 Jacques, P., 68, 669, 732
 Jaffe, H. H., 48, 68
 Jain, K. M., 176, 376
 Jain, M. K., 570
 Jaiswal, R. M. P., 144
 Jameson, A. K., 456, 457
 Janecka-Styrcz, K., 829, 879
 Jaruga, Z., 1167
 Jayaraman, A., 762
 Jegou, J. P., 538
 Jetten, L. A. M. J., 1212
 Jindal, V. K., 761, 942, 1267
 Jobic, H., 775, 955, 957, 1276, 1279
 Jones, A. C., 458, 664, 665, 850, 878, 879
 Jones, D., 1121
 Jones, L. H., 880, 991, 1095
 Jordan, A. D., 802
 Jortner, J., 35, 126, 127, 272, 273, 335, 412, 417
 Joshi, G. C., 108
 Joshi, M., 221
 Joshi, N. B., 724
 Joshi, U. C., 221, 305
 Joussot-Dubien, J., 649, 666
 Jung, C., 857
 Kaarli, R., 566, 567
 Kabanov, V. V., 568
 Kabza, H., 403
 Kaiser, W., 436, 437, 614
 Kaivola, M., 515
 Kakitani, T., 486
 Kalanov, T. Z., 14
 Kalas, M., 857
 Kalinowski, J., 825, 1152
 Kalus, J., 761, 765, 782, 942, 986, 1267, 1271, 1285
 Kaminishi, K., 569
 Kamlet, M. J., 459
 Kansal, K. P., 336
 Kanzaki, H., 1062
 Kapinus, E. I., 727
 Kaplan, I. G., 1006, 1274, 1275
 Kaplunov, M. G., 800
 Kaplyanskii, A. A., 853, 881

- Kapoor, R. C., 570
 Kapp, I., 145, 150
 Karaki, I., 675
 Karl, N., 1131, 1216, 1217
 Karpov, V. V., 608
 Kasatani, K., 390
 Kataev, V. E., 69
 Kato, R., 812
 Kawakubo, T., 882, 883, 884
 Kawasaki, A., 441
 Kawasaki, M., 390
 Kawenoki, I., 700
 Kawski, A., 132, 857
 Kaya, K., 158, 384
 Kazakovtsev, D. V., 958
 Keiderling, T. A., 306, 307
 Keita, B., 700
 Kelm, J., 667
 Kempka, U., 111
 Kemple, M. D., 67, 876, 1081
 Kenkre, V. M., 1009, 1109, 1110, 1111,
 1134, 1146, 1164
 Keskinova, E. N., 222
 Kessler, R. W., 177, 377
 Ketsle, G. A., 378, 460, 728
 Khabibullaev, P. K., 14
 Khallyak, Zh., 151
 Kharakhash'yan, E. G., 885
 Khlebnikov, S. Y., 885
 Kholodnykh, A. I., 270
 Khotyaintsev, V. N., 1025
 Khromova, V. V., 198
 Khutornaya, L. A., 830, 833
 Kielich, S., 193
 Kiguchi, M., 611
 Kihara, T., 1218
 Kikas, Ya. V., 873
 Kikuchi, K., 379
 Kikuchi, M., 379
 Kim, H., 1269
 Kim, S. K., 308
 Kimball, J. C., 959
 Kimlat, L. Z., 1256
 Kimura, M., 125
 Kimura, S., 576
 Kind, V. V., 886
 Kink, R., 827
 Kinnear, S., 1124
 Kinoshita, S., 576
 Kinoshita, Y., 576
 Kira, A., 674
 Kircheva, P. P., 222
 Kirichenko, A. P., 57, 799
 Kirov, N., 1219
 Kirste, B., 887
 Kiselev, A. A., 1261
 Kitaigorodsky, A. I., 980, 1235, 1236
 Kivits, P., 571
 Klæboe, P., 309
 Klafter, J., 1082
 Klapper, H., 1246
 Klasinc, L., 1147, 1148, 1149
 Kleimenov, V. I., 624
 Klein, J., 1132
 Klein, M. L., 956, 960, 961, 984
 Kleinert, P., 1070
 Kleinschmidt, J., 572
 Klemm, D., 572
 Klemm, E., 572
 Klimashina, A. G., 543
 Klimenko, V. G., 130, 213
 Klimusheva, G. V., 128, 931, 1101
 Klochkov, V. P., 223, 359, 360, 859
 Klöpffer, W., 828
 Knoll, W., 1201
 Knop, J. V., 1147, 1148, 1149
 Knox, W., 349
 Kobayashi, H., 102
 Kobayashi, S., 829
 Kobeissi, H., 224
 Kobs, K., 670
 Koda, T., 712, 713, 924, 1028
 Kohler, B. E., 888, 889, 890, 891, 1083
 Koiller, B., 1084
 Kojima, K., 1220
 Kokai, F., 405
 Kokubun, H., 379
 Kolesnikov, A. I., 751, 935, 937, 938,
 1264
 Kolesnikov, V. A., 1153
 Kolokolov, B. N., 259, 260, 261
 Kolubayev, T., 552
 Kommandeur, J., 499
 Kompa, K. L., 62, 98
 Konarski, J., 310
 Kondakova, V. P., 497
 Kondo, S., 311
 Kondow, T., 1133
 Kondratenko, P. A., 830
 König, R., 573, 590
 Koningstein, J. A., 225, 350, 414
 Kono, H., 210, 372
 Konschin, H., 312
 Kopainsky, B., 614
 Kopelman, R., 852, 855, 1066, 1068,
 1102
 Köppel, H., 209
 Koptuyug, V. A., 15, 16
 Kopylova, T. N., 523, 524, 558
 Korenowski, G. M., 63
 Korkoshko, I. V., 624
 Korkushko, A. O., 1024

- Koroteev, N. I., 1
 Korppi-Tommola, J., 313
 Korshunov, A. V., 886
 Kosevich, A. M., 17
 Kossanyi, J., 700
 Kosugi, N., 70
 Koswig, H. D., 748, 1173
 Kotov, A. A., 404
 Kottis, P., 793, 999
 Kouri, D. J., 640
 Kovalenko, S. I., 962
 Kovner, M. A., 200, 286
 Kovrigin, A. I., 270
 Kowalewski, J., 434
 Koyava, V. T., 574
 Kozankiewicz, B., 701, 831
 Kozlov, N. A., 543
 Krainyukova, N. V., 962
 Krajnovich, D. J., 625, 685, 743
 Kranitzky, W., 152
 Krasnyanskii, G. E., 787, 993
 Krasovskaya, G. G., 327
 Krauss, R., 849
 Kravtsov, V. E., 996
 Kray, H.-J., 178
 Kredentser, E. I., 293
 Kress, W., 936
 Kreutter, N. M., 683
 Kreysig, D., 132
 Krivenko, T. A., 18, 937, 938
 Krivoglaz, M. A., 1196, 1273, 1280
 Krochuk, A. S., 803
 Krogh-Jespersen, K., 249
 Kronfeldt, H.-D., 634
 Kroo, N., 867, 1270
 Kruglenko, V. P., 635
 Krutovskaya, I. V., 608
 Krysanov, S. A., 668
 Krzystek, J., 701, 831
 Kubinyi, M., 776
 Kubota, H., 1133
 Kuchitsu, K., 1133, 1142, 1143
 Kudo, K., 575
 Kühne, R., 1134, 1146
 Kukhtarev, N. V., 1010
 Kukhto, A. V., 557
 Kukina, T. N., 1262
 Kulagin, S. A., 1085
 Kuleshova, L. N., 1221
 Kurata, N., 671
 Kurik, M. V., 796, 1112, 1257
 Kurmey, N. D., 931, 1101
 Kuroda, H., 70
 Kuroda, Y., 71
 Kushida, T., 576
 Kutsherov, A. P., 47
 Kuwajima, S., 72
 Kuzmin, V. A., 552
 Kuznetsov, V. A., 577
 Kuznetsov, V. I., 270
 Kwiecien, J. Z., 1206
 Kwiram, A. L., 83, 181
 Kwok, H. S., 625, 685, 743
 Lai, T.-i., 380
 Lalov, I. Y., 963
 Lambert, M., 965, 1281
 Lambert, Wm. R., 461
 Lambin, Ph., 1097
 Lamotte, M., 666
 Lang, G., 518
 Lang, J., 463, 731
 Lange, A., 73
 Langel, W., 374
 Langridge-Smith, P. R. R., 729
 Lantsov, A. M., 541
 Lara, J., 1222
 Larkins, F. P., 56
 Lary, J., 536
 Lattanzi, F., 764
 Lau, A., 226
 Laukemper, J., 465
 Lawandy, N. M., 578
 Lax, M., 964
 Lazzeretti, P., 74
 Lebedev, V. V., 579
 Lebedeva, E. P., 432
 Lee, H. W. H., 736, 906, 908
 Lee, J., 133
 Lee, W. S., 256
 Lee, Y. C., 1011
 Lee, Y. T., 625, 685, 743
 Lefebvre, J., 1286
 Lehner, H., 452
 Lejeune, V., 650, 865
 Lemaire, J., 518
 Lengfellner, H., 777
 Lenz, K., 226
 Leopold, D. G., 153
 Lesin, V. I., 832, 1165
 Leskova, T. A., 996
 Letokhov, V. S., 36, 314
 Leung, C. H., 1022
 Leung, R. C., 1206
 Lev, N. B., 462
 Levanyuk, A. P., 773
 Levelut, A. M., 965, 1281
 Levesque, D., 960, 961
 Levine, R. D., 104
 Levinsky, H. B., 179
 Levinson, I. B., 768, 958
 Levshin, L. V., 378, 460, 514, 580, 728, 730, 738
 Levy, D. H., 438, 729

- Levy, M. R., 687
 Li Guangxiao, 631
 Lianos, P., 463, 731
 Libera, L., 1257
 Lichtin, D. A., 75
 Lilge, D., 143
 Lim, B. T., 464
 Lim, E. C., 380, 456, 457, 464
 Lin, H.-B., 398
 Lin, S. H., 142, 210, 372
 Lin, T.-S., 919
 Lipp, E. D., 154, 155
 Lishan, D. G., 381
 Lisitsa, M. P., 966, 967
 Lisovenko, V. A., 833, 1208
 Lisy, J. M., 625, 685, 743
 Liu, K. C., 1011
 Liverman, M. G., 431
 Lockwood, D. J., 252
 Loda, R. T., 888, 889, 890, 891, 1083
 Logunov, O. A., 522, 581, 635
 Logvinenko, R. M., 276
 Lohberger, C., 59
 Lohman, J. A. B., 92
 Lohmus, A., 827
 Loisel, J., 325
 Loktev, V. M., 1204
 Lombardi, J. R., 254
 Long, S. A. T., 76
 Loo, B. H., 227
 Lopez, J. R., 1168
 Lorriaux, J. L., 237, 238
 Louer, D., 1183
 Loughnot, D. J., 669, 732
 Loutfy, R. O., 582
 Lovtsyus, V. A., 1135, 1159
 Lowe-Ma, C., 1223
 Loy, B. R., 318
 Lozenko, G. F., 320
 Lubman, D. M., 77
 Lucazeau, G., 763
 Ludmer, Z., 644, 719, 1103, 1104
 Lukashin, A. V., 228, 229
 Lukin, L. V., 639, 1136
 Lund, P. A., 106
 Lushington, K. J., 774, 1209, 1224, 1277, 1282
 Luty, T., 968
 Lutz, D. R., 583
 Lyman, J. L., 465
 Lyovshin, L. V., 389
 Lysikov, Yu. T., 466, 467
 Maaswinkel, A. G. M., 62
 McCaffrey, R. R., 702
 McCarthy, I. E., 56
 McClure, D. S., 240
 Maciel, G. E., 78
 McDonald, D. B., 230, 355, 382, 468, 469, 470
 McDonald, I. R., 956
 McGowan, J. Wm., 19
 Machwe, M. K., 391
 McIntyre, G. J., 1184, 1185
 Mackenzie, G. A., 782, 986, 1285
 Mackey, H. J., 540
 Maclean, C., 92
 MacNamee, R. W., 266, 346
 Macrander, A. T., 1207
 Madzgalla, I., 231
 Maeda, Y., 733
 Mahamoud, A., 55
 Maier, G. V., 523, 524
 Maier, J. P., 471
 Maier, V. G., 558
 Majumdar, D. K., 94
 Makarov, A. A., 314
 Makarova, E. G., 236
 Makarova, V. S., 18
 Makhlinets, N. V., 192
 Maki, K., 984, 1224, 1282
 Makitra, R. G., 348
 Makogonenko, A. G., 584
 Makshantsev, B. I., 472
 Maksic, Z. B., 79
 Maksimov, A. A., 834
 Makushkin, Yu. S., 50
 Malhotra, K., 660
 Malinowska-Adamska, C., 1225
 Mal'shukov, A. G., 232
 Mamchenko, T. B., 165
 Mandel, L., 569
 Mangir, M., 687
 Mao, H. K., 1200
 Mar, A., 473
 Maradudin, A. A., 1012
 Marafi, M. A., 1168
 Marconi, G., 233, 234, 235, 406
 Marcott, C., 315
 Marechal, Y., 769
 Markov, V. N., 270
 Marsh, P., 1226
 Marteau, Ph., 771
 Martin, P., 1132
 Martin, R. L., 80
 Martin-Bouyer, M., 809
 Marty, A., 474
 Maruyama, Y., 1137
 Masetti, F., 653
 Masilamani, V., 585
 Maslov, V. G., 383, 703
 Masri, P., 969
 Masuhara, H., 733
 Mataga, N., 671, 675, 733, 735

- Mataloni, P., 537, 586
 Mathur, M. S., 778
 Matsuda, M., 663, 690
 Matsui, A., 807, 1013, 1166
 Matsuoka, O., 1218
 Matthews, G. P., 1175
 Matveev, V. D., 129
 Matyushin, G. A., 432
 Mavroyannis, C., 587, 1007
 Mayer, C. W., 1129
 Mayer, G., 1227
 Mayer, U., 734
 Mazumdar, S., 704, 1138
 Mazurenko, Yu. T., 236
 Mchedlov-Petrosyan, N. O., 588
 Meath, W. J., 995
 Medhi, K. C., 156, 316
 Medina, J. A., 791
 Meech, S. R., 354
 Megya, A., 693
 Meinnel, J., 785
 Meisner, R., 373, 443
 Meister, T. G., 165
 Melishchuk, M. V., 589, 892
 Melman, P., 1145
 Mel'nichenko, V. Ya., 321
 Mel'nik, V. I., 835, 893, 894, 895
 Mel'nikov, G. V., 378, 460, 728
 Memming, R., 670
 Memory, J. D., 76
 Menu, C., 203
 Meresse, A., 1183
 Merkel, P. B., 175
 Merkle, L. D., 1283
 Merlin, J. C., 237, 238
 Meyer, R., 563
 Michard, F., 970
 Michaud, M., 253
 Michel, K. H., 971
 Michl, J., 87, 330
 Miertus, S., 864
 Mierzejewski, A., 1184, 1185
 Migirdicyan, E., 650, 865
 Migita, M., 671
 Miguel, M. G., 439
 Mikhailov, V. M., 271
 Mikhailov, Yu. T., 672
 Mikhailova, K. V., 211
 Millar, D. P., 896, 1113
 Mille, G., 190
 Millefiori, A., 157, 1139
 Millefiori, S., 157, 1139
 Miller, J. C., 1140
 Miller, J. H., 897
 Miller, T. A., 375, 815
 Miloslavsky, I. N., 512
 Minaev, B. F., 460, 728
 Minato, T., 125
 Minchinton, A., 56
 Miniewicz, A., 705, 905, 1141, 1144
 Minoli, G., 637
 Mironov, G. S., 327
 Mirumyants, S. O., 368
 Mishra, V. N., 570
 Misra, M., 918, 1156
 Misra, T. N., 176, 376, 922, 923
 Misra, Y., 918, 1156
 Misumi, S., 671, 733, 735
 Mitchell, M. B., 180
 Mitler, A. L., 1263
 Mitra, P., 836
 Miyashita, T., 690
 Miyazaki, H., 1052
 Mnuskin, V. E., 543
 Möbius, K., 170
 Mochizuki, Y., 384
 Modelli, A., 1121
 Mohwald, H., 1201
 Moiseenko, V. M., 1249
 Molenkamp, L. W., 868
 Monti, S., 81
 Moore, D. R., 779
 Mootz, D., 1228
 Mordzinski, A., 673
 Morgan, J. R., 912
 Morgante, C. G., 182, 479, 678
 Moriizumi, T., 575
 Morita, T., 113
 Morrison, J. A., 774, 930, 1209, 1224, 1277, 1282
 Morse, M. D., 657
 Morsink, J. B. W., 837, 868, 898, 1086
 Mortensen, O. S., 82
 Mory, S., 573, 590
 Moscovitz, A., 315
 Moss, G., 1229
 Motten, A. G., 83, 181
 Moussa, F., 965, 1281
 Mühle, W., 849
 Muldakhmetov, Z. M., 3
 Mullner, M., 415
 Munakata, T., 1142, 1143
 Munn, R. W., 52, 939, 940, 1105, 1210
 Murakami, J.-i., 158
 Murdoch, J. R., 1230
 Murphy, W. F., 714, 925
 Muto, J., 561, 562
 Muto, S., 591
 Muzikante, I. Ya., 1153
 Myasnikov, E. N., 1053

- Naboikin, Yu. V., 553, 592, 838, 862,
 863, 872, 899, 900, 927
 Nadjio, L., 101, 300, 700
 Nafie, L. A., 239, 317
 Naganuma, K., 564
 Naiman, M. I., 276
 Najbar, J., 901, 902
 Nakajima, T., 210, 372
 Nakajo, Y., 733
 Nakamura, A., 564
 Nakamura, H., 475
 Nakayama, T., 725, 903, 904
 Namba, S., 516
 Narayanamurti, V., 964
 Narva, D. L., 240
 Nath, J., 1231
 Natkaniec, I., 751, 752, 761, 765, 782,
 858, 935, 942, 972, 989, 1264, 1265,
 1267, 1271, 1285
 Naudts, J., 780
 Nauts, A., 287
 Navon, G., 413
 Neb, D. K., 988
 Needham, C., 593
 Neerland, G., 288
 Negishi, K., 424
 Neisius, D., 84
 Nelipovich, K. I., 835, 893, 894, 895
 Nelson, J. B., 778
 Nelson, K. A., 583
 Nemkovich, N. A., 476, 594
 Neporent, B. S., 584, 595, 617, 618
 Neusser, H. J., 250
 Newton, K. R., 75
 Nguyen-Tan, T., 326
 Nicholas, J. V., 241
 Nicholls, R. W., 242
 Nicholson, L. K., 1284
 Nickel, B., 178
 Nickolov, Zh. S., 422
 Nicovich, J. M., 683
 Nikitchenko, V. M., 522
 Nikolaev, E. N., 1165
 Ninomiya, K., 164
 Nishijima, Y., 726
 Nishikawa, K., 292
 Nishimura, H., 1013, 1166
 Nishitani, S., 671
 Nitsovich, B. M., 1046, 1054, 1055
 Nitsovich, M. V., 1027
 Nizhegorodov, N. I., 151
 Noe, L. J., 811
 Nogami, K., 663
 Nosaka, Y., 674
 Novosadov, B. K., 194
 Nowak, R., 705, 905, 1141, 1144
 Nurmukhametov, R. N., 351
 Nyquist, R. A., 318
 Obriot, J., 771
 O'Connor, D. V., 717, 721
 Odaka, T., 675
 Odekerken, J. G. M., 1212
 Oehme, K.-L., 334
 Oelkrug, D., 377
 Ogasahara, K., 1232
 Ogilvie, J. F., 676
 Ogurtsova, L. A., 553, 872, 899
 Ohba, Y., 393, 841
 Ohno, K., 1142, 1143
 Ohta, N., 477
 Okada, T., 671, 735
 Okajima, S., 457, 464
 Olson, R. W., 736, 906, 908
 Onipko, A. I., 1161
 Opitz, J., 186
 Orbach, R., 749
 Orlandi, G., 233, 234, 406, 478, 642
 Orlov, V. Yu., 1075
 Osad'ko, I. S., 1085, 1087
 Osipov, A. I., 14
 Osman, A.-M., 596
 Ostapenko, N. I., 804, 1056
 Otto, A., 246
 Ovander, L. N., 973, 1014, 1233
 Overend, J., 315
 Owens, F. J., 781
 Ozaki, M., 379
 Paerschke, H., 231
 Page, J. B., 344
 Pak, K., 677
 Pakula, B., 686
 Palewska, K., 907
 Paliani, G., 319
 Palit, N. B., 1088
 Palm, V. V., 873
 Palmieri, P., 233, 406
 Panchenko, V. Ya., 14
 Pande, V. S., 340
 Pankratov, A. A., 85
 Pant, D. D., 724
 Pantos, E., 89, 90, 134
 Park, J. M., 1035
 Park, S.-M., 402
 Parmenter, C. S., 201, 202, 367, 428
 Partalla, N. A., 99, 333
 Pashkevich, Yu. G., 973, 1014
 Pasimeni, L., 706, 1036
 Pasternak, R., 86

- Pastur, L. A., 1067
 Paszyc, S., 441
 Patalakha, N. S., 541
 Patel, J. S., 805, 806
 Patterson, F. G., 736, 906, 908
 Pavlopoulos, T. G., 597, 598
 Pavlovich, V. S., 392, 574
 Pavlyuchko, A. I., 320
 Pawar, B. H., 565
 Pawley, G. S., 761, 765, 782, 942, 974, 986, 1184, 1185, 1234, 1241, 1267, 1271, 1285
 Pawlikowski, M., 243
 Pazdry, O. M., 803
 Pedersen, P. B., 87
 Pekar, S. I., 1015
 Pekcan, O., 1089, 1090
 Pelon, J., 538
 Penzkofer, A., 629
 Pepin, D., 545
 Perchi, Z. I., 599
 Perekalina, Z. B., 601
 Perelygin, I. S., 321
 Peretti, P., 909
 Perevalov, V. I., 322
 Pereyre, J., 666
 Perrin, B., 975, 976
 Perrin, H., 42, 43, 88
 Perrin, M., 45
 Perron, G., 1222
 Perry, J. W., 323
 Pershin, V. K., 977, 978, 979
 Pershin, V. K., 977, 978, 979
 Personov, R. I., 385
 Persson, B. N. J., 244
 Pertsin, A. I., 1236
 Pertsin, A. J., 980, 1215, 1235
 Pestryakov, G. M., 1055, 1057, 1237
 Petelenz, P., 707, 708, 1002, 1037, 1038
 Petrachenko, N. E., 624
 Petrick, H.-J., 1181
 Petrikov, V. D., 750
 Petrov, V. I., 245, 324
 Petrov, V. V., 1135, 1159
 Petrus', A. A., 542
 Pfeiffer, M., 226
 Philis, J., 89, 90, 134
 Phillips, D., 354, 717, 721
 Pick, R. M., 4
 Pies, W., 1191, 1238
 Pietra, S., 637
 Pietrzycki, W., 91
 Pilling, M. J., 426
 Pilz, W., 748, 1173
 Pinan-Lucarre, J. P., 325, 326
 Pineault, R. L., 182, 479, 678
 Pirig, Ya. N., 348
 Piscovoi, V. N., 1015
 Piskarskas, A., 483, 737
 Pitserskaya, I. V., 620
 Plail, B., 860
 Plakhtinsky, V. V., 327
 Plantenga, T. M., 92
 Plate, N. A., 1249
 Platonenko, V. T., 270, 480
 Platonova, N. V., 93
 Pleshakov, V. G., 151
 Plicque, F., 970
 Pliska, S. P., 361
 Plyasulya, V. M., 579
 Pockrand, I., 246
 Podoprigora, V. G., 981, 1248
 Pokhodnya, K. I., 800
 Pokrovskaya, F. S., 553, 872
 Polavarapu, P. L., 328
 Polevoi, A. V., 1075
 Politis, T. G., 386
 Poltoratskii, Yu. B., 839
 Polushkin, V. G., 321
 Pomazan, Yu. V., 172
 Pominov, I. S., 332
 Ponomarev, V. I., 1199
 Ponte Goncalves, A. M., 824
 Popadinets, Yu. Yu., 547
 Popechits, V. I., 574
 Popov, A. F., 293, 294
 Popov, K. R., 93
 Port, H., 910, 911, 1039, 1091, 1217
 Porteneuve, J., 538
 Porto, S. P. S., 985
 Potapov, S. K., 200, 286
 Povstyanoi, M. V., 635
 Powell, R. C., 1283
 Powers, D. E., 65, 196
 Prandl, W., 1239
 Prasad, C. R., 600
 Prasad, K. N., 1240
 Prasad, M., 481
 Prasad, P. N., 702, 912
 Prasad, S. M., 1241
 Prass, B., 913
 Pratt, D. W., 168, 499
 Premaswarup, D., 331
 Preobrazhensky, N. G., 159
 Press, W., 774, 1209, 1224, 1277, 1282
 Prishchepov, A. S., 601
 Pristupa, A. I., 832
 Priyutov, M. V., 247
 Prochorow, J., 623, 701, 722, 831
 Prock, A., 1145
 Prokofieva, N. I., 215
 Prostakov, N. S., 151

- Pruski, M., 602
 Pucci, R., 38
 Pulay, P., 329
 Pullman, B., 27
 Purkait, A. R., 94
 Pushkarev, V. V., 1272
 Pynn, R., 1272

 Quickenden, T. I., 603

 Rabitz, H., 430
 Radeaglia, R., 95
 Radomski, R., 1205
 Radziszewski, J. G., 330
 Rae, A. I. M., 1241
 Raichenok, T. F., 418
 Raitt, I., 709
 Rajendraprasad, S. B., 982
 Ramamurthy, V., 982
 Ramdas, A. K., 779
 Rand, S. D., 455
 Rangacharyulu, M., 331
 Ranson, P., 909
 Rao, K. R., 943
 Rashba, E. I., 5, 1016
 Rashev, S., 387
 Rashev, S. S., 248, 482
 Rasmussen, P., 525
 Rasovsky, M. R., 301, 302
 Rastogi, R. P., 1242
 Ratajczak, H., 1219
 Ratner, A. M., 798, 983
 Rau, H., 679
 Rava, R. P., 147, 148, 249
 Ravishankara, A. R., 683
 Razumova, T. K., 531
 Rebane, A., 566, 567
 Rebane, L. A., 873, 914, 915, 1058
 Rebane, T. K., 96
 Rebane, V. N., 96
 Rebentrost, F., 97, 98
 Reber, J. F., 619
 Reddoch, A. H., 710, 1035
 Reich, P., 748, 1173
 Reid, C. J., 296, 370
 Reimers, J. R., 208
 Reimschuessel, W., 851, 1167
 Reineker, P., 716, 1041, 1134, 1146
 Reiser, D., 152
 Reklat, A., 334
 Remizov, A. B., 332
 Rench, S., 145
 Renk, K. F., 749, 777
 Renouprez, A., 775, 957, 1279
 Rentsch, S., 150
 Rentsch, S. K., 483, 680, 737

 Rentzepis, P. M., 455
 Rerat, B., 1243
 Rerat, C., 1243
 Rettner, C. T., 604
 Reva, M. G., 580, 605, 730, 738
 Rhodes, W., 593
 Rice, S. A., 230, 355, 382, 416, 468, 469, 470, 484
 Richardson, R. M., 1286
 Rieckhoff, K. E., 66
 Riedle, E., 250
 Righini, R., 956, 984
 Rigini, R., 751, 935, 1264
 Rihs, G., 1129
 Ripmeester, J. A., 710
 Ritchie, G., 606
 Robbins, R. J., 896, 1113
 Roberston, J. M., 1120
 Robertson, G. N., 508
 Robinson, D. W., 578
 Robinson, G. W., 251
 Rodder, H. D., 183
 Rodgers, M. A. J., 485, 607
 Rodionov, A. N., 99, 290, 291, 608
 Rodionova, G. N., 99, 333, 608
 Roduner, E., 916
 Roebber, J. L., 153
 Rogan, J., 1017
 Rohitashava, 341
 Romagnoli, M., 537
 Romanovsky, Yu. V., 388
 Romm, I. P., 276
 Romming, C., 1198
 Rosenbergerova, A., 345
 Rosenfeld, A., 590
 Rosenthal, J., 794, 795, 1032, 1033, 1040
 Rosini, C., 645
 Röska, G., 528
 Ross, B., 1174
 Ross, I. G., 140, 208, 802
 Ross, R. C., 1244
 Rosta, L., 867, 1270
 Rousseau, D. L., 985
 Rousset, Y., 909
 Rowe, E. M., 106
 Rowe, J. E., 267
 Rowell, N. L., 252
 Roy, R., 569
 Royer, J., 681
 Rozman, M., 219
 Rubanov, A. S., 568
 Rubeko, L. M., 609
 Rubinov, A. N., 163, 476, 519, 594
 Rudakoff, G., 334
 Rudovskaya, K. A., 130

- Rullmann, J. A. C., 837
 Rumyantsev, A. Yu., 1272
 Rund, D., 911, 1039, 1091
 Rupasov, V. I., 997, 998
 Ruscic, B., 1147, 1148, 1149
 Russell, B. R., 540
 Ruvinskii, M. A., 1006, 1018, 1275
 Ruziewicz, Z., 49
 Ryabukhina, N. S., 327
 Ryan, T. G., 930
 Ryl'kov, V. V., 624, 672
 Ryzhikov, B. D., 160, 389, 580, 730, 738
 Rzanny, R., 334

 Sado, A., 292
 Saechnikov, V. A., 502
 Saeki, S., 311
 Sage, M. L., 335
 Sah, R. E., 610
 Sahni, V. C., 943
 Saidov, G. V., 1260
 Saigusa, H., 411
 Saikan, S., 611
 Saito, M., 113
 Sakata, Y., 671, 733, 735
 Sakun, V. P., 1165
 Salamon, Z., 612
 Saletskii, A. M., 514
 Salman, S. R., 100
 Salokhiddinov, K. I., 442
 Salvadori, P., 645
 Salvi, P. R., 365
 Samanta, C., 992
 Samartsev, V. V., 592, 838
 Samdal, S., 1198
 Samoc, M., 705, 905, 1141, 1144, 1158, 1245
 Samson, S., 1223
 Sanche, L., 253, 1000, 1116
 Sanchez, L. A., 254
 Sanchez Gomez, M., 613
 Sandros, K., 352, 353, 643
 Sanquer, M., 785
 Santos, M. J. M., 285
 Sanyal, N. K., 336, 337
 Sarai, A., 486
 Sarkar, S. B., 992
 Sarti-Fantoni, P., 651, 1194
 Sarzhovsky, A. M., 502, 520, 574
 Sataric, M., 1019
 Sato, H., 390
 Sato, K., 632
 Saunders, V. R., 51
 Sauvajol, J. L., 1171
 Savchenko, E. V., 798, 826

 Savransky, L. I., 146
 Sawada, A., 788, 1258
 Scaiano, J. C., 487
 Schaefer, T., 100
 Scharf, B., 162, 488
 Schatz, P. N., 106
 Scheckenburger, H., 910
 Scheer, H., 658
 Scheffen-Lauenroth, Th., 1246
 Scher, H., 1150
 Scherer, P., 614
 Schetter, K., 563
 Schlag, E. W., 250, 699
 Schlögl, R., 1120
 Schmelzer, U., 765, 782, 986, 1271, 1285
 Schmid, D., 734
 Schmid, E. D., 255
 Schmid, U., 716, 1041
 Schmidt, H., 183
 Schmidt, J., 188, 410, 500, 848, 926
 Schmidt, R., 646
 Schmidt, W., 1120
 Schnering, H. G. v., 762
 Schober, H. R., 1266
 Schott, M., 820, 821, 1034
 Schroder, D., 73
 Schröder, U., 936
 Schrof, W., 1217
 Schroter, O., 334
 Schubert, V., 447
 Schuh, M. D., 451
 Schulman, J. M., 256
 Schulte-Frohlinde, D., 173, 174
 Schultz, N. L., 141
 Schulze, F. W., 1181
 Schwartz, R. N., 429
 Schwarz, R., 529
 Schwoerer, M., 184
 Scott, A. C., 1059
 Scott, D. W., 1195
 Scott, G. W., 363
 Scott, T. W., 364, 840
 Sears, T., 375
 Sebastian, L., 1151
 Sebastian, R., 100
 Sedelnikov, A. I., 159
 Segawa, Y., 516
 Seguin, J. P., 101
 Sei, J., 611
 Seiff, F., 913
 Seilmeier, A., 152
 Seki, H., 161
 Sekino, H., 102
 Selg, M., 827
 Selinger, B. K., 739
 Seliskar, C. J., 154, 155

- Sellers, H., 1247
 Selzle, H. L., 699
 Semenets, T. I., 1010
 Sen, R. K., 992
 Senatorov, P. K., 160, 389
 Senatorova, N. R., 389
 Sender, V. R., 601
 Sens, R., 615
 Seo, K., 772
 Sepioł, J., 686
 Sepulveda, L., 449
 Sethuraman, V., 355
 Severson, M., 78
 Shabanov, V. F., 981, 1248
 Shah, R. C., 683
 Shalaev, V. K., 558
 Shalavina, T. I., 130
 Shamah, I., 489
 Shamolina, I. I., 93
 Shamovskii, I. A., 814
 Shamshev, V. N., 172
 Shank, C. V., 267
 Shapovalov, V. L., 490
 Sharapov, E. I., 2
 Sharma, A., 391
 Sharma, B. K., 987
 Sharma, K. K., 103
 Sharma, S. D., 336
 Sharma, S. N., 298, 336
 Sharma, Y. P., 1269
 Shashidbar, M. A., 135
 Shchanov, M. F., 392
 Shcheglova, N. A., 110, 396
 Shchekochikhin, Yu. M., 129
 Sheibut, Yu. E., 592, 838
 Sheinkman, M. K., 800
 Sheka, E. F., 5, 751, 752, 761, 765, 782, 858, 867, 935, 937, 938, 942, 986, 1264, 1265, 1267, 1270, 1271, 1285
 Shen, Y. R., 625, 685, 743, 959
 Sheng, S. J., 903, 904
 Sherman, A. V., 1050
 Sherman, W. F., 791
 Sherstyuk, A. I., 96
 Shestakov, N. P., 981
 Shevandin, V. S., 517
 Shibaev, V. P., 1249
 Shibanov, A. N., 36
 Shigenari, T., 262
 Shigorin, D. N., 110, 191, 211, 213, 258, 259, 260, 261, 290, 291, 396, 399, 697, 755, 756, 843
 Shilov, V. B., 595, 617, 618
 Shimura, H., 393, 841
 Shiraishi, J., 772
 Shirley, R., 1183
 Shizuka, H., 682
 Shklyarevsky, I. N., 512
 Short, R., 569
 Shouteenten, M. L., 1170
 Shpak, M. T., 589, 616, 804, 830, 833, 892, 893, 895, 1056, 1208
 Shtyagina, L. M., 93
 Shurvell, H. F., 313
 Shvarts, K. K., 30
 Shyldkrot, H., 162
 Sibbett, W., 491
 Sidhu, K. S., 660
 Siebrand, W., 218, 257, 478, 492, 707, 1002
 Siegmund, M., 357
 Signerski, R., 1152
 Silberstein, J., 104
 Silbey, R., 505, 723, 1047, 1051, 1076, 1077, 1082, 1099
 Sild, O. I., 915
 Silinsh, E. A., 917, 1153
 Simmons, R. O., 1207
 Simon, D. L., 204
 Simonetta, M., 114, 951
 Sinai, J. J., 1072, 1092
 Singh, D. P., 1242
 Singh, I. D., 989
 Singh, J., 1020, 1045, 1060, 1154, 1155
 Singh, N., 1242
 Singh, N. B., 1189, 1242
 Singh, R. A., 105
 Singh, R. K., 988
 Singh, R. N., 221, 305, 338
 Singh, S. K., 338
 Singh, U. C., 715
 Sinha, N. P., 918, 1156
 Sivaram, B. M., 555, 585
 Skalozub, A. S., 339
 Skelton, B. W., 352, 353
 Skettrup, T., 1021
 Skibinski, A., 612
 Skinner, J. L., 1093, 1114
 Skowrya, T., 441
 Skrilec, M., 407
 Slivka, V. Yu., 783
 Sloop, D. J., 919
 Slyusarev, V. A., 934, 1067
 Small, G. J., 874
 Smalley, R. E., 65, 196, 431, 1123
 Smirl, A. L., 540
 Smirnov, V. P., 1261
 Smirnova, T. N., 616
 Smishko, E. V., 803
 Smith, E. B., 1175
 Smith, G. P., 493
 Smith, G. R., 180

- Smith, G. W., 1250
 Smith, J. P., 185
 Smith, V. H., Jr., 708, 1038
 Smolyanskii, A. L., 1249
 Snyder, P. A., 106
 Snyder, R., 842, 845
 Sobolewski, A., 494
 Sobyenin, A. A., 773
 Soldatenkov, A. T., 151
 Solodunov, V. V., 920
 Song, K. S., 1022
 Sonnich Mortensen, O., 217
 Sood, A. K., 784, 1061
 Soos, Z. G., 704, 1138
 Sopkova, A., 921
 Sorai, M., 1232
 Sorensen, G. K., 551
 Soroka, G. M., 128, 931, 1101
 Soukoulis, C. M., 1094
 Sourisseau, C., 763
 Spain, I. L., 1283
 Spartakov, A. A., 107
 Speiser, S., 394
 Spicer, C. J., 1210
 Spiro, A. G., 595, 617, 618
 Srinivasan, M., 555
 Srivastava, S. L., 340, 341
 Srivastava, S. P., 108, 989
 Stacey, F. D., 990
 Stafast, H., 186
 Stalhandske, C., 1251
 Stalmakhovich, S. I., 580
 Stannard, P. R., 342
 Startsev, A. V., 522, 581, 635
 Staryi, V. P., 727
 Stechkina, I. B., 351
 Steele, D., 304, 313
 Stefanovich, V. A., 783
 Stehlik, D., 694, 792, 913
 Steiger, R., 619
 Steinberg, I. Z., 408
 Steinberg, N., 408
 Stel'makh, G. F., 395
 Stepanenko, V. M., 839
 Stepanov, Yu. A., 584
 Stephens, R. B., 551
 Steudle, W., 716, 1041
 Stoilov, Yu. Yu., 522, 581, 635
 Stolz, H. J., 760
 Ston, M., 109
 Stone, B. M., 202, 428
 Stone, J., 495
 Stout, R. P., 874
 Strange, J. H., 1178, 1205
 Strauss, K., 667
 Streitwieser, A., Jr., 1230
 Strizhevskii, S. V., 1023
 Strizhevskii, V. L., 1024
 Strokach, N. S., 110, 258, 259, 260, 261, 396, 697, 755, 756, 843
 Struchkov, Yu. T., 1215
 Struve, W. S., 182, 455, 479, 546, 678
 Studenov, V. I., 620
 Subashiev, A. V., 214
 Subbaratnam, N. R., 715
 Sucharda, Sobczyk, A., 91
 Sudhindra, B. S., 740
 Suemoto, T., 1062
 Suga, H., 1232
 Sugakov, V. I., 804, 1025, 1056, 1078, 1096
 Suhnel, J., 111
 Sukhareva, N. A., 480
 Sukhov, F. F., 1075
 Sullivan, N. S., 1197
 Sumi, A., 1026
 Sumi, H., 1063, 1157
 Sundström, V., 440, 621
 Suryanarayana Rao, K., 135
 Sushida, K., 496
 Susse, K.-E. (Susse, K. E.), 231, 397
 Suter, G., 49
 Suter, G. W., 409
 Suzuki, S., 786
 Svendsen, E. N., 82
 Sverdlov, L. M., 206, 293, 294, 295
 Svishchev, V. N., 1042
 Sveshnikova, E. B., 497
 Swalen, J. D., 869
 Swanson, B. I., 880, 991, 1095
 Sworakowski, J., 705, 905, 1141, 1144
 Szczepanski, J., 560
 Szentpaly, L. V., 112
 Szostak, M. M., 785
 Tabisz, G. C., 778
 Taft, R. W., 459
 Tajiri, A., 113
 Takagahara, T., 844
 Takagi, K., 424
 Takagi, Y., 262
 Takahashi, Y., 847
 Takase, K., 113
 Takeuchi, H., 682, 786
 Talapatra, G. B., 922, 923
 Talapatra, S. K., 992
 Taliani, C., 816
 Tan, S. L., 1174
 Tanabe, K., 343

- Tanaka, I., 576, 682
 Tanaka, J., 475
 Tanaka, Y., 741
 Tang, C. L., 545
 Tanielian, C., 498
 Tantardini, G. F., 114
 Tarasova, E. I., 822, 823, 1005, 1048
 Tartakovskii, I. I., 834
 Tatemitsu, H., 733
 Taubert, A., 1044, 1071
 Tauschek, H., 860
 Tavan, P., 73
 Taylor, G. W., 7
 Taylor, J. R., 491
 Taylor, R. S., 539
 Tegeler, E., 115
 Teichler, H., 263
 Teitelbaum, G. B., 885
 Tekippe, V. J., 779
 Telle, H., 622
 Ter Horst, G., 499
 Teranishi, H., 725
 Terent'ev, V. A., 116
 Testa, A. C., 117, 677, 842, 845
 Teuchner, K., 623
 Thakur, S. N., 105
 Thiele, E., 495
 Thirunamachandran, T., 816
 Thomas, E. W., 237, 238
 Thomas, L., 527
 Thomas, M. M., 711, 742, 1252
 Thommen, F., 471
 Thompson, R. L., 683
 Thozet, A., 45
 Thulstrup, E. W., 87
 Thurnauer, M. C., 171
 Tiffon, B., 1172
 Tikhonov, E. A., 589, 616, 892
 Timoshenko, M. M., 624
 Timosheva, A. P., 69
 Tindell, A. R., 1175
 Tindle, J., 304
 Titova, S. P., 191
 Tiunov, Yu. A., 854, 900, 927
 Tkach, N. V., 1027
 Tokareva, A. N., 543
 Tokmakov, G. P., 541
 Tokura, Y., 712, 713, 924, 1028
 Toledano, J. C., 779
 Tolkachev, V. A., 358, 361
 Tolmachev, A. V., 639, 1136
 Tolstobrov, V. I., 356
 Tolstoi, N. A., 107
 Tolstorozhev, G. B., 535
 Tomasello, P., 38
 Tomashevsky, Yu. B., 293
 Tomasi, J., 864
 Tomasik, P., 91
 Tomin, V. I., 163, 476, 594
 Tomioka, K., 807
 Tomita, K., 733
 Tonks, D. L., 344
 Topp, M. R., 366, 398, 423
 Topsom, R. D., 255
 Tovbin, Yu. K., 276
 Tovstenko, V. I., 1029
 Tramer, A., 625, 685, 743
 Tretyakov, A. G., 1253
 Tribel', V., 145, 150
 Trifunac, A. D., 185
 Tripathi, L. N., 918, 1156
 Troc, J., 446, 447
 Trofimov, A. S., 1162
 Trommsdorff, H. P., 274, 846, 868
 Trout, J., 450
 Tsaune, A. Ya., 339
 Tsay, W.-S., 450
 Tsekeris, P., 134
 Tsekvava, B. E., 1015
 Tskhai, K. V., 213, 399
 Tsutsumi, K., 682
 Tsvirko, M. P., 395
 Tsyashchenko, Yu. P., 787, 993
 Tuchin, Yu. G., 608
 Tuchkevich, V. M., 30
 Tuckett, R. P., 400
 Tully, F. P., 683
 Turek, A. M., 901, 902
 Turro, N. J., 684
 Tylli, H., 312
 Tyu, N. S., 973, 1014, 1233
 Tyuterev, Vl. G., 322
 Uchida, K., 847
 Udachin, Yu. M., 541
 Udagawa, M., 264
 Udal'tsov, V. S., 236
 Ueba, H., 265
 Uhl, S., 377
 Ulenikov, O. N., 50
 Umadevi, V., 784
 Umemura, J., 714, 925
 Underwood, G. R., 118
 Ushioda, S., 264
 Ustinov, V. A., 327
 Ustynyuk, Yu. A., 31
 Usui, Y., 379
 Uzan, R., 101, 300
 Uzhinov, B. M., 605, 609

- Vaida, V., 153
 Vakhrusheva, N. N., 332
 Valkunas, L., 1096
 Valle, G., 1254
 Van Alsten, J., 141
 Van Gerven, L., 1203
 Van Noort, H. M., 410, 500, 848, 926
 Van Pelt, J. F. J. M., 120
 Van Strien, A. J., 188
 Van Stryland, E. W., 540
 Van 't Hof, C. A., 410, 500, 848, 926
 Van Velzen, P. N. T., 121
 Van der Auweraer, M., 427
 Van der Auweraert, P., 652
 Van der Avoird, A., 968
 Van der Eerden, J. P., 1212
 Van der Hart, W. J., 121
 Van der Merwe, P. du T., 994
 Van der Rest, J., 1097
 Van der Veen, J., 571
 Van der Valden, G. P. M., 119
 Van der Waal, B. M., 1255
 Van der Waals, J. H., 188
 Vartanyan, T. A., 198
 Vaughn, C. B., 815
 Vavra, J., 345
 Veeman, W. S., 119
 Velikov, Yu. Kh., 1256
 Velsko, S., 503
 Venkateshan, S. P., 600
 Venuvanalasingam, P., 715
 Venzl, G., 501, 1064
 Verbitskii, S. S., 808
 Vereshchagin, A. N., 69
 Vergoten, G., 766
 Verhaegen, G., 84
 Vernon, M. F., 625, 685, 743
 Vertzimakha, Ya. I., 1257
 Vial, M., 809
 Viallet, P., 474
 Vieth, H. M., 694, 792
 Vigo, J., 474
 Vigoureux, J. M., 203
 Villaeys, A. A., 626
 Vincent, E.-J., 55
 Vincent-Geisse, J., 325
 Vinogradov, E. A., 744
 Vitukhnovskii, A. G., 808
 Vogel, W., 397
 Vogler, H., 187
 Voigt, E. M., 66
 Voitlander, J., 166
 Voitleder, J., 403
 Vol, E. D., 927
 Völker, S., 866
 Vollmann, W., 1098
 Voltz, R., 1132
 Von Borcyskowski, C., 188
 Von Büna, G., 506
 Von Schütz, J. U., 716, 849, 1041
 Voropai, E. S., 502, 520
 Vos, A., 1177
 Vranchev, D., 627
 Vrbancich, J., 233, 406
 Vujicic, G., 1019
 Vulfson, S. G., 69
 Vysloukh, V. A., 808
 Vysochansky, Yu. M., 783
 Wackerle, G., 189, 797
 Wada, M., 788, 1258
 Wagner, R., 1266
 Wagniere, G., 86
 Wakayama, N. I., 810
 Waldeck, D., 503, 550
 Waldmeyer, J., 552
 Walker, J. K., 1145
 Walker, W. C., 741
 Wallis, R. F., 1012
 Walmsley, S. H., 947
 Walters, M. A., 141
 Waluk, J., 686
 Wang, C. H., 143, 303
 Wang, C. S., 789
 Wang, Y., 698
 Wang Naiguang, 631
 Ward, J., 511
 Wasiutynski, T., 968, 972
 Watanabe, K., 995
 Watkins, A. R., 739
 Watson, G. H., Jr., 789
 Watson, T. A., 687
 Weagley, R. J., 46
 Webb, J. B., 1158
 Webster, F., 122
 Weidner, F., 628
 Weigmann, H.-J., 226
 Weigold, E., 56
 Weinberg, N. N., 39
 Weiner, A. M., 559
 Weinzierl, G., 123, 861, 928, 929, 1043
 Weis, J.-J., 960, 961
 Weiser, G., 1151
 Weiss, A., 1191, 1238
 Weissman, S. I., 919
 Weitz, D. A., 504
 Welford, D., 491
 Welge, K. H., 465

- Welsch, D. G., 397
Welsch, D.-G., 231
Wendelken, H. J., 446, 447
Wendler, J., 452
Wertheimer, R., 505, 1099
Westby, M. J., 426
Whitaker, T. J., 401
White, A. H., 352, 353
White, M. A., 930
White, S. R., 197
Whitten, W. B., 813, 1031
Wiech, G., 115
Wiedmann, J., 629
Wiersma, D. A., 767, 790, 837, 868, 875, 898, 1049, 1079, 1086
Wight, C. A., 688
Wild, U. P., 49, 117, 409, 817
Wilkinson, F., 177
Wilkinson, G. R., 791
Williams, D. E., 945, 1226, 1259
Williams, D. F., 714, 870, 925, 1158, 1245
Williams, J. H., 41
Williams, J. O., 458, 664, 665, 829, 850, 878, 879, 1245
Williams, R., 1223
Willis, M. R., 1124
Wilson, H. W., 266, 346
Wilson, J. R., 402
Wilson, K. R., 197
Windsor, C. G., 1286
Wine, P. H., 683
Winefordner, J. D., 511
Winkler, I. C., 124
Winkler, R., 634
Winnik, M. A., 473, 952
Winscom, C. J., 170
Wirnitzer, B., 410, 500, 848, 926
Wittig, C., 647, 687
Wojdac, L. F., 811
Wolf, A., 1147, 1148, 1149
Wolf, H. C., 716, 734, 849, 910, 911, 1039, 1041, 1091
Wolfbeis, O. S., 630
Wolff, C., 498
Wolff, T., 506, 689
Wolfrum, H., 659, 662
Wolfsberg, M., 122
Wong, Y. M., 1110
Wood, T. H., 267
Wryzykowska, K., 445
Wu, C. H., 1150
Wu Chengjiu, 631
Wu, S.-Y., 1072, 1092
Wu, S. Y., 1100
Wussow, H.-G., 1228
Wyncke, B., 754
Xu Ling, 631
Yajima, T., 564
Yakovlev, B. S., 639, 1136
Yamabe, S., 125
Yamada, H., 268
Yamaguchi, H., 164
Yamaguchi, Y., 690
Yamamoto, M., 726
Yamanaka, H., 812
Yamauchi, S., 411
Yamazaki, I., 496, 507
Yang, S. K., 54
Yankovskaya, L. B., 835, 893, 894, 895
Yaremko, A. M., 966, 967
Yarmus, L., 794, 795, 1032, 1033, 1040
Yarovaya, R. G., 512
Yarwood, J., 508
Yashiro, M., 632
Yeager, E. B., 282
Yee, W. A., 381
Yencha, A. J., 1133
Yoganarasimha, A., 600
Yoshi, M., 305
Youssef, M. S. K., 596
Yu, H.-L., 919
Yudovich, M. E., 1260
Yurtaeva, E. M., 1042
Yuzhakov, V. I., 514
Zachariasse, K. A., 167, 720
Zagainova, L. I., 931, 1101
Zagrubskii, A. A., 1135, 1159
Zaitsev, N. M., 347
Zakharova, G. V., 509
Zakula, R., 1019
Zana, R., 463, 731
Zanasi, R., 74
Zander, M., 59
Zavodnik, V. E., 1187
Zboinski, Z., 1119
Zeiri, L., 719
Zelikina, G. Ya., 165
Zenin, A. G., 885
Zerbo, M. A., 1139
Zewail, A. H., 323, 461, 633, 691, 896, 1113
Zeyher, R., 275, 1192
Zgierski, M. Z., 218, 257, 492

- | | |
|----------------------------------|--|
| Zhang, G. W., 634 | Zinevich, E. M., 547 |
| Zhdanov, B. V., 270 | Zink, J. I., 819 |
| Zheludev, N. I., 270 | Zitter, M. S., 118 |
| Zheng, Z.-b., 1100 | Zorkii, P. M., 1221, 1262 |
| Zhevandrov, N. D., 808 | Zou, G., 1200 |
| Zhilich, A. G., 1261 | Zschokke-Gränacher, I., 817, 870, 871,
1030 |
| Zhizhin, G. N., 744 | Zuev, V. S., 522, 635 |
| Zhukovskii, V. Ya., 348 | Zurauskiene, E., 510 |
| Zhulin, V. M., 39 | Zvolinskii, V. P., 151 |
| Zickendraht-Wendelstadt, B., 658 | Zwemer, D. A., 267 |
| Ziegler, L. D., 269 | |