

Bibliography of R. Stephen Berry

1. R. S. Berry: The electronic structure of butadiene (Thesis), Harvard, 1956, directed by W. Moffitt.
2. W. Klemperer, S. A. Rice and R. S. Berry: The infrared spectrum of cuprous chloride vapor. *J. Am. Chem. Soc.* **79**, 1810–1811 (1957).
3. R. S. Berry and W. Klemperer: The Spectra of the alkali halides III. Electronic spectra of lithium chloride, lithium bromide, and lithium iodide. *J. Chem. Phys.* **26**, 724–726 (1957).
4. R. S. Berry: The pi-electron structure of butadiene. *J. Chem. Phys.* **26**, 660–664 (1957).
5. R. S. Berry: The interaction of vibrational and electronic motion in alkali halide molecules. *J. Chem. Phys.* **27**, 1288–1295 (1957).
6. R. S. Berry: Bending motions in the dihalides of group II metals. *J. Chem. Phys.* **30**, 286–290 (1959); Erratum, *J. Chem. Phys.* 1104.
7. R. S. Berry: Conjugation and polar effects in butadiene. *J. Chem. Phys.* **30**, 936–941 (1959).
8. R. Dehl, W. R. Vaughan and R. S. Berry: Ring equivalence and charge distribution in triphenylcarbonium ion from NMR spectra. *J. Org. Chem.* **24**, 1616–1617 (1959).
9. R. S. Berry: Molecular Fragments in Shock Waves: A Final Report. The University of Michigan Research Institute, 1960.
10. R. S. Berry: Time-dependent measurements and molecular structure: Ozone. *Rev. Mod. Phys.* **32**, 447–454 (1960).
11. R. S. Berry: Correlation of rates of intramolecular tunneling processes, with application to some group V compounds. *J. Chem. Phys.* **32**, 933–938, (1960).
12. R. S. Berry, G. N. Spokes and R. M. Stiles: Spectroscopic evidence for gaseous benzyne. *J. Am. Chem. Soc.* **82**, 5240–5241 (1960).
13. R. S. Berry, R. Dehl and W. R. Vaughan: Nuclear magnetic resonance spectrum of the triphenylcarbonium ion. *J. Chem. Phys.* **34**, 1460–1461 (1961).
14. R. S. Berry: Remarks on the electronic spectra and structures of compounds of chromium and benzene. *J. Chem. Phys.* **35**, 29–35 (1961).
15. R. S. Berry: Ultraviolet spectrum of dibenzene chromium vapor. *J. Chem. Phys.* **35**, 2025–2028 (1961).
16. R. S. Berry, C. Reimann and G. N. Spokes: Absorption spectrum of gaseous Cl^- and electron affinity of chlorine. *J. Chem. Phys.* **35**, 2237–2238 (1961).
17. R. S. Berry: Zero-point vibrations in benzene. *J. Chem. Phys.* **35**, 2253–2254 (1961).
18. R. S. Berry, G. N. Spokes and M. Stiles: The absorption spectrum of gaseous benzyne. *J. Am. Chem. Soc.* **84**, 3570–3577 (1962).
19. R. S. Berry, C. W. Reimann and G. N. Spokes: Absorption spectra of gaseous halide ions and halogen electron affinities: Chlorine, bromine and iodine. *J. Chem. Phys.* **37**, 2278–2290 (1962).
20. R. S. Berry and C. W. Reimann: Absorption Spectrum of gaseous F- and electron affinities of the halogen atoms. *J. Chem. Phys.* **38**, 540 (1963).
21. R. S. Berry, D. Cornell and W. Lwowski: Flash-photolytic decomposition of gaseous alkyl azidoformates. *J. Am. Chem. Soc.* **85**, 1199 (1963).
22. R. S. Berry: Analog of $n^*-\pi^*$ transitions in mono-olefins. *J. Chem. Phys.* **38**, 1934–1938 (1963).
23. R. S. Berry: Diabatic effect in molecular ionization by electron impact. in: Proceedings of the VIth Conference Internationale sur les Phenomenes d'Ionization dans les Gas. 1963, Paris, pp 13–14.
24. R. S. Berry: Thermodynamics and elementary processes of gaseous ions. in: Ionization in High Temperature Gases. K. E. Shuler (ed). Vol 12 in the series: Progress in Aeronautics and Astronautics. Academic Press, New York (1963) pp 3–65.
25. R. S. Berry and C. W. David: Radiative capture of electrons by halogen atoms. in: Atomic Collision Process. M. R. C. McDowell (ed). North-Holland, Amsterdam (1964) pp 543–548.
26. R. S. Berry, J. Clardy and M. E. Schafer: Benzyne. *J. Am. Chem. Soc.* **86**, 2738 (1964).
27. R. S. Berry, J. Clardy and M. E. Schafer: 1,4-dehydrobenzene: A stable species. *Tetrahedron Lett.* **15**, 1003–1010 (1965).
28. R. S. Berry, J. Clardy and M. E. Schafer: Decomposition of benzenediazonium-3-carboxylate: Transient 1,3-dehydrobenzene. *Tetrahedron Lett.* **15**, 1011–1017 (1965).
29. R. S. Berry, C. W. David and J. C. Mackie: Threshold shapes and resonances in the photodetachment cross sections of chloride, bromide and iodide. *J. Chem. Phys.* **42**, 1541–1546 (1965).
30. R. S. Berry, J. Jortner, J. C. Mackie, E. S. Pysh and S. A. Rice: Search for a charge-transfer state in crystalline anthracene. *J. Chem. Phys.* **42**, 1535–1540 (1965).
31. D. W. Cornell, R. S. Berry and W. Lwowski: Carbalkoxy-nitrenes. The photolytic decomposition of gaseous alkyl azidoformates. *J. Am. Chem. Soc.* **87**, 3626–3629 (1965).
32. R. S. Berry, J. C. Mackie, R. L. Taylor and R. Lynch: Spin-orbit coupling and electron affinity determinations from radiative capture of electrons by oxygen atoms. *J. Chem. Phys.* **43**, 3067–3074 (1965).
33. M. E. Schafer and R. S. Berry: The dimerization of gaseous benzyne. *J. Am. Chem. Soc.* **87**, 4497–4501 (1965).
34. R. S. Berry: Photochemistry. in: Encyclopaedia Britannica. T. Hori (ed). Chicago, IL (1966) Vol. 17, pp 916–23.
35. D. W. Cornell, R. S. Berry and W. Lwowski: The reactions of triplet NH with olefins. *J. Am. Chem. Soc.* **88**, 544–550 (1966).
36. R. S. Berry: Resource papers—V: Atomic orbitals. *J. Chem. Ed.* **43**, 282–299 (1966).
37. M. Weinberg and R. S. Berry: Forbidden continuum: Free-bound transitions in hydrogen plasmas. *Phys. Rev.* **144**, 75–81 (1966).

38. R. M. Glaeser and R. S. Berry: Mobilities of electrons and holes in organic molecular solids. Comparison of bond and hopping models. *J. Chem. Phys.* **44**, 3797–3810 (1966).
39. R. S. Berry: Ionization of molecules at low energies. *J. Chem. Phys.* **45**, 1228–1245 (1966).
40. M. Craig and R. S. Berry: Covalent and ionic character in ground and excited states of benzene. *J. Am. Chem. Soc.* **89**, 2801–2805 (1967).
41. R. S. Berry: Molecular photoionization near threshold. Paper 44, in: Proceedings of the 15th Annual Conference on Mass Spectrometry and Allied Topics. May 14–19, 1967, Denver, Colorado, pp 133, résumé of invited paper.
42. R. S. Berry, M. Tamres, C. J. Ballhausen and H. Johansen: Orbitals and structures of pentafluorides. *Acta Chem. Scand.* **22**, 231–246 (1968).
43. J. Jortner and R. S. Berry: Radiationless transitions and molecular quantum beats. *Chem. Phys.* **48**, 2757–2766 (1968).
44. R. S. Berry and S. E. Nielsen: Rydberg states and scattering states of molecular electrons: $e\text{-H}_2^+$. *J. Chem. Phys.* **49**, 116–121 (1968).
45. M. Weinberg, R. S. Berry and J. C. Tully: Quantum defect method for linear molecules and $e\text{-H}_2^+$ scattering. *J. Chem. Phys.* **49**, 122–126 (1968).
46. R. S. Berry, T. Cernoch, M. Coplan and J. J. Ewing: Inverted population in dissociation of CsBr molecules. *J. Chem. Phys.* **49**, 127–134 (1968).
47. M. Yaris, A. Moscowitz and R. S. Berry: Low-lying excited states of mono-olefins. *J. Chem. Phys.* **49**, 3150–3160 (1968).
48. M. Coplan, T. Cernoch and R. S. Berry: Chemical overshoot: Thermal dissociation of alkali halide molecules. *Phys. Fluids, Suppl. 1* I-118–18 (1969).
49. J. C. Tully, R. S. Berry and B. J. Dalton: Angular distribution of molecular photoelectrons. *Phys. Rev.* **176**, 95–105 (1968).
50. S. E. Nielsen and R. S. Berry: Vibronic autoionization and predissociation in hydrogen. *Chem. Phys. Lett.* **2**, 503–506 (1968).
51. B. Schneider, M. Weinberg, J. C. Tully and R. S. Berry: Pseudopotential method for inelastic processes in atoms & molecules. I. General method and photodetachment of O^- . *Phys. Rev.* **182**, 133–141 (1969).
52. B. Schneider and R. S. Berry: Pseudopotential method for inelastic processes in atoms & molecules. II. The photoionization of N_2 . *Phys. Rev.* **182**, 141–151 (1969). Addendum, *Phys. Rev.* **186**, 265 (1969).
53. R. S. Berry: Small free negative ions. *Chem. Rev.* **69**, 533–42 (1969).
54. J. C. Tully and R. S. Berry: Elastic scattering of low-energy electrons by the hydrogen molecule. *J. Chem. Phys.* **51**, 2056–2075 (1969).
55. R. S. Berry: Electronic spectroscopy by electron spectroscopy. *Ann. Rev. Phys. Chem.* **20**, 357–406 (1969).
56. R. S. Berry: Electronic structure and spectra of NH and nitrenes. in: Nitrenes. W. Lwowski (ed). J. Wiley, New York (1970) Chapter 2, pp 13–45.
57. R. S. Berry: Chemiionization. in: Molecular Beams and Reaction Kinetics, International School of Physics, “Enrico Fermi”. C. Schlier (ed). Academic Press, New York (1970) Vol. XLIV, pp 193–228.
58. R. S. Berry: Transfer of electronic excitation. in: Molecular Beams and Reaction Kinetics, International School of Physics, “Enrico Fermi”. C. Schlier (ed). Academic Press, New York (1970) Vol. XLIV, pp 229–248.
59. R. S. Berry: The decay of molecular excited states. *Records of chemical progress* **31**, 9 (1970).
60. S. Berry: Perspectives on polluted air—1970. *Bull. At. Sci.* April 2, 34–41 (1970).
61. J. J. Ewing, R. Milstein and R. S. Berry: Population inversions in shock-induced dissociation of alkali halides. in: Proceedings of VIIth International Shock Tube Symposium. June 1969, Toronto, University of Toronto Press (1970) pp 591–604.
62. J. Weiner, W. B. Peatman, and R. S. Berry: Electron transfer from O^- to the 3p level of Na^+ in O^- to 7-eV collisions. *Phys. Rev. Lett.* **25**, 79–82 (1970).
63. S. E. Nielsen and R. S. Berry: Interaction range aspects of chemiionization. in: Recent Developments in Mass Spectroscopy (Proceedings of the International Conference on Mass Spectrometry, 1969, Kyoto). K. Ogata and T. Hayakawa (eds). University of Tokyo Press (1970) pp 807–810.
64. R. S. Berry, B. Schneider and G. B. Shaw: Photoionization of molecules: Pseudopotential theories. in: Recent Developments in Mass Spectroscopy (Proceedings of the International Conference on Mass Spectrometry, 1969, Kyoto). K. Ogata and T. Hayakawa (eds). University of Tokyo Press (1970) pp 811–813.
65. R. S. Berry and S. E. Nielsen: Dynamic coupling phenomena in molecular excited states. I. General formulation and vibronic coupling of H_2 . *Phys. Rev. A* **1**, 383–394 (1970).
66. R. S. Berry and S. E. Nielsen: Dynamic coupling phenomena in molecular excited states. II. Autoionization and predissociation in H_2 , Hd and D_2 . *Phys. Rev. A* **1**, 395–411 (1970).
67. R. S. Berry: Aeronomy as a component in air resource management. *Bull Am Phys Soc* **15**, 474 (1970).
68. S. E. Nielsen and R. S. Berry: Dynamic coupling phenomena in molecular excited states. III. Associative ionization and dissociative recombination of H_2 . *Phys. Rev. A* **4**, 865–885 (1971).
69. J. J. Ewing, R. Milstein and R. S. Berry: Curve-crossing in collisional dissociation of alkali halide molecules. *J. Chem. Phys.* **54**, 1752–1760 (1971).
70. B. Blaney and R. S. Berry: Photoemission and electron detachment in low-energy collisions of metastable atoms with negative ions. *Phys. Rev. A* **3**, 1349–1355 (1971).
71. J. M. Kramer and R. S. Berry: 3,4-pyridyne and its dimer. *J. Am. Chem. Soc.* **93**, 1303–1304 (1971).
72. M. Oppenheimer and R. S. Berry: Ultraviolet spectra of alkali halides in inert matrixes. *J. Chem. Phys.* **54**, 5058–5073 (1971).
73. R. S. Berry and P. A. Lehman: Aerochemistry of air pollution. *Ann. Rev. Phys. Chem.* **22**, 47–84 (1971).
74. G. Hug and R. S. Berry: Interaction of electrons and holes in a molecular crystal. *J. Chem. Phys.* **55**, 2516–2521 (1971).
75. R. Milstein and R. S. Berry: On the electron affinity of fluorine. *J. Chem. Phys.* **55**, 4146–4147 (1971).
76. R. S. Berry: The option for survival. *Bull. At. Sci.* May, 22–27 (1971).

77. J. Weiner, W. B. Peatman and R. S. Berry: Charge transfer in $\text{Na}^+ - \text{O}^-$ collisions at low relative energy. *Phys. Rev. A* **4**, 1824–1835 (1971).
78. R. S. Berry: Environmental problems and the basic natural sciences. in: *Growth and Change*. University of Kentucky (1971) Vol. 2, pp 25–29.
79. F. P. Tully, Y. T. Lee and R. S. Berry: Crossed molecular beam study of collision-induced dissociation of alkali halides. *Chem. Phys. Lett.* **9**, 80–84 (1971).
80. R. S. Berry: On the assessment, control and assimilation of technology—discussion of Tribe. *Minerva* **IX**, 565–566 (1971).
81. T. Frankiewicz and R. S. Berry: Singlet O_2 Production from photoexcited NO_2 . *Environ. Sci. Tech.* **6**, 365–366 (1972).
82. R. S. Berry: Recycling, thermodynamics and environmental thrift. *Bull. At. Sci.* May, 8–15 (1972).
83. R. S. Berry and M. F. Fels: The production and consumption of automobiles, and energy analysis of the manufacture, discard and reuse of the automobile and its component materials. in: *A report to the Illinois Institute for Environmental Quality*. July 1972 pp 1–74.
84. G. B. Shaw and R. S. Berry: Photoionization and autoionization of H_2 . *J. Chem. Phys.* **56**, 5808–5817 (1972).
85. R. S. Berry: Only one world: An awakening. *Bull. At. Sci.* Sept, 17–20 (1972).
86. R. S. Berry: Reflections on the ‘limits to growth’. *Bull. At. Sci.* Nov, 25–27 (1972).
87. J. Kramer and R. S. Berry: Gaseous 3,4-pyridyne and the formation of diazabiphenylene. *J. Am. Chem. Soc.* **94**, 8336–8347 (1972).
88. R. S. Berry: Dynamics of dissociative excitation. *Joint. Inst. Lab. Astrophys. Rev.* **12**, 21–28 (1972).
89. M. MacGregor and R. S. Berry: Formation of HCO^+ by the associative ionization of $\text{CH} + \text{O}$. *J. Phys. B* **6**, 181–196 (1973).
90. T. C. Frankiewicz and R. S. Berry: Production of Metastable singlet O_2 photosensitized by NO_2 . *J. Chem. Phys.* **58**, 178–195 (1973).
91. M. M. Lambropoulos and R. S. Berry: Angular distributions from resonant 2-photon ionization. *Phys. Rev. A* **8**, 855–865 (1973).
92. R. S. Berry and M. F. Fels: The energy cost of automobiles. *Bull. At. Sci.* Dec, 11–17, 58–60 (1973).
93. P. H. Lehman and R. S. Berry: Flash photolytic decomposition of aryl azides: Measurement of an intramolecular closure rate. *J. Am. Chem. Soc.* **95**, 8614–8620 (1973).
94. A. Dalgarno, M. Oppenheimer and R. S. Berry: Chemionization in interstellar clouds. *Astrophys. J.* **183**, L21–L24 (1973).
95. R. S. Berry: Fire: Facing the energy crisis in the 70's and beyond. *Hyde Parker* **4**, 49–52 (1973).
96. H. Makino and R. S. Berry: Consumer goods, a thermodynamic analysis of packaging, transport and storage. in: *A Study Carried out for the Illinois Institute for Environmental Quality*. June 1973 pp 1–162.
97. R. S. Berry and H. Makino: Energy Thrift in Packaging and Marketing. *Tech. Rev.* **76**, 32–43 (1974).
98. R. S. Berry, M. F. Fels and H. Makino: A thermodynamic valuation of resource use: Making automobiles and other processes. in: *Energy: Demand. Conservation and Institutional Problems*. M. S. Macrakis (ed). MIT Press, Cambridge, Mass (1974) pp 499–515.
99. R. S. Berry: Energy use and energy waste. in: *Environmental Quality and Food Supply*. Futura, Mt. Kisco, New York (1974) pp 115–130.
100. R. S. Berry: Photochemical reactions. in: *Encyclopaedia Britannica*, 15th ed. T. Hori (ed). Chicago, IL (1974) pp 291–296.
101. R. S. Berry: The theory of Penning ionization. *Radiat. Res.* **59**, 367–375 (1974).
102. R. S. Berry: Ionization processes at low energies. *Adv. Mass Spectrosc.* **6**, 1–13 (1974).
103. S. Edelstein, M. Lambropoulos, J. Duncanson and R. S. Berry: Angular distribution of electrons from two-photon ionization of Ti atoms. *Phys. Rev. A* **9**, 2459–2465 (1974).
104. R. S. Berry: Crises of resource scarcity. a paper prepared for the Joint Anglo-French Pugwash Symposium on Energy, Arc-et-Senans, France, 4–8 July 1974. *Bull. At. Sci.* Jan, 31–36 (1975).
105. R. S. Berry, T. V. Long, II, and H. Makino: Energy budgets 5, an international comparison of polymers and their alternatives. *Energy Policy* **3** (2), 144–155 (1975).
106. R. S. Berry: Ethics and the assimilation of science. in: *Proceedings of the Fourth International Conference on the Unity of Science* (1975).
107. G. Becker, R. S. Berry (Chairman), D. Currie, J. E. Dyrud, A. Gibbard, P. Schmitter, D. F. Steiner, R. Stern and R. Wilson: Report of the Committee on the Consequences of Research. in: *The University of Chicago Record XI*, 8–22 (1975).
108. R. S. Berry: Two-photon processes. in: *Electron and Photon Interactions with Atoms*. H. Kleinpoppen and M. R. C. McDowell (eds). Plenum, New York (1976) pp 559–579.
109. B. L. Blaney and R. S. Berry: Electron capture into eight excited states of ${}^7\text{Li}$ in collisions of 2-keV ${}^7\text{Li}^+$ on H_2 . *Phys. Rev. A* **13**, 1034–1042 (1976).
110. C. Duzy and R. S. Berry: Photoionization and Rydberg states of N_2 . *J. Chem. Phys.* **64**, 2421–2430 (1976).
111. C. Duzy and R. S. Berry: Autoionization of N_2 . *J. Chem. Phys.* **64**, 2431–2436 (1976).
112. J. W. Laing and R. S. Berry: The normal coordinates, structure, and bonding of benzyne. *J. Am. Chem. Soc.* **98**, 660–664 (1976).
113. R. S. Berry: Thermodynamics and energy use in materials supply. in: *Proceedings of the American Physics Society Conference on Materials Supply* (1976) pp 1–20.
114. M. E. Kellman and R. S. Berry: Correlation diagram for rigid and nonrigid three-body systems. *Chem. Phys. Lett.* **42**, 327–330 (1976).
115. R. S. Berry: Reducing the energy demand. in: *The New York Times*, Thursday February 12, 1976, p 33M.
116. J. A. Duncanson, Jr., M. P. Strand, A. Lingård and R. S. Berry: Angular distributions of electrons from resonant two-photon ionization of sodium. *Phys. Rev. Lett.* **37**, 987–990 (1976).
117. B. Andresen, R. S. Berry, A. Nitzan and P. Salamon: Thermodynamics in finite time. I. The step-Carnot cycle. *Phys. Rev. A* **15**, 2086–2093 (1977).

118. P. Salamon, B. Andresen and R. S. Berry: Thermodynamics in finite time. II. Potentials for finite-time processes. *Phys. Rev. A* **15**, 2094–2102 (1977).
119. P. D. Gait and R. S. Berry: Anomalous emission in the blue wings of sodium and rubidium lines. *J. Chem. Phys.* **66**, 2387–2391 (1977).
120. B. Andresen, P. Salamon and R. S. Berry: Thermodynamics in finite time. Extremals for imperfect heat engines. *J. Chem. Phys.* **66**, 1571–1577 (1977).
121. P. D. Gait and R. S. Berry: Anomalous emission from atomic lines of sodium and rubidium in shock-heated salt vapors. in: *Electron Transition Lasers II*. S. N. Suchard and I. I. Steinfeld (eds). MIT Press, Cambridge, Mass (1977), paper III, pp 211–217.
122. P. D. Gait and R. S. Berry: Oscillations of the D line emission in shock generated sodium halide plasmas. *J. Chem. Phys.* **66**, 2764–2765 (1977).
123. N. E. Abrams and R. S. Berry: Mediation: A better alternative to science courts. *Bull At. Sci.* **33**, 50–53 (1977).
124. S. Hebenstreit, T. V. Long, II, and R. S. Berry: Energy requirements and conservation potential in the cement industry. in: *Proceedings of the Fourth National Conference on Energy and the Environment*, October 1976, American Institute of Chemical Engineers, Dayton, Ohio.
125. B. Andresen, R. S. Berry and P. Salamon: Optimization of processes with finite-time thermodynamics. in: *Proceedings of the International Conference on Energy Use Management*. R. Fazzolare and C. B. Smith (eds). Pergamon Press, New York (1977) Vol. II, pp 1–9.
126. M. T. Woo, T. Noguchi, T. V. Long, II, and R. S. Berry: Methodology for energy analysis. in: *Proc of the International Conf on Energy Use Management*. R. Fazzolare and C. B. Smith (eds). Pergamon Press, New York (1977) Vol. II, pp 649–664.
127. R. S. Berry, P. Salamon and G. Heal: On a relation between economic and thermodynamic optima. *Resour. Energy* **1**, 125–137 (1978).
128. P. Rehmus, M. E. Kellman and R. S. Berry: Spatial correlation of atomic electrons: He^{**} . *Chem. Phys.* **31**, 239–262 (1978).
129. P. Rehmus, C. C. J. Roothaan and R. S. Berry: Visualization of electron correlation in ground states of He and H^- . *Chem. Phys. Lett.* **58**, 321–325 (1978).
130. M. P. Strand, J. C. Hansen, R.-L. Chien and R. S. Berry: Influence of nuclear spin on angular distribution and polarization of photoelectrons: Resonant two-photon ionization of Na. *Chem. Phys. Lett.* **59**, 205–209 (1978).
131. M. Lounsbury, S. Hebenstreit and R. S. Berry: Resource Analysis: Water and Energy as Linked Resources. University of Illinois Water Resources Center, Urbana, Illinois (1978).
132. R. R. Kracum, M. T. Woo and R. S. Berry: Energy and materials analysis of the remanufacturing of auto parts. in: *Procedures of the Product Remanufacturing Forum*. National Bureau of Standards, Gaithersburg, Maryland (1978).
133. R. S. Berry: Optical spectra of the alkali halide molecules. in: *Alkali Halide Vapors: Structure, Spectra and Reaction Dynamics*. P. Davidovits and D. L. McFadden (eds). Academic Press, New York (1979) pp 77–123.
134. F. Amar, M. E. Kellman and R. S. Berry: Correlation diagrams for rigid and nonrigid four body systems. *J. Chem. Phys.* **70**, 1973–1985 (1979).
135. L. Gaines, R. S. Berry and T. V. Long II: *TOSCA: The Total Social Cost of Coal and Nuclear Power*. Ballinger Press, Cambridge, Mass (1979).
136. M. Valley and R. S. Berry: Correlation effects in low-energy scattering of electrons by a model negative ion. *J. Phys. B* **12**, 1529–1548 (1979).
137. P. Rehmus and R. S. Berry: Visualization of electron correlation in a series of helium S states. *Chem. Phys.* **38**, 257–275 (1979).
138. R. S. Berry: Symmetry and thermodynamics from structured molecules to liquid drops. in: *The Permutation Group in Physics and Chemistry*. J. Hinze (ed). in: *Lecture Notes in Chemistry*. Springer-Verlag, Berlin (1979) Vol. 12, pp 92–120.
139. R. S. Berry: Floppy Molecules. *Natural History* **88**, 15–24 (1979).
140. B. DeVries and R. S. Berry: Physical information in economic analysis. in: *Changing Energy use Futures*. R. A. Fazzolare and C. B. Smith (eds). Pergamon Press, New York (1979) Vol. 1, pp 156–164.
141. N. Meshkov and R. S. Berry: Can thermodynamics say anything useful about the economics of production? in: *Changing Energy use Futures*. R. A. Fazzolare and C. B. Smith (eds). Pergamon Press, New York (1979) Vol. 1, pp 374–382.
142. R. S. Berry: Energy Analysis for energy policy. in: *Energy Policy the Global Challenge*. J. W. C. Tomlinson and P. N. Nemetz (eds). Journal of Business Administration of the University of British Columbia, Vancouver, Canada (1979) Chapter 4, pp 83–105.
143. R. S. Berry: The organic materials system: Toward making practical choices. in: *Proceedings of the First CHEMRAWN (IUPAC) Conference*, Toronto, July 1978, Pergamon Press (1980) pp 99–107.
144. R. S. Berry: Elementary attachment and detachment process I. in: *Advances in Electronics and Electron Physics*. L. Marton (ed). Academic Press, New York (1980) Vol. 51, pp 137–182.
145. J. C. Hansen; J. A. Duncanson, Jr.; R.-L. Chien and R. S. Berry: Angular distributions of photoelectrons from resonant two-photon ionization of sodium through the $3p^2P_{3/2}$ intermediate state. *Phys. Rev. A* **21**, 222–233 (1980).
146. F. Schlögl and R. S. Berry: Small roughness fluctuations in the layer between two phases. *Phys. Rev. A* **21**, 2078–2081 (1980).
147. M. J. Ondrechen, R. S. Berry and B. Andresen: Thermodynamics in finite time: A chemically driven engine. *J. Chem. Phys.* **72**, 5118–5124 (1980).
148. R. S. Berry, S. A. Rice and J. Ross: *Physical Chemistry*. J. Wiley & Sons, New York (1980).
149. M. J. Ondrechen, B. Andresen and R. S. Berry: Thermodynamics in finite time: Processes with temperature-dependent chemical reactions. *J. Chem. Phys.* **73**, 5838–5843 (1980).
150. P. Salamon, B. Andresen, P. D. Gait and R. S. Berry: The significance of Weinhold's length. *J. Chem. Phys.* **73**, 1001–1002 and 5407 (1980).
151. P. Salamon, A. Nitzan, B. Andresen and R. S. Berry: Minimum entropy production and the optimization of heat engines. *Phys. Rev. A* **21**, 2115–2129 (1980).

152. M. E. Kellman, F. Amar and R. S. Berry: Correlation diagrams for rigid and nonrigid 3-body systems. *J. Chem. Phys.* **73**, 2387–2404 (1980).
153. R. S. Berry: Chemistry of gaseous ion pairs produced by thermal collisions. *J. Chem. Phys.* **77**, 759–768 (1980).
154. R. S. Berry: A general phenomenology for small clusters, however floppy. in: *Quantum Dynamics of Molecules* NATO ASI-B 57. R. G. Woolley (ed). Plenum, NY (1980) pp 143–195.
155. P. Rehmus and R. S. Berry: The mechanism of atomic autoionization. *Phys. Rev. A* **23**, 416–426 (1981).
156. R. S. Berry and S. Leach: Elementary attachment and detachment processes II. in: *Advances in Electronics and Electron Physics*. (1981) Vol. 57, pp 1–144.
157. R. S. Berry: The practical and the pure. intended for: *Living in the Environment*, 3rd ed. G. T. Miller, Jr (ed). Wadsworth, Belmont, California (1981). Fate unknown.
158. M. Mozurkewich and R. S. Berry: Finite time thermodynamics: Engine performance improved by optimized piston motion. *Proc. Natl. Acad. Sci.* **78**, 1986–1988 (1981).
159. H.-J. Yuh, G. Ezra, P. Rehmus and R. S. Berry: Electron correlation and Kellman-Herrick quantization in doubly excited helium. *Phys. Rev. Lett.* **47**, 497–500 (1981).
160. M. P. Strand and R. S. Berry: Quantum mechanical angular distributions and group representations on Banach spaces. in: *Quantum Mechanics in Mathematics, Chemistry and Physics*. K. E. Gustafson and W. P. Reinhardt (eds). Plenum, New York (1981) pp 415–434.
161. R. S. Berry: Testimony on the review of the National Bureau of Standards Organic Act, hearings before the Subcommittee on Science, Research & Technology of the Committee on Science and Technology, U. S. House of Representatives, June 1981, pp 193–215.
162. R. S. Berry, M. Lounsbury and E. S. Hebenstreit: Water and Energy: linked resources. *Water Eng. Manage.* August, 42–44 (1981).
163. M. J. Ondrechen, B. Andresen, M. Mozurkewich and R. S. Berry: Maximum work from a finite reservoir by sequential Carnot cycles. *Am. J. Phys.* **49**, 681–685 (1981).
164. R. S. Berry: This week's citation classic. in: *Current Contents. Physical, Chemical & Earth Sciences*. Bonnie Cohen (ed). Institute for Scientific Information, Philadelphia (1981) pp 20.
165. R. S. Berry and B. Andresen: Thermodynamic constraints in economic analysis, in: *Self-Organization and Dissipative Structures*. W. C. Schieve and P. M. Allen (eds). University of Texas Press, Austin (1982) pp 323–338.
166. M. Mozurkewich and R. S. Berry: Optimal paths for thermodynamic systems: The ideal Otto cycle. *J. Appl. Phys.* **53**, 34–42 (1982).
167. M. P. Strand and R. S. Berry: Group representations in the Liouville representation and the algebraic approach. *J. Math. Phys.* **23**, 587–593 (1982).
168. G. S. Ezra and R. S. Berry: Correlation diagrams for rigid and nonrigid five-body and XY₅ six- body systems. *J. Chem. Phys.* **76**, 3679–591 (1982).
169. G. S. Ezra and R. S. Berry: Correlation of two particles on a sphere. *Phys. Rev. A* **25**, 1513–1527 (1982).
170. M. H. Rubin, B. Andresen and R. S. Berry: Finite time constraints and availability. in: *Beyond the Energy Crisis. Opportunity and Challenge*. R. A. Fazzolare and C. B. Smith (eds). Pergamon Press, New York (1982) Vol. II, pp 1177–1183.
171. R. S. Berry: Are atoms and small molecules almost the same? in: *Intramolecular Dynamics*. J. Jortner and B. Pullman (eds). Reidel, Dordrecht, Holland (1982) pp 29–52.
172. R. S. Berry: What is really happening in laser-induced processes in collisions, in: *Physics of Electronic and Atomic Collisions*. S. Datz (ed). North-Holland Publishing Co., Amsterdam (1982) pp 413–427.
173. A. S. Ragone, D. H. Levy and R. S. Berry: Fluorescence spectra of the NaI molecule. *J. Chem. Phys.* **77**, 3784–3789 (1982).
174. R. S. Berry, F. d'Isep and L. Sertorio: Behavior of a thermodynamic model system under time-dependent periodic boundary conditions. *Nuovo Cimento* **5C**, 332–358 (1982).
175. R. S. Berry, G. S. Ezra and G. Natanson: Collective and independent-particle motion in simple atoms and molecules: A unification? in: *New Horizons of Quantum Chemistry*. P.-O. Lowdin and B. Pullman (eds). Reidel Dordrecht, Holland (1983) pp 77–93.
176. R. S. Berry: Electron correlation and the mechanism of atomic autoionization. in: *Energy Storage and Redistribution in Molecules*. J. Hinze (ed). Plenum Press, New York (1983) pp 275–91.
177. F. Schlögl, C. Escher and R. S. Berry: Fluctuations in the interface between two phases. *Phys. Rev. A* **27**, 2698–2704 (1983).
178. P. Salamon, E. Ihrig and R. S. Berry: A group of coordinate transformations which preserve the metric of Weinhold. *J. Math. Phys.* **24**, 2515–2520 (1983).
179. G. Natanson, F. Amar and R. S. Berry: Melting and surface tension in microclusters. *J. Chem. Phys.* **78**, 399–408 (1983).
180. R. S. Berry: On the onset of strong mode coupling in small polyatomic molecules. *J. Chem. Phys.* **78**, 3976–3980 (1983).
181. M. Mozurkewich and R. S. Berry: Optimization of a heat engine based on a dissipative system. *J. Appl. Phys.* **54**, 3651–3661 (1983).
182. B. Andresen, M. H. Rubin and R. S. Berry: Availability for finite-time processes: General theory and a model. *J. Phys. Chem.* **87**, 2704–2713 (1983).
183. G. S. Ezra and R. S. Berry: Collective and independent-particle motion in doubly excited two- electron atoms. *Phys. Rev. A* **28**, 1974–1988 (1983).
184. G. S. Ezra and R. S. Berry: Quantum states of two particles on concentric spheres. *Phys. Rev. A* **28**, 1989–2000 (1983).
185. P. Salamon and R. S. Berry: Thermodynamic length and dissipated availability. *Phys. Rev. Lett.* **51**, 1127–1130 (1983).
186. R.-L. Chien, O. C. Mullins and R. S. Berry: Angular distributions and quantum beats of photoelectrons from resonant two-photon ionization of lithium. *Phys. Rev. A* **28**, 2078–2084 (1983).
187. R. S. Berry: A crisis of ignorance. *Acc. Chem. Res.* **16**, 145 (1983).

188. R. S. Berry and D. H. Levy: Reply to "Comment on 'fluorescence spectra of the NaI molecule". J. Chem. Phys. **78**, 6342–6243 (1983).
189. O. C. Mullins and R. S. Berry: Minimization of entropy production in distillation. J. Phys. Chem. **88**, 723–728 (1984).
190. J. C. Hansen and R. S. Berry: Angular distributions of electrons from resonant two-photon ionization of molecules. J. Chem. Phys. **80**, 4078–4096 (1984).
191. R. Milstein and R. S. Berry: Collisional dissociation and chemical relaxation of alkali halide molecules: 2000–4000K. J. Chem. Phys. **80**, 6025–6037 (1984).
192. G. Natanson and R. S. Berry: Splitting the degeneracy of harmonically bound identical spinless bosons: General derivation. Ann. Phys. **155**, 158–177 (1984).
193. G. Natanson and R. S. Berry: Splitting the degeneracy of harmonically bound identical spinless bosons: Pairwise delta-function potentials. Ann. Phys. **155**, 178–201 (1984).
194. B. Andresen, R. S. Berry, M. J. Ondrechen and P. Salamon: Thermodynamics for processes in finite time. Acc. Chem. Res. **17**, 266–271 (1984).
195. R. S. Berry: Transitions between resonances: Some proposals for experiments. in: Collisions and Half-Collisions with Lasers. N. K. Rahman and C. Guidotti (eds). Harwood Academic Publishers, New York (1984) pp 179–201.
196. R. S. Berry: The federal laboratories. Bull. At. Sci. March 21–25 (1984).
197. R. S. Berry, J. Jellinek and G. Natanson: Unequal freezing and melting temperatures for clusters. Chem. Phys. Lett. **107**, 227–230 (1984).
198. R. S. Berry, J. Jellinek and G. Natanson: Melting of clusters and melting. Phys. Rev. A **30**, 919–931 (1984).
199. B. Andresen, P. Salamon and R. S. Berry: Thermodynamics in finite time. Phys. Today **37**, 62–70 (1984).
200. G. S. Ezra and R. S. Berry: Comment on "Classification of doubly excited states of two electron atoms" by C. D. Lin. Phys. Rev. Lett. **52**, 1252 (1984).
201. G. A. Natanson, G. S. Ezra, G. Delgado-Barrio and R. S. Berry: Calculation of rovibrational spectra of water by means of particles-on-concentric-spheres models. I. Ground stretching vibrational state. J. Chem. Phys. **81**, 3400–3406 (1984).
202. J. Weber and R. S. Berry: Collisional dissociation and chemical relaxation of rubidium and cesium halide molecules. Adv. Chem. Phys. **58**, 127–208 (1985).
203. K. H. Hoffmann, S. J. Watowich and R. S. Berry: Optimal paths for thermodynamic systems: The ideal diesel cycle. J. Appl. Phys. **58**, 2125–2134 (1985).
204. O. C. Mullins, R.-L. Chien, J. E. Hunter, III, J. S. Keller and R. S. Berry: Angular distributions of photoelectrons from excited valence ${}^1, {}^3P_1$ states of Ca, Sr and Ba. Phys. Rev. A **31**, 321–328 (1985).
205. O. C. Mullins, R.-L. Chien, J. E. Hunter, III, D. K. Jordan and R. S. Berry: Electron correlation effects in resonant multiphoton ionization of barium. Phys. Rev. A **31**, 3059–3067 (1985).
206. O. C. Mullins, J. E. Hunter, III, J. S. Keller and R. S. Berry: Strong angular correlation of bound electrons revealed by resonant two-color, three-photon ionization of barium. Phys. Rev. Lett. **54**, 410–413 (1985).
207. J. L. Krause and R. S. Berry: Electron correlation in alkaline-earth atoms. Phys. Rev. A **31**, 3502–3504 (1985).
208. P. Salamon, J. D. Nulton and R. S. Berry: Length in statistical thermodynamics. J. Chem. Phys. **82**, 2433–2436 (1985).
209. J. W. Warner and R. S. Berry: Hund's rule. Nature **313**, 160 (1985).
210. J. W. Warner and R. S. Berry: Injection quenching and the high-temperature water-splitting reactor. Sol. Energy **35**, 535–537 (1985).
211. M. Barat, J. C. Brenot, J. A. Fayeton, J. C. Houver, J. B. Ozenne, R. S. Berry and M. Durup-Ferguson: The dynamics of $\text{Cl}^- + \text{H}_2$ reactive collisions. Chem. Phys. **97**, 165–177 (1985).
212. S. J. Watowich, J. L. Krause and R. S. Berry: Stability analysis and optimal control of a photochemical heat engine. in: Applications of Computer Algebra. R. Pavelle (ed). Kluwer Academic Publishers, Boston (1985) pp 183–209.
213. S. J. Watowich, K. H. Hoffmann and R. S. Berry: Intrinsically irreversible light-driven engine. J. Appl. Phys. **58**, 2893–2901 (1985).
214. J. L. Krause and R. S. Berry: Electron correlation in the ground and low-lying states of alkaline earth atoms. J. Chem. Phys. **83**, 5153–5162 (1985).
215. F. D'Isep, L. Sertorio and R. S. Berry: Entropy flow in a two-component system with periodic geophysical inputs. Nuovo Cimento **8C**, 515–530 (1985).
216. R. S. Berry: The mechanism of autoionization: A molecular view. in: Proceedings of the Workshop on Some Aspects of Autoionization in Atoms and Small Molecules, Argonne National Laboratory, May 1985. J. Berkowitz, H. G. Berry and R. S. Berry (eds). Argonne National Laboratory Report ANL-Phy-85-3 (1985).
217. R. S. Berry: Prospects for laser-induced processes in collisions: A Round table. J. Phys. **46**, C1–319–21 (1985).
218. J. W. Warner and R. S. Berry: Hydrogen separation and the direct high-temperature splitting of water. Int. J. Hydrogen Energy **11**, 91–100 (1986).
219. G. A. Natanson, G. S. Ezra, G. Delgado-Barrio and R. S. Berry: Calculation of rovibrational spectra of water by means of particles-on-concentric-spheres models. II. Excited states of stretching vibrations. J. Chem. Phys. **84**, 2035–2044 (1986).
220. R. S. Berry and J. L. Krause: The potential in a two-electron atom. Phys. Rev. A **33**, 2865–2869 (1986).
221. J. Jellinek, T. L. Beck and R. S. Berry: Solid–liquid phase changes in simulated isoenergetic Ar_{13} . J. Chem. Phys. **84**, 2783–2794 (1986).
222. J. L. Krause and R. S. Berry: Electron correlation in alkali negative ions. Comments At. Mol. Phys. **18**, 91–106 (1986).
223. S. J. Watowich, J. L. Krause and R. S. Berry: Stability analysis of an optically controlled light-driven engine. J. Symbol. Comp. **2**, 103–108 (1986).
224. R. S. Berry: Collective and planetary motion in atoms, in: The Lesson of Quantum Theory. J. de Boer, E. Dal and O. Ulfbeck (eds). Elsevier, Amsterdam (1986) pp 241–262.
225. S. J. Watowich and R. S. Berry: Optimal current paths for model electrochemical systems. J. Phys. Chem. **90**, 4624–4631 (1986).
226. R. S. Berry: Angular distributions and electron correlation from resonance ionization spectroscopy of barium atoms. Inst. Phys. Conf. Ser. **84**, 203–208 (1986).

227. J. E. Hunter, III, J. S. Keller and R. S. Berry: Experimental study of configuration mixing in intermediate excited levels of barium. *Phys. Rev. A* **32**, 3138–3145 (1986).
228. M. E. Carrera-Patino and R. S. Berry: Entropy production in stopping atoms with laser light. *Phys. Rev. A* **34**, 4728–4736 (1986).
229. F. Amar and R. S. Berry: The onset of nonrigid dynamics and the melting transition in Ar₇. *J. Chem. Phys.* **85**, 5943–5954 (1986).
230. R. S. Berry: Molecules: Rigid/floppy or solid/liquid. in: *Understanding Molecular Properties*. J. Avery, J. P. Dahl and A. E. Hansen (eds). Reidel, Boston (1987) pp 425–448.
231. R. S. Berry: Melting and freezing of microclusters from analytics and simulations. in: *Microclusters*. S. Sugano, Y. Nishina and S. Ohnishi (eds). Springer, New York (1987) pp 200–210.
232. J. Bernholc, P. Salamon and R. S. Berry: Annealing of fine powders: Initial shapes and grain boundary motion. in: *The Physics and Chemistry of Small Clusters*. P. Jena, S. N. Khanna and B. K. Rao (eds). Plenum, New York (1987) pp 43–48.
233. R. S. Berry, T. L. Beck, H. L. Davis and J. Jellinek: Melting and freezing of microclusters. in: *The Physics and Chemistry of Small Clusters*. P. Jena, S. N. Khanna and B. K. Rao (eds). Plenum, New York (1987) pp 185–191.
234. T. L. Beck and R. S. Berry: Steepest descent quenches and the melting of microclusters. in: *The Physics and Chemistry of Small Clusters*. P. Jena, S. N. Khanna and B. K. Rao (eds). Plenum, New York (1987) pp 213–218.
235. J. W. Warner and R. S. Berry: On the thermodynamics of fuel synthesis. *J. Phys. Chem.* **91**, 2216–2226 (1987).
236. J. W. Warner and R. S. Berry: Alternative perspective on photosynthetic yield and enhancement. *Proc. Natl. Acad. Sci.* **84**, 4103–4107 (1987).
237. J. L. Krause, J. D. Morgan, III, and R. S. Berry: Expectation values of $\mathbf{p}_1 \cdot \mathbf{p}_2$ as a measure of correlation in two-electron atoms. *Phys. Rev. A* **35**, 3189–3196 (1987).
238. H. L. Davis, J. Jellinek and R. S. Berry: Melting and freezing in isothermal Ar₁₃ clusters. *J. Chem. Phys.* **86**, 6456–6469 (1987).
239. T. L. Beck, J. Jellinek and R. S. Berry: Rare gas clusters: Solids, slush and magic numbers. *J. Chem. Phys.* **87**, 545–554 (1987).
240. P. C. Ojha and R. S. Berry: Angular correlation of two electrons on a sphere. *Phys. Rev. A* **36**, 1575–1585 (1987).
241. J. E. Hunter, III, and R. S. Berry: Projection of accurate configuration-interaction wave functions for He** and the alkaline earth-metal atoms onto simple rotor-vibrator wave functions. *Phys. Rev. A* **36**, 3042–3053 (1987).
242. R. S. Berry: Phase changes: The interplay of dynamics and equilibrium in finite systems. in: *Large Finite Systems*. J. Jortner, A. Pullman and G. Pullman (eds). Reidel, Amsterdam (1987) pp 135–143.
243. J. E. Hunter, III, and R. S. Berry: Oscillator strengths for the alkaline-earth atoms using rotor-vibrator and configuration-interaction wave functions. *Phys. Rev. Lett.* **59**, 2959–2962 (1987).
244. J. Jellinek and R. S. Berry: Simulation of arbitrary ensembles by extended dynamics: A unified scheme. in: *The Physics of Phase Space*. Y. S. Kim and W. W. Zachary (eds). Lecture Notes in Physics 278, Springer-Verlag (1987) pp 78–81.
245. B. Andresen, R. S. Berry, R. Gilmore, E. Ihrig and P. Salamon: Thermodynamic geometry and the metrics of Weinhold and Gilmore. *Phys. Rev. A* **37**, 845–848 (1988).
246. B. Andresen, R. S. Berry, E. Ihrig and P. Salamon: Inducing Weinhold's metric from Euclidean and Riemannian metrics. *Phys. Rev. A* **37**, 849–851 (1988).
247. R. S. Berry and J. Krause: Independent and collective behavior within atoms and molecules. in: *Evolution of Size Effects in Chemical Dynamics Part I*. I. Prigogine and S. A. Rice (eds). *Adv. Chem. Phys.* **70**, Part 1, 35–51 (1988).
248. R. S. Berry, T. L. Beck, H. L. Davis and J. Jellinek: Solid–liquid-phase behavior in microclusters. in: *Evolution of Size Effects in Chemical Dynamics Part 2*. I. Prigogine and S. A. Rice (eds). *Adv. Chem. Phys.* **70**, Part 2, 75–138 (1988).
249. J. E. Hunter, III, D. M. Leitner, G. A. Natanson and R. S. Berry: Theoretical intensities for rotation-vibration lines of water using particles-on-a-sphere wave functions. *Chem. Phys. Lett.* **144**, 145–148 (1988).
250. T. L. Beck and R. S. Berry: The interplay of structure and dynamics in the melting of small clusters. *J. Chem. Phys.* **88**, 3910–3922 (1988).
251. P. Ojha and R. S. Berry: On adiabatic separation of stretching and bending vibrations. *Mol. Phys.* **63**, 909–919 (1988).
252. R. S. Berry, H. L. Davis and T. L. Beck: Finding saddles on multidimensional potential surfaces. *Chem. Phys. Lett.* **147**, 13–17 (1988).
253. H. L. Davis, T. L. Beck, P. A. Braier and R. S. Berry: Time scale considerations in the characterization of melting and freezing in microclusters. in: *The Time Domain in Surface and Structural Dynamics*. G. J. Long and F. Grandjean (eds). Kluwer Academic Publishers, Norwell, Mass (1988) pp 535–549.
254. T. L. Beck, D. M. Leitner and R. S. Berry: Melting and phase space transitions in small clusters: Spectral characteristics, dimensions and K-entropy. *J. Chem. Phys.* **89**, 1681–1694 (1988).
255. J. Jellinek and R. S. Berry: Generalization of Nosé's isothermal molecular dynamics. *Phys. Rev. A* **38**, 3069–3072 (1988).
256. D. M. Leitner, G. A. Natanson, R. S. Berry, P. Villarreal and G. Delgado-Barrio: Particles-on-a-sphere method for computing the rotational-vibrational spectrum of H₂O. *Comput. Phys. Commun.* **51**, 207–216 (1988).
257. R. S. Berry: Metric geometry in irreversible thermodynamics. in: *Proceedings of the Sixth Symposium on Energy Engineering Sciences*, May 1988. Argonne National Laboratory, U.S. DoE CONF-8805106, pp 129–135.
258. R. S. Berry: How good is Niels Bohr's atomic model? *Contemp. Phys.* **30**, 1–19 (1989).
259. R. D. Levine and R. S. Berry: Why separable vibrational modes dominate spectra. *J. Chem. Phys.* **88**, 2071–2072 (1989).

260. R. S. Berry: Robert Sanderson Mulliken. in: American Philosophical Society Yearbook, Philadelphia, PA (1989) pp 187–194.
261. F. Amar, J. Bernholc, R. S. Berry, J. Jellinek and P. Salamon: The shapes of first-stage sinters. *J. Appl. Phys.* **65**, 3219–3225 (1989).
262. S. Sieniutycz and R. S. Berry: Conservation laws for Hamilton's principle for non-LTE fluids with heat flow. *Phys. Rev. A* **40**, 348–361 (1989).
263. R. S. Berry: Small clusters: Between dynamics and thermodynamics. *Z. Phys. D* **12**, 161–165 (1989).
264. R. S. Berry and D. J. Wales: Freezing, melting, spinodals and clusters. *Phys. Rev. Lett.* **63**, 1156–1159 (1989).
265. D. M. Leitner, R. S. Berry and R. M. Whitnell: Quantum chaos of Ar₃: Statistics and Eigenvalues. *J. Chem. Phys.* **91**, 3470–3476 (1989).
266. R. S. Berry: Our energy future: Time horizons and instability. *Environment* **31** (6), 5 (1989).
267. J. Jellinek and R. S. Berry: Generalization of Nosé's isothermal molecular dynamics: Necessary and sufficient conditions of dynamical simulations of statistical ensembles. *Phys. Rev. A* **40**, 2816–2818 (1989).
268. R. S. Berry: Small Molecules and ions: A thing or two we still do not understand. in: *The Structure of Small Molecules and Ions*, R. Na'amani and Z. Vager (eds). Plenum, New York (1988) pp 1–9.
269. S. J. Watowich, K. H. Hoffman and R. S. Berry: Optimal paths for a bimolecular, light-driven engine. *Nuovo Cimento B* **104B**, 131–147 (1989).
270. P. Salamon, J. Bernholc, R. S. Berry, M. E. Carrera-Patiño and B. Andresen: The wetted solid—a generalization of Plateau's problem and its implications for sintered materials. *J. Math. Phys.* **31**, 610–615 (1990).
271. D. J. Wales and R. S. Berry: Melting and freezing of small argon clusters. *J. Chem. Phys.* **92**, 4283–4295 (1990).
272. H. L. Davis, D. J. Wales and R. S. Berry: Exploring potential energy surfaces with transition state calculations. *J. Chem. Phys.* **92**, 4308–4319 (1990).
273. D. J. Wales and R. S. Berry: Freezing, melting, spinodals and clusters. *J. Chem. Phys.* **92**, 4473–4482 (1990).
274. R. S. Berry, P. Braier, R. J. Hinde and H.-P. Cheng: Dynamics and potential surfaces of small clusters. in: *Dynamics of Molecular Processes*. Isr. J. Chem. (special issue) **30**, 39–44 (1990).
275. R. S. Berry: When the melting and freezing point are not the same. *Sci. Am.* **262** (8), 68–74 (1990).
276. R. S. Berry: Clusters, melting, freezing and phase transitions. *J. Chem. Soc., Faraday Trans.* **86**, 2343–2349 (1990).
277. R. S. Berry: Melting, freezing and other peculiarities in small systems. *Phase Transitions* (special issue) **24–26**, 259–270 (1990).
278. R. J. Hinde and R. S. Berry: Correlation of two weakly attractive particles on a sphere. *Phys. Rev. A* **42**, 2259–2266 (1990).
279. R. S. Berry, H.-P. Cheng and J. Rose: Freezing and melting of metallic and salt-like clusters. *High-Temp. Sci.* **27**, 61–76 (1990).
280. R. S. Berry: Structure and dynamics of clusters: An introduction. in: *The Chemical Physics of Atomic and Molecular Clusters*. Proceedings International School of Physics "Enrico Fermi", course 107. G. Scoles (eds). North Holland, Amsterdam (1990) pp 3–22.
281. R. S. Berry: Structure and dynamics of clusters: Phase equilibrium and phase change. in: *The Chemical Physics of Atomic and Molecular Clusters*. Proceedings of the International School of Physics "Enrico Fermi", course 107. G. Scoles (ed). North Holland, Amsterdam (1990) pp 23–42.
282. V. N. Orlov and R. S. Berry: Power output from an irreversible heat engine with a nonuniform working fluid. *Phys. Rev. A* **42**, 7230–7235 (1990).
283. P. A. Braier, R. S. Berry and D. J. Wales: How the range of pair interactions governs features of multidimensional potentials. *J. Chem. Phys.* **93**, 8745–8756 (1990).
284. R. S. Berry: Clusters: New tools for insight into chemical structure and dynamics. Proceedings of the International Symposium on Modern Chemistry, Zheng Zhao, China, Henan Science, Zheng Zhao, China (1990) pp 65–90.
285. R. S. Berry, J. Bernholc and P. Salamon: The disappearance of grain boundaries in sintering. *Appl. Phys. Lett.* **58**, 595–597 (1991).
286. J. S. Keller, J. E. Hunter, III, and R. S. Berry: Path dependence in resonant multiphoton excitation to autoionizing states of barium. *Phys. Rev. A* **43**, 2270–2280 (1991).
287. S. Sieniutycz and R. S. Berry: Field thermodynamic potentials and geometric thermodynamics with heat transfer. *Phys. Rev. A* **43**, 2807–2818 (1991).
288. R. S. Berry: Symmetry in atomic and molecular systems. *Computers & Mathematics with Applications* **21**, 39–52 (1991).
289. D. M. Leitner, J. E. Hunter, G. A. Natanson, R. S. Berry, P. Villarreal and G. Delgado-Barrio: Variational calculation of the rovibrational spectrum of H₂O using the coupled-rotor basis. *J. Chem. Phys.* **94**, 5917–5926 (1991).
290. H.-P. Cheng, R. S. Berry and R. L. Whetten: Electronic structures and binding energies of aluminum clusters. *Phys. Rev. B* **43**, 10 647–653 (1991).
291. H.-P. Cheng and R. S. Berry: Surface melting and surface diffusion on clusters. *Proc. Mater. Res. Soc. Fall 1990* **206**, 241–252 (1991).
292. R. G. Daniel, J. S. Keller, D. Pines and R. S. Berry: Photoelectrons from resonant ionization of Na₂: Angular and non-Franck–Condon energy distributions. *Chem. Phys. Lett.* **182**, 275–282 (1991).
293. V. N. Orlov and R. S. Berry: Estimation of minimal heat consumption for heat driven separation processes via methods of finite-time thermodynamics. *J. Phys. Chem.* **95**, 5624–5628 (1991).
294. D. J. Wales and R. S. Berry: Local interpretation of chaotic dynamics in many-body classical Hamiltonian system. *J. Phys. B* **24**, L351–357 (1991).
295. V. N. Orlov and R. S. Berry: Thermodynamic bounds for performance of nonuniform systems under finite-time constraints. in: *Proceedings of the Ninth Symposium on Energy Engineering Sciences: Fluid and Dynamical Systems*, May 13–15, 1991. Argonne National Laboratory, U.S. DoE CONF-9105116, pp 255–261.
296. R. S. Berry: Understanding Energy: Energy, Entropy and Thermodynamics for Everman. World Scientific Publishing, Singapore, 1991.
297. R. S. Berry: Robert Sanderson Mulliken. in: *Remembering the University of Chicago*. E. Shils (ed). University of Chicago Press (1991) pp 360–373.

298. P. Basa, J. C. Schön, R. S. Berry, J. Bernholc, J. Jellinek and P. Salamon: Shapes of wetted solids and sinters. *Phys. Rev. B* **43**, 8113–8122 (1991).
299. S. C. Ceraulo and R. S. Berry: Quadrupole moments as measures of electron correlation in “two- electron” atoms. *Phys. Rev. A* **44**, 4145–4153 (1991).
300. R. S. Berry: How we and molecules explore molecular landscapes. in: *Mode Selective Chemistry*. J. Jortner (ed). Kluwer Academic Publishers, The Netherlands (1991) pp 1–15.
301. J. L. Persson, R. L. Whetten, H.-P. Cheng and R. S. Berry: Evidence for quantized electronic level structure for 100–1300 electrons in metal-atomic clusters. *Chem. Phys. Lett.* **186**, 215–222 (1991).
302. J. P. Rose and R. S. Berry: Towards elucidating the interplay of structure and dynamics in clusters: Small KCl clusters as models. *J. Chem. Phys.* **96**, 517–538 (1992).
303. R. J. Hinde, R. S. Berry and D. J. Wales: Chaos in small clusters of inert gas atoms. *J. Chem. Phys.* **96**, 1376–1390 (1992).
304. C. Amitrano and R. S. Berry: Probability distributions of local Liapunov exponents for small clusters. *Phys. Rev. Lett.* **68** (6), 729–732 (1992).
305. D. J. Wales and R. S. Berry: Limitations of the Murrell-Laidler theory. *J. Chem. Soc., Faraday Trans.* **8**, 543–544 (1992).
306. V. N. Orlov and R. S. Berry: Analytical and numerical estimates of efficiency for an irreversible heat engine with distributed working fluid. *Phys. Rev. A* **45** (10), 7202–7206 (1992).
307. H.-P. Cheng and R. S. Berry: Surface melting of clusters and implications for bulk matter. *Phys. Rev. A* **45** (11), 7969–7980 (1992).
308. H.-P. Cheng, X. Li, R. L. Whetten and R. S. Berry: Complete statistical thermodynamics of the cluster solid–liquid transition. *Phys. Rev. A* **46** (2), 791–800 (1992).
309. S. Sieniutycz and R. S. Berry: Least entropy generation: Variational principle of Onsager’s type for transient hyperbolic heat and mass transfer. *Phys. Rev. A* **46** (10), 6359–6370 (1992).
310. X.-Y. Chang and R. S. Berry: Geometry, interaction range, and annealing. *J. Chem. Phys.* **97** (5), 3573–3575 (1992).
311. R. S. Berry and H.-P. Cheng: Phase changes for clusters and for bulk matter. *NATO ASI Ser. C* **375**, 277–286 (1992).
312. R. S. Berry: Phases and phase-equilibria: Clusters to bulk matter. *Int. J. Mod. Phys. B* **6**, 3695–3707 (1992).
313. R. S. Berry, S. C. Ceraulo and J. Batka: Valence electrons in atoms: Collective or Independent- particle-like? in: *Dimensional Scaling in Chemical Physics*. D. Herschbach, J. Avery and O. Goscinsky (eds). Kluwer Academic Publishers, The Netherlands (1993) pp 485–498.
314. J. P. Rose and R. S. Berry: Freezing, melting, nonwetting and coexistence in $(\text{KCl})_{32}$. *J. Chem. Phys.* **98** (4), 3246–3261 (1993).
315. J. P. Rose and R. S. Berry: $(\text{KCl})_{32}$ and the possibilities for glassy clusters. *J. Chem. Phys.* **98** (4), 3262–3274 (1993).
316. J. L. Batka, Jr., and R. S. Berry: Validity criteria for rotor-vibrator and independent particle models of atoms: Overlaps and oscillator strengths. *J. Phys. Chem.* **97**, 2435–2442 (1993).
317. R. S. Berry: Three silly notions about technology transfer—and one that is not. *R&D Innovator* **2** (4), 1–3 and 10 (1993).
318. S. Sieniutycz and R. S. Berry: Canonical formalism, fundamental equation, and generalized thermomechanics for irreversible fluids with heat transfer. *Phys. Rev. E* **47**, 1765–1783 (1993).
319. R. S. Berry: Energy for water: Coupled resources from the other viewpoint. *International Journal on Global Energy Issues, Special Issue on Energy Analysis* **5** (1), 4–9 (1993).
320. R. S. Berry, H.-P. Cheng and J. P. Rose: Cluster simulations: Melting and sintering. in: *On Clusters and Clustering. From atoms to fractiles*. P. J. Reynolds (ed). Elsevier Science Publishers, The Netherlands (1993) pp 227–241.
321. J. P. Rose and R. S. Berry: The possibilities of glassy clusters: $(\text{KCl})_{32}$. *Z. Phys. D* **26**, 178–180 (1993).
322. J. P. Rose and R. S. Berry: Phase changes, nonwetting and coexistence: $(\text{KCl})_{32}$. *Z. Phys. D* **26**, 189–191 (1993).
323. V. K. W. Cheng, J. P. Rose and R. S. Berry: Isomers of $(\text{LiBr})_n$ $n=4,5,8$ and their interconversion. *Z. Phys. D* **26**, 195–197 (1993).
324. C. Amitrano and R. S. Berry: Clusters: A laboratory for studying chaos and ergodicity. *Z. Phys. D* **26**, 388–390 (1993).
325. R. J. Hinde and R. S. Berry: Chaotic dynamics and vibrational mode coupling in small argon clusters: the influence of potential energy saddles. *Z. Phys. D* **26**, 391–393 (1993).
326. F. Y. Li and R. S. Berry: Noble gas clusters in model zeolite cavities. *Z. Phys. D* **26**, 394–396 (1993).
327. C. Amitrano and R. S. Berry: Probability distributions of local Liapunov exponents for Hamiltonian systems. *Phys. Rev. E* **47** (5), 3158–3173 (1993).
328. R. J. Hinde and R. S. Berry: Chaotic dynamics in small inert gas clusters: The influence of potential energy saddles. *J. Chem. Phys.* **99**, 2942–2963 (1993).
329. V. N. Orlov and R. S. Berry: Power and efficiency limits for internal combustion engines via methods of finite-time thermodynamics. *J. Appl. Phys.* **74** (6), 4317–4322 (1993).
330. R. S. Berry: Potential surfaces and dynamics: What clusters tell us. *Chem. Rev.* **93**, 2379–2394 (1993).
331. R. E. Kunz and R. S. Berry: Coexistence of multiple phases in finite systems. *Phys. Rev. Lett.* **71**, 3987–3990 (1993).
332. R. S. Berry and H. Haberland: Clusters: An introduction. in: *Clusters of Atoms and Molecules*. H. Haberland (ed). Springer-Verlag, Berlin (1994) pp 1–12.
333. R. S. Berry: Melting & freezing of clusters: How they happen & what they mean. in: *Clusters of Atoms and Molecules*. H. Haberland (ed). Springer-Verlag, Berlin (1994) pp 187–205.
334. R. S. Berry: Matter, Part VII. Clusters, in: *Encyclopaedia Britannica*. T. Hori (ed). Chicago, IL (1994) Vol. 23, pp 672–678.
335. S. C. Ceraulo, R. M. Stehman and R. S. Berry: Six-fold differential cross sections for atomic helium, magnesium and calcium in $(\gamma, 2e)$ experiments. *Phys. Rev. A* **49** (3), 1730–1744 (1994).

336. R. E. Kunz and R. S. Berry: Multiple phase coexistence in finite systems. *Phys. Rev. E* **49** (3), 1895–1908 (1994).
337. A. M. Tsirlin, V. A. Kazakov and R. S. Berry: Finite-time thermodynamics: Limiting performance of rectification and minimal entropy production in mass transfer. *J. Phys. Chem.* **98**, 3330–3336 (1994).
338. P. A. Braier and R. S. Berry: Model systems and approximate constants of motion. *J. Phys. Chem.* **98**, 3506–3512 (1994).
339. V. A. Kazakov and R. S. Berry: Estimation of productivity, efficiency and entropy production for cyclic separation processes with distributed working fluid. *Phys. Rev. E* **49** (4), 2928–2934 (1994).
340. V. A. Mironova, A. M. Tsirlin, V. A. Kazakov and R. S. Berry: Finite-time thermodynamics. Exergy and optimization of time-constrained processes. *J. Appl. Phys.* **76** (2), 629–636 (1994).
341. R. S. Berry: Clusters: Tools for studying potential surfaces and their connection to molecular dynamics. *J. Phys. Chem.* **98** (28), 6910–6918 (1994).
342. R. S. Berry: Phase transitions in clusters: A bridge to condensed matter. in: *Linking the Gaseous and Condensed Phases of Matter: The Behavior of Slow Electrons*. L. G. Christophorou, E. Illenberger and W. F. Schmidt (eds). Plenum Press, New York (1994) pp 231–249.
343. R. S. Berry: Exploring potential surface landscapes and how they govern dynamics. in: *Linking the Gaseous and Condensed Phases of Matter: The Behavior of Slow Electrons*. L. G. Christophorou, E. Illenberger and W. F. Schmidt (eds). Plenum Press, New York (1994) pp 251–256.
344. D. J. Wales and R. S. Berry: Coexistence in Finite Systems. *Phys. Rev. Lett.* **73** (21) 2875–2878, (1994).
345. F.-Y. Li and R. S. Berry: Dynamics of Xe atoms in NaA zeolites and the ^{129}Xe shift. *J. Phys. Chem.* **99** (9), 2459–2468 (1995).
346. R. S. Berry: Probing the Collective and Independent-Particle Character of Atomic Electrons, in *Structure and Dynamics of Atoms and Molecules: Conceptual Trends*. J. L. Calais and E. Kryachko (eds). Kluwer Academic Publishers, The Netherlands (1995) pp 155–181.
347. R. S. Berry and R. E. Kunz: Topography and dynamics of multidimensional potential surfaces. *Phys. Rev. Lett.* **74** (20), 3951–3954 (1995).
348. S. Wolf, G. Sommerer, S. Rutz, E. Schreiber, T. Leisner, L. Wöste and R. S. Berry: Spectroscopy of size-selected neutral clusters: Femtosecond evolution of neutral silver trimers. *Phys. Rev. Lett.* **74** (21), 4177–4180 (1995).
349. R. E. Kunz and R. S. Berry: Statistical interpretation of topographies and dynamics of multidimensional potentials. *J. Chem. Phys.* **103** (5), 1904–1912 (1995).
350. J. P. K. Doye, D. J. Wales and R. S. Berry: The effect of the range of the potential on the structures of clusters. *J. Chem. Phys.* **103** (10), 4234–4249 (1995).
351. F. Y. Li and R. S. Berry: Confined clusters of rare gas atoms: Structures and phases. *J. Phys. Chem.* **99** (42), 15557–15564 (1995).
352. R. S. Berry: Preface to *Structure and Dynamics of Non-Rigid Molecules*. Y. G. Smeyers (ed). Kluwer Academic Press, The Netherlands (1995) pp ix–xi.
353. K. D. Ball, R. S. Berry, R. E. Kunz, F.-Y. Li, A. Proykova and D. J. Wales: From topographies to dynamics on multidimensional potential energy surfaces of atomic clusters. *Science* **271** (5251), 963–966 (1996).
354. R. S. Berry: Review of *Picture Book of Quantum Mechanics* by S. Drandt and H. D. Dahmen. *Phys. Today*, January, 65–66 (1996).
355. R. S. Berry: Review of *Algebraic Theory of Molecules* by F. Iachello and R. D. Levine. *Phys. Today* March, 92, 94 (1996).
356. R. S. Berry: Phases and Phase Changes of Clusters, in: *Large Clusters of Atoms and Molecules* (Proceedings of the NATO-ASI on Large Clusters of Atoms and Molecules, Ettore Majorana Centre for Scientific Culture, Erice, June 1995). T. P. Martin (ed). Kluwer, Dordrecht (1996) pp 281–298.
357. R. S. Berry and R. E. Kunz: Topographies and Dynamics of Many-Dimensional Potential Surfaces. in: *Large Clusters of Atoms and Molecules* (Proceedings of the NATO-ASI on Large Clusters of Atoms and Molecules, Ettore Majorana Centre for Scientific Culture, Erice, June 1995). T. P. Martin (ed). Kluwer, Dordrecht (1996) pp 299–314.
358. R. S. Berry: Exergy and optimization of time-constrained processes. *Periodica Polytechnica*. **2** (1–2), 5–14 (1995).
359. R. S. Berry and R. E. Breitengraser-Kunz: Clusters: Keys to the multidimensional potentials and control of morphology. in: *Structures and Dynamics of Clusters* (Proceedings of the Yamada Conference XLI on Structures and Dynamics of Clusters May 1995, Shimoda, Shizuoka, Japan). T. Kondow, K. Kaya and A. Terasake (eds). Universal Academy Press, Inc., Tokyo (1996) pp 169–174.
360. R. S. Berry: Many-dimensional potential surfaces: What they imply and how to think about them. *Int. J. Quantum Chem.* **58** (6), 657–670 (1996).
361. S. Wolf, G. Sommerer, S. Rutz, E. Schreiber, T. Leisner, L. Wöste and R. S. Berry: Size-selected neutral clusters. in: *Femtochemistry: Ultrafast Chemical and Physical Processes in Molecular Systems* (Proceedings of the FEMTO Conference, Lausanne, September 1995). M. Chergui (ed). World Scientific, Singapore (1996) pp 225–260.
362. D. T. Mainz and R. S. Berry: Effect of potential energy landscape on dynamics and phase behavior of clusters. *Mol. Phys.* **88** (3), 709–726 (1996).
363. R. E. Kunz, R. S. Berry and T. Astakhova: Using Clusters to Relate Topography and Dynamics of Multidimensional Potentials. *Surf. Rev. Lett. (Proc. ISSPIC 7, Kobe, 1994)* **3** (1), 307–312 (1996).
364. V. K. W. Cheng, J. P. Rose and R. S. Berry: Structures and dynamics of small alkali halide clusters. *Surf. Rev. Lett. (Proc. ISSPIC 7, Kobe, 1994)* **3** (1), 347–351 (1996).
365. B. Meissner, B. Schmidt and R. S. Berry: Cluster growth from gas phase: Associative collisions of small alkali halide aggregates. *Z. Phys. Chem.* **195**, 237–251 (1996).
366. R. S. Berry: Cluster dynamics: Potential surfaces. in: *Proceedings of the 1995 Welch Symposium*. Robert A. Welch Foundation, Houston (1996) pp 71–83.
367. R. S. Berry: Atomic clusters: Laboratories for studying chaos and ergodicity. in: *Chaos in Mesoscopic Systems*. G. Casati and H. Cerdiera (eds). World Scientific, Singapore (1995) pp 11–24.

368. R. S. Berry: Melting and freezing phenomena. in: Microscale Energy Transport. C. L. Tien, A. Majumdar and F. M. Gerner (eds). Taylor & Francis, Washington, D.C. (expected publication in August 1997). Also as *Microscale Thermophys. Eng.* **1**, 1–18 (1997).
369. F. Martin and R. S. Berry: Penning detachment of H⁻ by impact of excited He and Li atoms. *J. Phys. Rev. A* **55** (2), 1099–1107 (1997).
370. B. Vekhter, K. D. Ball, J. Rose and R. S. Berry: Vibrational relaxation of clusters: Relation to potential surface topography. *J. Chem. Phys.* **106** (11), 4644–4650 (1997).
371. S. Sieniutycz and R. S. Berry: Thermal mass and thermal inertia in fluids—A comparison of hypotheses. *Open Sys. Inf. Dyn.* **4**, 15–43 (1997).
372. B. Vekhter and R. S. Berry: Phase coexistence in clusters: An “experimental” isobar and an elementary model. *J. Chem. Phys.* **106** (15), 6456–6459 (1997).
373. F. Martin and R. S. Berry: Multichannel Penning detachment of H⁻ from excited Li and Ca atoms. *Phys. Rev. A* **55** (6), 4209–4212 (1997).
374. A. Proykova and R. S. Berry: Analogues in clusters of second-order transitions? (Proc ISSPIC-8) *Z. Phys. D* **40** 215–20 (1997); also in: Symposium on Small Particles and Inorganic Clusters. H. H. Anderson (ed). Springer, Berlin (1997) pp 215–220.
375. R. S. Berry (Chairman): Bits of Power: Issues in Global Access to Scientific Data, National Academy Press, Washington, D.C. (1997).
376. R. S. Berry, V. Bonacic-Koutecky, J. Gaus, Th. Leisner, J. Manz, B. Reischel-Lenz, H. Ruppe, S. Rutz, E. Schreiber, S. Vajda, R. de Vivie-Riedle, S. Wolf and L. Wöste: Size-dependent ultrafast relaxation phenomena in metal clusters. (Proc 1996 Solvay Conf) *Adv. Chem. Phys.* **101**, 101–139 (1997).
377. R. S. Berry, N. Elmaci, J. P. Rose and B. Vekhter: Linking topography of its potential surface with the dynamics of folding of a protein model. *PNAS* **94**, 9520–4 (1997).
378. R. S. Berry: The Bohr Model of the Hydrogen Atom. in: Macmillan Encyclopedia of Chemistry. J. J. Lagowski (ed). Macmillan Reference, U. S. A., New York (1997) 251–252.
379. R. S. Berry: Intermolecular Forces. in: Macmillan Encyclopedia of Chemistry. J. J. Lagowski (ed). Macmillan Reference, U. S. A., New York (1997) 790–793.
380. S. M. Kast, J. Brickmann and R. S. Berry: The interplay between quantum chemistry and molecular dynamics simulations. in: Conceptual Perspectives in Quantum Chemistry. J. L. Calais and E. Kryachko (eds). Kluwer Academic Publishers, The Netherlands (1997) pp 195–223.
381. R. S. Berry, B. M. Smirnov and A. Yu Strizhev: Competition of icosahedral and face-centered cubic structures in large atomic clusters. *JETP* **85** (3), 588–592 (1997).
382. S. K. Nayak, P. Jena, K. D. Ball and R. S. Berry: Dynamics and instabilities near the glass transition: From crystals to clusters. *J. Chem. Phys.* **108** (1), 234–239 (1998).
383. R. E. Kunz, P. Blaudeck, K. H. Hoffmann and R. S. Berry: Atomic clusters and nanoscale particles: From coarse-grained dynamics to optimized annealing schedules. *J. Chem. Phys.* **108** (6), 2576–2582 (1998).
384. R. S. Berry: Size is everything. News and Views in Nature. *Nature* **393**, 212–213 (1998).
385. S. Bachrach, R. S. Berry, M. Blume, T. van Foerster, A. Fowler, P. Ginsparg, S. Heller, N. Kestner, A. Odlyzko, A. Okerson, R. Wigington and Anne Moffat: Who should own scientific papers? *Science* **281**, 1459–1460 (1998).
386. R. S. Berry: Transnational exchange of scientific data: The “Bits of Power” report. in: Atomic and Molecular Data and Their Applications. P. J. Mohr and W. L. Wiese (eds). AIP Conference Proceedings 434. American Institute of Physics, Woodbury, New York (1998) pp 8–19.
387. R. A. Radev, A. Proykova, F.-Y. Li and R. S. Berry: Orientational order–disorder phase transitions in plastic molecular clusters: Projection of the three-dimensional distribution onto a two-dimensional spherical surface. *J. Chem. Phys.* **109** (9), 3596–3599 (1998).
388. K. D. Ball and R. S. Berry: Realistic master equation modeling of relaxation on complete potential energy surfaces: Partition function models and equilibrium results. *J. Chem. Phys.* **109** (19), 8541–8556 (1998).
389. K. D. Ball and R. S. Berry: Realistic master equation modeling of relaxation on complete potential energy surfaces: Kinetic results. *J. Chem. Phys.* **109** (19), 8557–8572 (1998).
390. R. A. Radev, A. Y. Proykova and R. S. Berry: Visualization of the orientational order–disorder phase transitions in plastic molecular clusters. *Internet J. Chem.* 1 paper 36 (1998): <http://www.ijc.con/articles/1998v1/36>.
391. S. A. Darveau and R. S. Berry: Superelastic collisions [e+Mg*] following resonant, 2-photon ionization of Mg atoms in Resonance Ionization Spectroscopy, J. C. Vickerman, I. Lyon, N. P. Lockyer and J. E. Parks (eds). American Institute of Physics, Woodbury, New York (1998) 253–256.
392. R. S. Berry: The strange phases and phase changes of small systems. in: Proceedings of the CMT 21 Conference, Luso, Portugal, Sept 97. Nova Science Publishers, Inc., Commack, New York. Also in: *Condens. Matter Theor.* **13**, 317–332 (1998).
393. B. Vekhter and R. S. Berry: Modeling self-assembling of proteins: Assembled structures, relaxation dynamics, and phase coexistence. *J. Chem. Phys.* **110** (4), 2195–2201 (1999).
394. A. Proykova, R. Radev, F.-Y. Li, and R. S. Berry: Structural transitions in small molecular clusters. *J. Chem. Phys.* **110** (8), 3887–3896 (1999).
395. B. M. Smirnov, A. Yu Strizhev and R. S. Berry: Structures of large Morse clusters. *J. Chem. Phys.* **110** (15), 7412–7420 (1999).
396. T. Komatsuzaki and R. S. Berry: Regularity in chaotic reaction paths I: Ar₆. *J. Chem. Phys.* **110** (18), 9160–9173 (1999).
397. R. S. Berry: Phases and phase changes of small systems. in: Theory of Atomic and Molecular Clusters. J. Jellinek (ed). Springer-Verlag, Berlin (1999) pp 1–26.
398. T. Komatsuzaki and R. S. Berry: Regularity in chaotic reaction paths II: Ar₆ Energy dependence and visualization of the reaction bottleneck. *PCCP* **1**, 1387–1398 (1999).
399. N. Elmaci and R. S. Berry: Principal coordinate analysis on a protein model. *J. Chem. Phys.* **110** (21), 10606–10622 (1999).

400. T. Leisner, S. Vajda S. Wolf, L. Wöste and R. S. Berry: The relaxation from linear to triangular Ag_3 probed by femtosecond resonant 2-photon ionization. *J. Chem. Phys.* **111** (3), 1017–1021 (1999).
401. K. D. Ball and R. S. Berry: Dynamics on statistical Samples of potential energy surfaces. *J. Chem. Phys.* **111** (5), 2060–2070 (1999).
402. B. Vekhter and R. S. Berry: Simulation of mutation: Influence of a “side group” on global minimum structure and dynamics of a protein model. *J. Chem. Phys.* **111** (8), 3753–3760 (1999).
403. F. Martin, M. E. Madjet, P. A Hervieux, J. Hanssen, M. F. Politis and R. S. Berry: Penning detachment from atomic clusters. *J. Chem. Phys.* **111** (19), 8934–8938 (1999).
404. A. Fernandez, K. Kostov and R. S. Berry: From residue matching patterns to protein folding topographies: General model and BPTI. *PNAS* **96** (23), 12991–12996 (1999).
405. A. Proykova and R. S. Berry: Surface effects in order-disorder transformations in molecular clusters. *Eur. Phys. J. D* **9**, 445–450 (1999).
406. R. S. Berry V. A. Kazakov, S. Sieniutycz, Z. Szwast and A. M. Tsirlin: Thermodynamic Optimization of Finite-Time Processes. John Wiley and Sons, Ltd, London (2000).
407. R. S. Berry: ‘Full and open access’ to scientific information: An academic’s view. *Learned Publishing* **13**, 37–42 (2000).
408. A. Fernández and R. S. Berry: Self-organization and mismatch tolerance in protein folding: General theory and an application. *J. Chem. Phys.* **112** (11), 5212–22 (2000).
409. A. Fernández, K. S. Kostov and R. S. Berry: Coarsely resolved topography along protein folding pathways. *J. Chem. Phys.* **112** (11), 5223–5229 (2000).
410. R. S. Berry, S. A. Rice and J. Ross: Physical Chemistry, 2nd ed. Oxford University Press, New York (2000).
411. R. S. Berry and B. M. Smirnov: Phase stability of solid clusters. *J. Chem. Phys.* **113** (2), 728–737 (2000).
412. T. Komatsuzaki and R. S. Berry: Local regularity and nonrecrossing paths in transition state—a new strategy in chemical reaction theories. *J. Mol. Struct. (Theochem)* **506**, 55–70 (2000).
413. R. S. Berry and B. M. Smirnov: Structural phase transition in a large cluster. *J. Exp. Theor. Phys.* **90** (3), 491–9 (2000) translated from *Zhurnal Èksperimental’noi i Teoreticheskoi Fiziki* **117** (3), 562–770 (2000).
414. S. Sieniutycz and R. S. Berry: Discrete Hamiltonian Analysis of Endoreversible Thermal Cascades in: Thermodynamics of Energy Conversion and Transport. S. Sieniutycz and A. De Vos (eds). Springer, New York, (2000) pp 143–172.
415. R. S. Berry and A. Proykova: New insights into phase transitions from cluster behavior, Richmond Conference in: Cluster and Nanostructure Interfaces. P. Jena, S. N. Khanna and B. K. Rao (eds). World Scientific, Singapore (2000) pp 663–670.
416. A. Fernández, A. Colubri and R. S. Berry: Topology to geometry in protein folding: β -Lactoglobulin. *PNAS* **97** (26), 14062–14066 (2000).
417. R. S. Berry: Robert Sanderson Mulliken. Biographical Memoirs. National Academy Press, Washington, D.C. (2000) Vol 78.
418. M. Yu Efremov, F. Schietekatte, M. Zhang, E. A. Olson, A. T. Kwan, R. S. Berry and L. H Allen: Discrete periodic melting point observations for nanostructure ensembles. *Phys. Rev. Lett.* **85** (17), 3560–3563 (2000).
419. A. Fernández, A. Colubri and R. S. Berry: Topologies to geometries in protein folding: Hierarchical and non-hierarchical scenarios. *J. Chem. Phys.* **114** (13), 5871–5877 (2001).
420. P. Salamon, K. H. Hoffmann, S. Schubert, R. S. Berry and B. Andresen: What conditions make minimum entropy production equivalent to maximum power production? *J. Nonequilib. Thermodyn.* **26**, 73–83 (2001).
421. R. S. Berry and B. M. Smirnov: Two-state approximation for aggregate states of clusters. *J. Chem. Phys.* **114**(15), 6816–6823 (2001).
422. T. Komatsuzaki and R. S. Berry: Dynamical hierarchy in transitions states: Why and how does a system climb over the Mountain? *PNAS* **98** (14), 7666–7671 (2000).
423. T. Komatsuzaki and R. S. Berry: Regularity in chaotic reaction paths III: Ar_6^- Local invariances at the reaction bottleneck. *J. Chem. Phys.* **115** (9), 4105–4117 (2000).
424. R. S. Berry and M. Inokuti: Obituary of Ugo Fano. *Phys. Today* **54** (9), 73–74 (2001).
425. F. Despa and R. S. Berry: Inter-basin dynamics on multidimensional potential surfaces. I. Escape rates on complex basin surfaces *J. Chem. Phys.* **115** (18), 8274–8278 (2001).
426. A. Proykova, S. Pisov and R. S. Berry: Dynamical coexistence of phases in molecular clusters. *J. Chem. Phys.* **115** (18), 8583–8591 (2001).
427. R. S. Berry, A. Fernández and K. Kostov: Connecting cluster dynamics and protein folding. *Eur. Phys. J.* **16**, 47–50 (2001).
428. F. Despa and R. S. Berry: Relaxation dynamics in the presence of unequally spaced attractors along the reaction coordinate. *Eur. Phys. J.* **16**, 55–58 (2001).
429. F. Despa and R. S. Berry: On the proximity relation between two surface-melted clusters involved in inter-cluster mass transfer. *Eur. Phys. J.* **16**, 261–264 (2001).
430. A. Fernández, A. Colubri and R. S. Berry: Three-body correlations in protein folding: The origins of cooperativity. *Phys. A* **307**, 235–259 (2002).
431. R. S. Berry: Phases, phase changes and the thermodynamics of small systems. in: Proceedings of the Erice Conference on Physical-Chemical Properties from Weak Interactions (NATO-ARW 977622) (in press, 2001).
432. B. M. Smirnov and R. S. Berry: Statistics of internal excitations of atomic systems *JETP* **93** (4), 541–549 (2001).
433. Y. Zhou, M. Karplus, K. D. Ball and R. S. Berry: The distance fluctuation criterion for melting: Comparison of square-well and Morse potential models for clusters and homopolymers. *J. Chem. Phys.* **116** (5), 2323–2329 (2002).
434. R. S. Berry: Phases, phase changes and the thermodynamics of small systems. in: Strength from Weakness: Structural Consequences of Weak Interactions in Molecules, Supermolecules and Crystals (NATO-ARW 977622) A. Domenicano and I. Hargittai (eds. Kluwer Academic Publishers, The Netherlands (2002), pp 143–168.

435. A. Proykova, D. Nikolova and R. S. Berry: Symmetry in order-disorder changes of molecular clusters. *Phys. Rev. B* **65**, 085411-1-085411-6 (2002).
436. S. Sieniutycz and R. S. Berry: Variational Theory for Thermodynamics of Thermal Waves. *Phys. Rev. E* **65**, 046132-1-11 (2002).
437. A. Proykova, R. Radev, S. Pisov, I. Daykov and R. S. Berry: Temperature induced phase transformations of molecular nanoclusters. *Vacuum* **68**, 87-96 (2002).
438. F. Despa and R. S. Berry: Visualization of Coulomb correlations in finite metallic systems. *Phys. Chem. Chem. Phys.* **4**, 3774-3779 (DOI 10.1039/b111394c) (2002).
439. M. H. Zaman, R. S. Berry and T. R. Sosnick: The entropic benefit of a cross-link in protein association. *Proteins* **48** 341-351 (2002).
440. R. S. Berry: The amazing phases of small systems. *Compt. Rend. Phys.* **3** 1-8 (2002).
441. A. Reber, F. Martín, H. Bachau and R. S. Berry: Two-photon above-threshold ionization of magnesium. *Phys. Rev. A* **65** 063413-1-7 (2002).
442. R. S. Berry: Quantum and classical size effects in thermodynamic properties. Chapter for book edited by S. Khanna and A. W. Castleman (in press, 2002).
443. R. S. Berry and R. D. Levine: Survey of the Structures, Energetics and Dynamics of Clusters. Chapter for *Progress in experimental and theoretical studies of clusters*. T. Kondow and F. Mafane (eds.) (in press, 2002).
444. R. S. Berry: Graduate education in chemistry: A personal perspective on where it's been and where it might go. in: Workshop on Graduate Education in the Chemical Sciences. National Academy Press, Washington, D.C. (2000) pp 27-36.
445. T. Komatsuzaki and R. S. Berry: Chemical reaction dynamics: Many-body chaos and regularity. *Adv. Chem. Phys.* **123**, 79-152 (2002).
446. R. S. Berry and B. M. Smirnov: Glassy-like states of bulk rare gases. *JETP* (in press, 2002).
447. T. R. Sosnick, R. S. Berry, A. Colubri and A. Fernández: Distinguishing foldable proteins from nonfolders: When and how do they differ? *Proteins* (in press, 2002).
448. T. Komatsuzaki and R. S. Berry: A dynamical propensity rule for transitions in chemical reactions. *J. Phys. Chem.* (in press, 2002).
449. A. Fernández and R. S. Berry: Extent of hydrogen-bond protection in folded proteins: A constraint on packing architectures. *Biophys. J.* (in press, 2002).
450. A. Fernández, M.-y. Shen, A. Colubri, T. R. Sosnick, R. S. Berry and K. F. Freed: Large-scale content in protein folding: villin headpiece. *Biochemistry* (submitted, 2002).
451. S. Hauptmann, H. Dufner, J. Brickmann, S. M. Kast and R. S. Berry: Potential energy function for apatites (in preparation, 2002).
452. C. Essex, D. C. Kennedy and R. S. Berry: How hot is radiation? (Available on ArXiv.edu; submitted, 2002).
453. R. S. Berry and B. M. Smirnov: Glassy state of bulk and clusters of rare gases. *J. Chem. Phys.* (submitted, 2002).
454. R. S. Berry and B. M. Smirnov: Phase transitions in a system of repulsing atoms at high pressures. *Phys. Rev. Lett.* (submitted, 2002).