

## Subject Index

Page numbers in italics indicate abstracts from the IXth International Conference on Photochemistry.

- Absorption**  
multiple photon, the collision induced increase of in polyatomic molecules, 177
- Absorption spectra**  
and luminescence of aromatic amines, effects of hydrogen bonding intermolecular interactions on, 529
- Acridine**  
photoionization mechanism of in aqueous solution studied by laser excitation, 249
- Adsorption**  
a reflectance study of the photoexcitation of stilbene adsorbed on alumina, 33
- Alkanes**  
and alkyl radicals, kinetics of the gas phase reaction of  $\text{NH}_2$  radicals with, 110  
quenching of  $\text{SO}_2$  ( $^3B_1$ ) by, 101
- $\alpha$ -Alkylarylcyclopropanes**  
conformational relaxation in excited charge-transfer complexes of, 214
- Alkylbenzenes**  
triplet, orientation and distance requirements for energy transfer between and biacetyl and *cis*-piperylene vapours, 243
- Alumina**  
a reflectance study of the photoexcitation of stilbene adsorbed on, 33
- Amines**  
aromatic, effects of hydrogen bonding intermolecular interactions on the absorption of in a matrix at 77 K, 529  
aromatic, excited state  $pK_a^*$  values of by dynamic analyses, 334  
simple saturated, photophysics of, 260
- Aminocarboxyanthraquinones**  
possible emission from an upper triplet state of, 559
- Amino radical**  
kinetics of the gas phase reactions of  $\text{NH}_2$  radicals with alkanes and alkyl radicals, 110
- Ammonia**  
infrared multiple photon dissociation of  $\text{CH}_3\text{NH}_2$  and  $\text{NH}_3$ , 197  
saturation of the  $a(6,0)$  transition in the  $\nu_2$  band of  $\text{NH}_3$  by irradiation with a TEA  $\text{CO}_2$  laser, 200
- Anthraquinone dyes**  
possible emission from an upper triplet state of, 559
- Argon**  
the interaction of 1216 Å photons and of excited argon atoms with  $\text{CH}_3\text{CN}$ , 329
- Aromatic carbonyl compounds**  
the quenching of the triplet states of by triethylamine: solvent effects on correlations with the function  $\{^3\Delta E_{0,0} + E(A^-/A)\}$ , 11
- Aromatics**  
formation of complexes of with exciplexes, 539  
photochemical reactions of in solid solution, 274  
photoexcited, interaction of with trifluoroacetic acid, 287
- Atmosphere**  
recent advances in the chemical kinetics of and effects on chemical pollution estimates, 317
- Atmospheric photochemical systems**  
construction of Surrogate CHEMical MEchanisms (SCHEMEs) for, 104
- Atmospheric photochemistry**  
analysis of at northern latitudes, 121
- Azoxybenzene**  
photorearrangement of to 2-hydroxyazobenzene — a flash photolysis study, 216
- Benzene**  
intramolecular exciplex formation between and some olefinic compounds, 338  
and toluene in argon matrices, fluorescence and phosphorescence excitation spectra of, 300
- 3,4-Benzpyrenes**  
flash spectroscopic investigations of

- the triplet states and the photochemically generated radical cations of in aqueous sodium dodecylsulphate and caffeine solutions, 43
- Biacetyl**  
modulated excited IR (MEIR) spectroscopy of in ethylbenzene, 140  
and *cis*-piperylene, orientation and distance requirements for energy transfer between triplet alkylbenzenes and vapours of, 243  
quenching of triplet excitons in poly-(2-vinylnaphthalene) by, 269
- Bromine fluoride**  
characterization of the  $B^3\Pi(0^+)$  state of BrF by high resolution spectroscopy, 183
- 1,3-Butadiene**  
synergistic effects in the photooxidation of ethylene and vinyl chloride induced by, 113
- Butene**  
excited radicals in the gas phase photolysis of isomers of in the vacuum UV region, 127
- 1-Butene**  
gas phase photolysis of at 147 nm (8.4 eV), 519
- Cadmium**  
primary processes in the  $Cd(^3P_1)-C_2H_6$  reaction at 265 °C, 335
- Calorimetry**  
high intensity infrared laser irradiation: direct determination of heat input to chlorodifluoromethane and ethyl acetate, 205
- Carbon monoxide**  
electronic excitation of the  $A^1\Pi$  and  $b^3\Sigma^+$  states of  $^{12}C^{16}O$ ,  $^{13}C^{16}O$  and  $^{12}C^{18}O$  by  $Kr(^3P_1)$  and  $Kr(^1P_1)$ , 154  
energy transfer processes in monochromatically excited  $^{12}C^{16}O$  and  $^{12}C^{18}O$  ( $A^1\Pi v' = 13$ ) molecules, 132
- Chemiluminescence**  
active nitrogen induced, at sodium sulphate surfaces, 159  
of  $CN^*(A^2\Pi_i)$  from  $C + N_2O \rightarrow CN^*(A^2\Pi_i) + NO$ , 168  
from ion-molecule reactions, 318  
of metastable atoms, cross-beam studies of reactions causing, 162
- Charge transfer complexes**  
excited, the dynamics of in non-ionic micelles, 295
- Charge transfer states**  
intramolecular, solvent and conformational effects on the luminescence of, 240
- $C_6H_5I$**   
and  $C_6F_5I$ , yields and quenching of  $I(5^2P_{1/2})$  following photodissociation of, 433
- Chlorine atoms**  
the chlorine atom sensitized oxidation of  $HCCl_3$ ,  $HCF_2Cl$  and  $HCF_3$ , comments on, 495  
produced in the photolysis of methyl chloride, 499
- Chlorodifluoromethane**  
and ethyl acetate, direct measurement of heat input to by high intensity infrared laser irradiation calorimetry, 205
- Clathrates**  
energy transfer processes in luminescence quenching and in photolysis of, 272
- CN radical**  
 $CN^*(A^2\Pi_i)$  chemiluminescence from  $C + N_2O \rightarrow CN^*(A^2\Pi_i)$ , 168
- Cobalt**  
photolysis in aprotic solvents of some  $Co^{III}$  complexes: an ESR and spin trapping study, 262
- Complexes**  
exciplex-aromatic, formation of, 539
- Conformational relaxation**  
in excited charge-transfer complexes of  $\alpha$ -alkylaryl cyclopropanes, 214
- Conformations**  
ground state, and excited state reactivities of tetrahydro-1,4-naphthoquinones in the solid state, 267
- Conjugated molecules**  
correlated excitations in, 333
- Cross-beam studies**  
of chemiluminescent reactions of metastable atoms, 162
- Cross sections**  
UV absorption, of halocarbons, influence of temperature on, 322
- CS radical**  
laser-induced fluorescence studies of  $CS A^1\Pi(v = 0)$ , 145
- Cyanine dyes**  
predicted fluorescence lifetimes of the

- first excited singlet states of cyanine dyes, 339
- Cyanogen  
vibronic effects in the photodissociation of, 137
- Cyanopyridine  
and pyridinecarboxaldehyde, solvent effects on the phosphorescent triplet states of, 577
- Cycloalkanes  
the mercury photosensitized reactions of, 326
- 2-(4-Cyclopropyl)pyridines  
gas phase UV excitations of, 213
- Deactivation  
radiationless, of the fluorescent state of 9-methoxyanthracene, 246
- Decomposition  
of mixtures of ethyl acetate and isopropyl bromide subjected to pulsed infrared laser irradiation, mechanisms of, 209
- 3,6-Diaminoacridine  
spin trapping of free radicals formed during visible irradiation of, 545
- trans*-Diarylethylenes  
emission spectroscopic evidence for the existence of ground state rotamers of, 277
- Dihalomethanes  
high amplitude vibrations in, 175
- Dimers  
of mercury, emission bands from at 335 nm and 485 nm, 551
- Dimethyl-1,1-cyclopropane  
photolysis of in the vacuum UV region, 449
- Di- $\alpha$ -methylenenaphthylsulphone  
photochemistry of, 571
- Dimethyl ether  
photolysis of by 184.9 nm radiation, 481
- Dimethylsilyl imine  
rearrangement of trimethylazidosilane to after photolysis in inert matrices, 195
- 1,2-Di- $\alpha$ -naphthylethane  
formation of from di- $\alpha$ -methylene-naphthylsulphone, 571
- N-Dioxides  
heterocyclic, studies on the photo-reaction of: photochromism of phenazine N-dioxides in organic solvents, 463
- 1-(3,4-Dioxopentyl)uracil  
singlet and triplet populations of uracil in, 293
- 9,10-Diphenylanthracene  
temperature effects on fluorescence quantum efficiency of, 363
- 1,6-Diphenyl-1,3,5-hexatriene (DPH)  
photolysis of in solution, 219
- 1,3-Diphenylisobenzofuran  
 $O_2^1\Delta_g$  quenching by the triplet state of in solution, 233
- Dipolar crystals  
produced photochemically and their behaviour in lyophilic colloidal solutions, 298
- Dipyrroles  
photochemical behaviour of, 282
- Dissociation  
collisionally induced, of  $UF_6$  (A state), 473  
infrared multiple photon, of  $CH_3NH_2$  and  $NH_3$ , 197  
state-selective, intracavity laser detection of radicals following, 324
- Duroquinone  
the triplet state of studied by pulse radiolysis, 227
- Electronic energy migration  
evidence for in the photochemistry of 4,7-undecanedione, 69
- Electron spin resonance  
an ESR and spin trapping technique study of the photolysis of some  $Co^{III}$  complexes in aprotic solvents, 252  
in the identification of free radicals formed during the visible irradiation of an acridine dye: 3,6-diaminoacridine (proflavine), 545  
matrix photochemistry of cyclic ketones: an ESR study, 312
- Electron transfer  
in the primary processes in the photochemistry of rhodamine dyes, 411
- Electron transfer mechanism  
for the carbocation sensitized photo-oxidation of leuco crystal violet, 218
- Electron transfer distances  
obtained by picosecond study of fluorescence dynamic quenching, 230
- Emission  
possible, from an upper triplet state of an anthraquinone dye, 559

- Energy relaxation  
in synthetic polymer solutions, 301
- Energy transfer  
between triplet alkylbenzenes and biacetyl and *cis*-piperylene vapours, orientation and distance requirements for, 243  
electronic, functions for, 222  
mechanisms of in mixed systems involving flavins, 174  
processes of in luminescence quenching and in photolysis of clathrates, 272  
processes of in monochromatically excited  $^{12}\text{C}^{16}\text{O}$  and  $^{12}\text{C}^{18}\text{O}$  ( $A^1\Pi v' = 13$ ) molecules, 132  
transfer of electronic energy in micellar solutions, 307
- Ethyl acetate  
and chlorodifluoromethane, direct measurement of heat input to by high intensity infrared laser irradiation calorimetry, 205  
mechanisms of decomposition of mixtures of and isopropyl bromide subjected to pulsed infrared laser irradiation, 209
- Ethyl acetoacetate  
determination of triplet quantum yields by sensitized ketonization of, 257
- Ethylene  
primary processes in the  $\text{Cd}(^3\text{P}_1)\text{-C}_2\text{H}_6$  reaction at 265 °C, 335  
and vinyl chloride, synergistic effects in the photooxidation of induced by 1,3-butadiene, 113
- Excimers  
intramolecular, formation of from di- $\alpha$ -methylenenaphthylsulphone, 571  
mercury, emission bands from at 335 nm and 485 nm, 551
- Exciplexes  
intramolecular, formation of between benzene and some olefinic compounds, 338  
formation of complexes with aromatics, 539
- Excitations  
correlated, in conjugated molecules, 333
- Excitons  
triplet, quenching of in poly(2-vinyl-naphthalene) by biacetyl, 269
- Flash photolysis  
of aminochloroanthraquinones, 559  
and luminescence study of the photosensitizer N-methyl-2-benzoyl- $\beta$ -naphthiazoline, 439  
study of the photosensitized oxidation of iodide ion by, 255  
in the study of the primary processes in the photochemistry of rhodamine dyes, 411
- Flash spectroscopy  
photochemical concentration modulation and its application to the detection of low concentration photochemical pollutants in the air, 341  
of the triplet states and the photolytically generated radical cations of 3,4-benzopyrenes in aqueous sodium dodecylsulphate and caffeine solutions, 43
- Flavins  
energy transfer mechanisms in mixed systems involving, 174
- Fluorescence  
of aminochloroanthraquinones, 559  
laser-induced, of  $\text{CS } A^1\Pi(v = 0)$ , 145  
laser induced time resolved fluorescence study of the HNO molecule, 309  
quenching rates for  $\text{NO}_2(A^2B_2)$  from fluorescence decay measurements, 399  
temperature effects on fluorescence quantum efficiency of 9,10-diphenylanthracene, 363  
time resolved, of tryptophan solutions, 425
- Fluorescence excitation spectra  
and phosphorescence excitation spectra of benzene and toluene in argon matrices, 300
- Fluorescence lifetimes  
predicted, of the first excited singlet states of cyanine dyes, 339
- Fluorescence spectroscopy  
of subpicosecond states in liquids, 326
- Formaldehyde  
the photophysics and photochemistry of investigated by laser photolysis, 322
- Fragmentation  
of dimethyl-1,1-cyclopropane after photolysis in the vacuum UV region, 449
- Free radicals  
formed during visible irradiation of an acridine dye: 3,6-diaminoacridine (proflavine), spin trapping of, 545

- Half-wave reduction potentials  
the quenching of the triplet states of aromatic carbonyl compounds by triethylamine: solvent effects on correlations with the function  $\{^3\Delta E_{0,0} + E(A^-/A)\}$ , 11
- Halocarbons  
the influence of temperature on UV absorption cross sections of, 322
- Halomethanes  
some, gas phase photolysis of at 185 nm, 385
- Halogens  
photodissociation and recombination of in the gas phase at pressures up to 1.4 kbar, 143
- $\text{HCCl}_3$ ,  $\text{HCF}_2\text{Cl}$  and  $\text{HCF}_3$   
comments on the chlorine atom sensitized oxidation of, 495
- $\text{HNO}$   
the laser induced time resolved fluorescence study of, 309
- Hydrogen  
 $\text{H}_2$ -laser photolysis study of the temperature dependence of the quenching of  $\text{O}_2(b^1\Sigma_g^+)$ , 102
- Hydrogen cyanide  
photodissociation spectroscopy and predissociation pathways in HCN and DCN, 134
- Hydroperoxides  
singlet oxygen reactions with model compounds of *cis* and *trans* polyisoprene containing two units, 19
- Hydroxyl radical  
kinetic study of the reaction of OH with olefins, 119
- Hydroxyl radical  
rotational distribution of  $\text{OH}(^2\Sigma)$  fluorescence in the photodissociation of nitric acid, 150
- 2-Hydroxyazobenzene  
photorearrangement of azoxybenzene to — a flash photolysis study, 216
- Indolic compounds  
photoprocesses of in solution, 304
- Infrared photochemistry  
elementary steps in, 94
- Iodine  
yields and quenching of  $\text{I}(5^2\text{P}_{1/2})$  following photodissociation of  $\text{C}_6\text{H}_5\text{I}$  and  $\text{C}_6\text{F}_5\text{I}$ , 433
- Iodine chloride  
selective photoaddition of  $\text{ICl}$  to acetylene: pressure, buffer and wavelength dependence of enrichment, 186
- Iodide ion  
flash photolysis study of photosensitized oxidation of, 255
- Ionization energy threshold  
of aqueous tryptophan, 236
- Ion-molecule reactions  
chemiluminescent, 318
- Ions  
diatomic, the infrared photodissociation of initially formed in high vibrational levels, 328
- Isobutene  
formation of in photolysis of dimethyl-1,1-cyclopropane in the vacuum UV region, 449
- Isopropyl bromide  
mechanisms of decomposition of mixtures of and ethyl acetate subjected to pulsed infrared laser irradiation, 209
- Isotopic enrichment  
multiple photon IR laser induced, of  $\text{SF}_6$  in the solid state. A spectroscopic artefact, 192
- $\text{K}[\text{Cr}(\text{C}_2\text{O}_4)_2(\text{H}_2\text{O})_2]$   
photoisomerization of in aqueous solution, 224
- Ketones  
cyclic, matrix photochemistry of: an ESR study, 312
- Ketonization  
sensitized, determination of triplet quantum yields by of ethyl acetate, 257
- Krypton  
electronic excitation of the  $\text{A}^1\Pi$  and  $\text{b}^3\Sigma^+$  states of  $^{12}\text{C}^{16}\text{O}$ ,  $^{13}\text{C}^{16}\text{O}$  and  $^{12}\text{C}^{18}\text{O}$  by  $\text{Kr}(^3\text{P}_1)$  and  $\text{Kr}(^1\text{P}_1)$ , 154
- Laser  
CW, three experiments on transient photochemistry using a, 263  
intracavity laser detection of radicals following state-selective dissociation, 324  
tunable spin flip Raman, low temperature IR photochemistry and spectroscopy using, 189

- Lasing dyes**  
primary processes in the photochemistry of rhodamine dyes, 411
- Latitudes**  
northern, analysis of atmospheric photochemistry at, 121
- Lead**  
recombination of Pb atoms, 369
- Leuco crystal violet**  
on the electron transfer mechanism for the carbocation sensitized photooxidation of, 218
- Lifetimes**  
of electronically excited  $UF_6$  in the presence of inorganic quenchers, 473  
radiative, of NH and ND( $b^1\Sigma^+$ ), 171
- Lightfastness**  
and spectroscopic properties of amino-chloroanthraquinones, 559
- Liquids**  
fluorescence spectroscopy of subpicosecond states in, 326
- Luminescence**  
and absorption of aromatic amines, effects of hydrogen bonding intermolecular interactions on, 529  
of some anthraquinones, 559  
and flash photolysis study of the photosensitizer N-methyl-2-benzoyl- $\beta$ -naphthiazoline, 439  
of intramolecular charge-transfer states, solvent and conformational effects on, 240
- Luminescence quenching**  
and photolysis of clathrates, energy transfer processes in, 272
- Lyophilic colloidal solutions**  
dipolar crystals produced photochemically and their behaviour in, 298
- Magnetic switching**  
of radiationless transitions, 97
- Matrix photochemistry**  
of cyclic ketones: an ESR study, 312
- Mercury**  
the emission bands of vapour of at 335 nm and 485 nm, 551  
the reactions of cycloalkanes photosensitized by, 326
- 9-Methoxyanthracene**  
radiationless deactivation of the fluorescent state of, 246
- Methylamine**  
infrared multiple photon dissociation of  $CH_3NH_2$  and  $NH_3$ , 197
- N-Methyl-2-benzoyl- $\beta$ -naphthiazoline**  
a luminescence and flash photolysis study of the photosensitizer, 439
- 2-Methyl-1-butene**  
and 2-methyl-2-butene, formation of in the photolysis of dimethyl-1,1-cyclopropane in the vacuum UV region, 449
- Methylbutenes**  
the 7.1 and 7.6 eV photolysis of, 128
- Methyl chloride**  
the photochemistry of, 499
- Methyl cyanide**  
the interaction of 1216 Å photons and of excited argon atoms with  $CH_3CN$ , 329
- Methyl nitrogen oxides**  
some halogen-substituted, photoabsorption spectra of, 116
- Micelles**  
non-ionic, the dynamics of excited charge transfer complexes in, 295  
the reactivity of singlet oxygen in aqueous micellar systems, 336  
transfer of electronic energy in micellar solutions, 307
- Modulated excited IR (MEIR) spectroscopy**  
of diacetyl in ethylbenzene, 140
- Molecular complexation**  
phosphorescence from pyridine induced by, 491
- Naphthalene cations**  
multiphoton photodissociation of, 142
- NH and ND radicals**  
new bands in the transitions ( $c^1\Pi \rightarrow a^1\Delta$ ) and ( $c^1\Pi \rightarrow b^1\Sigma^+$ ) of NH and ND: the predissociation of NH ( $c^1\Pi$ ), 151  
NH and ND( $b^1\Sigma^+$ ) radiative lifetimes, 171
- Nitric acid**  
rotational distribution of OH( $^2\Sigma$ ) fluorescence in the photodissociation of, 150
- Nitrogen**  
active, chemiluminescence at sodium sulphate surfaces induced by, 159  
the effects of small amounts of  $O_2$  on vibrational excitation of  $N_2$ , 1
- Nitrogen dioxide**  
quenching rates for  $NO_2(\tilde{A}^2B_2)$  from fluorescence decay measurements, 399

- Nitromethane**  
photochemical reactions of  $\text{CH}_3\text{NO}_2$  in non-aqueous solutions, 331
- Nitroso-*t*-butane**  
use of to spin trap free radicals formed during visible irradiation of an acridine dye: 3,6-diaminoacridine (proflavine), 545
- Olefinic compounds**  
some, intramolecular exciplex formation between benzene and, 338
- Olefins**  
kinetic study of the reaction of OH with, 119
- Oxalyl fluoride**  
laser induced time resolved phosphorescence of  $^3A_u$  molecules of, 407
- Oxidation**  
chlorine atom sensitized, of  $\text{HCCl}_3$ ,  $\text{HCF}_2\text{Cl}$  and  $\text{HCF}_3$ , comments on, 495
- Oxygen**  
a combined discharge flow/shock tube study of  $\text{O}_2$  ( $^1\Delta_g$  and  $^1\Sigma_g^+$ ) at high temperatures, 107  
the effects of small amounts of  $\text{O}_2$  on vibrational excitation of  $\text{N}_2$ , 1  
 $\text{H}_2$ -laser photolysis study of the temperature dependence of the quenching of  $\text{O}_2(b^1\Sigma_g^+)$ , 102  
 $\text{O}_2$   $^1\Delta_g$  quenching by the triplet state of 1,3-diphenylisobenzofuran in solution, 233  
rate constants for the gaseous interactions of  $\text{O}(2^1D_2)$  and  $\text{O}(2^1S_0)$  — a critical evaluation, 55  
singlet, reactions of with model compounds of *cis* and *trans* polyisoprene containing two units, 19  
singlet, on the reactivity of in aqueous micellar systems, 336
- Partitioning**  
of the chemical and physical quenching of  $\text{SO}_2(^3B_1)$ , evaluation of and application to alkanes, 101
- Pericyclic reactions**  
in upper singlet and triplet states — quantitative aspects, 294
- Phenazine N-dioxides**  
photochromism of in organic solvents: studies on the photoreaction of heterocyclic N-dioxides, 463
- Phosphorescence**  
of aminochloroanthraquinones, 559  
of cyanopyridine and pyridinecarboxaldehyde, solvent effects on, 577  
laser induced time resolved, of oxalyl fluoride  $^3A_u$  molecules, 407  
from pyridine induced by molecular complexation, 491  
temperature dependent, of poly(*N*-vinylcarbazole), studies of, 266
- Phosphorescence excitation spectra and fluorescence excitation spectra of benzene and toluene in argon matrices, 300**
- Photoaddition**  
selective, of ICl to acetylene: pressure, buffer and wavelength dependence of enrichment, 186
- Photochemical concentration modulation and its application to the detection of low concentration photochemical pollutants in the air, 341**
- Photochemistry**  
and spectroscopy, low temperature IR, using a tunable spin flip Raman laser, 189  
transient, three experiments on using a CW laser, 263
- Photochromism**  
of phenazine N-dioxides in organic solvents studies on the photoreaction of heterocyclic N-dioxides, 463  
and photochemistry of 2,3,4,4-tetrachloro-1-keto-1,4-dihydronaphthalene ( $\beta$ -TKN), 284
- Photodissociation**  
of  $\text{C}_6\text{H}_5\text{I}$  and  $\text{C}_6\text{F}_5\text{I}$ , yields and quenching of  $\text{I}(5^2P_{1/2})$  following, 433  
of cyanogen, vibronic effects in, 137  
infrared, of diatomic ions initially formed in high vibrational levels, 328  
multiphoton, of naphthalene cations, 142  
of nitric acid, rotational distribution of  $\text{OH}(^2\Sigma)$  fluorescence in the photodissociation of nitric acid, 150  
and recombination of halogens in the gas phase at pressures up to 1.4 kbar, 143
- Photodissociation spectroscopy and predissociation pathways in HCN and DCN, 134**

- Photofragments  
translational energy distribution of, 87
- Photoluminescence  
of tryptophan solutions, temperature and solvent effects on, 425
- Photolysis  
of dimethyl ether by 184.9 nm radiation, 481  
gas phase, of 1-butene at 147 nm (8.4 eV), 519  
laser, the photophysics and photochemistry of formaldehyde investigated by, 322
- Photoionization  
of acridine in aqueous solution studied by laser excitation, mechanism of, 249  
of tryptophan by a mixed-harmonics Nd laser, 238
- Photoisomerization  
of  $K[Cr(C_2O_4)_2(H_2O)_2]$  in aqueous solution, 224
- Photooxygenation  
singlet oxygen reactions with model compounds of *cis* and *trans* polyisoprene containing two units, 19
- Photophysics  
of simple saturated amines, 260
- Photorearrangement  
of azoxybenzene to 2-hydroxyazobenzene — a flash photolysis study, 216
- cis*-Piperylene  
and biacetyl, orientation and distance requirements for energy transfer between triplet alkyl benzenes and vapours of, 243
- $pK_a^*$  values  
excited state, of aromatic amines by dynamic analyses, 334
- Pollutants  
low concentration photochemical, photochemical concentration modulation and its application to the detection of, 341
- Pollution  
chemical, recent advances in the chemical kinetics of the atmosphere and effects on estimates of, 317
- Polyatomic molecules  
collision induced increase in the multiple photon absorption in, 177
- Polyisoprene  
*cis* and *trans*, singlet oxygen reactions with model compounds of containing two units, 19
- Polymers  
synthetic, energy relaxation in solutions of, 301
- Poly(N-vinylcarbazole)  
studies of the temperature dependent phosphorescence of, 266
- Poly(2-vinylnaphthalene)  
quenching of triplet excitons in by biacetyl, 269
- Predissociation  
of NH ( $c^1\Pi$ ): new bands in the transitions ( $c^1\Pi \rightarrow a^1\Delta$ ) and ( $c^1\Pi \rightarrow b^1\Sigma^+$ ) of NH and ND, 151
- Predissociation pathways  
and photodissociation spectroscopy in HCN and DCN, 134
- Primary processes  
in the photolysis of methyl chloride, 499
- Propenyl radicals  
produced in the gas phase photolysis of 1-butene at 147 nm (8.4 eV), 519
- Pulsed laser photolysis  
the quenching of the triplet states of aromatic carbonyl compounds by triethylamine: solvent effects on correlations with the function  $\{^3\Delta E_{0,0} + E(A^-/A)\}$ , 11
- Pulse radiolysis  
the triplet state of duroquinone studied by, 227  
use of in the study of the recombination of lead atoms, 369
- Pumping  
with narrow band lasers, molecules in isolation and in collision after, 96
- Pyridine  
phosphorescence from induced by molecular complexation, 491
- Pyridinecarboxaldehyde  
and cyanopyridine, solvent effects on the phosphorescent triplet states of, 577
- Pyruvic acid  
and pyruvate, photochemistry of and photophysics of thiamine, 290
- Quantum yields  
for the photolysis of dimethyl ether by 184.9 nm radiation, 481  
for the photolysis of methyl chloride, 499  
for the photolysis of TNT, 403



- triplet, determination of by sensitized ketonization of ethyl acetoacetate, 257
- Quenching
- of electronically excited  $\text{UF}_6$  by inorganic quenchers, 473
  - fluorescence dynamic, electron transfer distances obtained by picosecond study of, 230
  - of triplet excitons in poly(2-vinylnaphthalene) by biacetyl, 269
  - of the triplet state of 1,3-diphenylisobenzofuran in solution by  $\text{O}_2$   $^1\Delta_g$ , 233
  - and yields of  $\text{I}(5^2\text{P}_{1/2})$  following photodissociation of  $\text{C}_6\text{H}_5\text{I}$  and  $\text{C}_6\text{F}_5\text{I}$ , 433
- Quenching rate constants
- of the triplet states of aromatic carbonyl compounds by triethylamine: solvent effects on correlations with the function  $\{\Delta E_{0,0} + E(\text{A}^-/\text{A})\}$ , 11
- Quenching rates
- for  $\text{NO}_2(\text{A}^2\text{B}_2)$  from fluorescence decay measurements, 399
- Radiationless transitions
- magnetic switching of, 97
- Radical cations
- photolytically generated, and triplet states of 3,4-benzopyrenes in aqueous sodium dodecylsulphate and caffeine solutions, flash spectroscopic investigations of, 43
- Radicals
- intracavity laser detection of following state-selective dissociation, 324
  - short lived, and triplet states, time-resolved resonance Raman spectroscopy of, 180
- Raman spectroscopy
- time-resolved resonance, 325
- Rare gas atoms
- metastable, quenching reactions of: product state distributions, 91
- Rate constants
- for the gaseous interactions of  $\text{O}(2^1\text{D}_2)$  and  $\text{O}(2^1\text{S}_0)$  — a critical evaluation, 55
- Reactivities
- excited state, and ground state conformation of tetrahydro-1,4-naphthaquinones in the solid state, 267
- Recombination
- of lead atoms, 369
- Reflectance
- a study of the photoexcitation of stilbene adsorbed on alumina, 33
- Rhodamine dyes
- primary processes in the photochemistry of, 411
- Rotamers
- ground state, emission spectroscopic evidence for the existence of in *trans*-diarylethylenes, 277
- Saturation
- of the  $a(6,0)$  transition in the  $\nu_2$  band of  $\text{NH}_3$  by irradiation with a TEA  $\text{CO}_2$  laser, 200
- SCF MO study
- non-empirical, on the first triplet state potential energy surfaces and vibrational frequencies of simple thiocarbonyls, 130
- Sodium sulphate
- active nitrogen induced chemiluminescence at surfaces of, 159
- Spectroscopy
- high resolution, characterization of the  $\text{B}^3\text{II}(0^+)$  state of  $\text{BrF}$  by, 183
  - state selective time of flight, 148
  - time resolved resonance Raman, of short lived radicals and triplet states, 180
- Spin trapping
- of free radicals formed during visible irradiation of an acridine dye: 3,6-diaminoacridine (proflavine), 545
  - photolysis in aprotic solvents of some alkyl  $\text{Co}^{\text{III}}$  complexes: an ESR and spin trapping technique study, 252
- Stern-Volmer relation
- linear, deviation from in the quenching of  $\text{UF}_6$  (A state), 473
- Stilbene
- a reflectance study of the photoexcitation of adsorbed on alumina, 33
- Sulphides
- atmospheric, elementary reactions of, 124
- Sulphur dioxide
- lifetime saturation of  $\text{SO}_2(^3\text{B}_1)$ . Evaluation of chemical and physical quenching. Application to alkanes, 101
- Sulphur hexafluoride
- multiple photon IR laser induced isotopic enrichment of  $\text{SF}_6$  in the

- solid state. A spectroscopic artefact, 192
- Surrogate CHEMical MEchanisms (SCHEMEs)  
 construction of for atmospheric photochemical systems, 104
- Temperature  
 effects of on the fluorescence quantum efficiency of 9,10-diphenylanthracene, 363  
 influence of on UV absorption cross sections of halocarbons, 322
- Temperature dependences  
 of rate constants for the gaseous interactions of  $O(2^1D_2)$  and  $O(2^1S_0)$ , 55
- 2,3,4,4-Tetrachloro-1-keto-1,4-dihydronaphthalene ( $\beta$ -TKN)  
 photochromism and photochemistry of, 284
- Tetrahydro-1,4-naphthaquinones  
 ground state conformations and excited state reactivities of, 267
- Thiamine  
 the photophysics of and photochemistry of pyruvic acid and pyruvate, 290
- Thiocarbonyls  
 simple, a non-empirical SCF MO study on the first triplet state potential energy surfaces and vibrational frequencies of, 130  
 small, optical spectroscopy and second excited state photophysics of, 157
- Toluene  
 and benzene in argon matrices, fluorescence and phosphorescence excitation spectra of, 300
- Translational energy distribution  
 of photofragments, 87
- Trace gas  
 photochemistry of in the troposphere, 85
- Triethylamine  
 the quenching of the triplet states of aromatic carbonyl compounds by: solvent effects on correlations with the function  $\{^3\Delta E_{0,0} + E(A^-/A)\}$ , 11
- Trifluoroacetic acid  
 interaction of photoexcited aromatic compounds with, 287
- Trimethylazidosilane  
 photolysis of in inert matrices: rearrangement to a dimethylsilyl imine, 195
- 2,4,6-Trinitrotoluene  
 photolysis quantum yield of, 403
- Triplet states  
 of aromatic carbonyl compounds, the quenching of by triethylamine: solvent effects on correlations with the function  $\{^3\Delta E_{0,0} + E(A^-/A)\}$ , 11  
 of cyanopyridine and pyridinecarboxaldehyde, solvent effects on, 577  
 of N-methyl-2-benzoyl- $\beta$ -naphthiazoline produced by flash photolysis, 439  
 and photolytically generated radical cations of 3,4-benzopyrenes in aqueous solutions of sodium dodecylsulphate and caffeine, flash spectroscopic investigations of, 43  
 and short lived radicals, time-resolved resonance Raman spectroscopy of, 180
- Troposphere  
 trace gas photochemistry in, 85
- Tryptophan  
 aqueous, the ionization energy threshold of, 236  
 mixed-harmonics Nd laser photoionization of, 238  
 temperature and solvent effects on photoluminescence of solutions of, 425
- 4,7-Undecanedione  
 the photochemistry of: evidence of electronic energy migration, 69
- Uracil  
 singlet and triplet populations of in the compound 1-(3,4-dioxopentyl)-uracil, 293
- Uranium hexafluoride  
 excited state dynamics of electronically excited  $UF_6$  in the presence of added gases, 156  
 lifetimes of electronically excited  $UF_6$  in the presence of inorganic quenchers, 473
- Uranyl formates  
 compared photoluminescence and photochemical properties of in the solid state, 280
- Vibrational excitation  
 of  $N_2$ , the effects of small amounts of  $O_2$  on, 1

**Vibrations**

high amplitude, in dihalomethanes, *175*

**Vinyl chloride**

and ethylene, synergistic effects in the photooxidation of induced by 1,3-butadiene, *113*

**Xenon**

some processes in vacuum-ultraviolet irradiated Xe, *165*