

PUBLICATIONS OF HERSCHBACH GROUP

- 1956
1. Theoretical Pre-Exponential Factors for Twelve Bimolecular Reactions, D.R. Herschbach, H.S. Johnston, K.S. Pitzer and R.E. Powell, *J. Chem. Phys.* **25**, 736-741 (1956).
 2. Internal Barrier in $\text{CH}_3\text{CH}_2\text{F}$ and CH_3CHF_2 from Torsional Satellites, D.R. Herschbach, *J. Chem. Phys.* **25**, 358-359 (1956).
- 1957
3. Internal Barrier of Propylene Oxide from the Microwave Spectrum, I., J.D. Swalen and D.R. Herschbach, *J. Chem. Phys.* **27**, 100-108 (1957).
 4. Variation of Reaction Rate with Vibrational State, W. Klemperer and D.R. Herschbach, *Proc. Nat. Acad. Sci.*, **43**, 429-435 (1957).
 5. Tables of Mathieu Integrals for the Internal Rotation Problem, D.R. Herschbach, *J. Chem. Phys.* **27**, 975 (1957).
 6. Comments on the Internal Rotation Problem, D.R. Herschbach, *J. Chem. Phys.* **27**, 1420-1421 (1957).
- 1958
7. Microwave Spectrum of $\text{CH}_2\text{DCH}:\text{CH}_2$; Equilibrium Conformation of Propylene, D.R. Herschbach and L.C. Krisher, *J. Chem. Phys.* **28**, 728-729 (1958).
 8. Internal Barrier of Propylene Oxide from the Microwave Spectrum II., D.R. Herschbach and J.D. Swalen, *J. Chem. Phys.* **29**, 761-776 (1958).
- 1959
9. Calculation of Energy Levels for Internal Torsion and Overall Rotation. III., D.R. Herschbach, *J. Chem. Phys.* **31**, 91-108 (1959).
 10. Molecular Partition Functions in Terms of Local Properties, D.R. Herschbach, H.S. Johnston and D. Rapp, *J. Chem. Phys.* **31**, 1652-1661 (1959).

- 1960 11. Stark Effect and Dipole Moment of CH_3CHF_2 , G.H. Kwei and D.R. Herschbach, *J. Chem. Phys.* **32**, 1270-1271 (1960).
12. Energy Levels of a Slightly Asymmetric Top, J.A. Norris and V.W. Laurie, *J. Chem. Phys.* **32**, 1591 (1960).
13. Analysis of Reactive Scattering in Crossed Molecular Beams, D.R. Herschbach, *J. Chem. Phys.* **33**, 1870-1871 (1960).
- 1961 14. Reactive Scattering in Crossed Molecular Beams. K. Atoms with CH_3I and $\text{C}_2\text{H}_5\text{I}$, D.R. Herschbach, G.H. Kwei and J.A. Norris, *J. Chem. Phys.* **34**, 1842-1843 (1961).
15. Anharmonic Potential Constants and their Dependence upon Bond Length, D.R. Herschbach and V.W. Laurie, *J. Chem. Phys.* **35**, 458-463 (1961).
16. On the Classical Boltzmann Equation for Gases, F.C. Andrews, *J. Chem. Phys.* **35**, 922-924 (1961).
17. Collision Mechanics in Crossed Maxwellian Molecular Beams, S. Datz, D.R. Herschbach and E.H. Taylor, *J. Chem. Phys.* **35**, 1549-1559 (1961).
18. Chemical Reactions in Crossed Molecular Beams, D. Herschbach, *The Vortex*, **22**, 348-357 (1961).
- 1962 19. Exact Evolution of Reduced Distribution Functions in a Homogeneous Dense Classical Fluid, F.C. Andrews, *Phys. Rev.*, **125**, 1461-1469 (1962).
20. Approach to Equilibrium in a Dense Classical Fluid, F.C. Andrews, *Phys. Rev.* **125**, 1469-1472 (1962).
21. Evolution of Reduced Distribution Functions for Inhomogeneous Dense Classical Fluids, F.C. Andrews, *Phys. Rev.* **125**, 1473-1477 (1962).
22. Reactive Collisions in Crossed Molecular Beams, D.R. Herschbach, *Disc. Faraday Soc.* **33**, 149-161 (1962).

23. Comment on Relation of Reaction Dynamics to Potential Energy Surface, D.R. Herschbach, Disc. Faraday Soc. **33**, 277-278 (1962).
24. Comment on Vibrational State Analysis in Molecular Beams, D.R. Herschbach, Disc. Faraday Soc. **33**, 278-279 (1962).
25. Comment on Rotational Excitation of Reaction Products, D.R. Herschbach, Disc. Faraday Soc. **33**, 281-283 (1962).
26. Influence of Vibrations on Molecular Structure Determinations. I. General Formulation of Vibration-Rotation Interactions, D.R. Herschbach and V.W. Laurie, J. Chem. Phys. **37**, 1668-1686 (1962).
27. Influence of Vibrations on Molecular Structure Determinations. II. Average Structures Derived from Spectroscopic Data V.W. Laurie and D.R. Herschbach, J. Chem. Phys. **37**, 1687-1693 (1962).
- 1963 28. Doppler Line Shape of Atomic Fluorescence Excited by Molecular Photodissociation, R.N. Zare and D.R. Herschbach, Proc. I.E.E.E. **51**, 173-182 (1963).
29. Testing of Diatomic Potential-Energy Functions by Numerical Methods, J.K. Cashion, J. Chem. Phys. **39**, 1872-1877 (1963).
30. Elastic Scattering of Chemically Reactive Molecules, D.R. Herschbach and G.H. Kwei in Atomic Collision Processes, pp. 972-982, M.R.C. McDowell, Editor (North-Holland Publishing Company, Amsterdam, 1963).
- 1964 31. Calculation of Intensity Distribution in the Vibrational Structure of Electronic Transitions: The $B^3\Pi_{0+u} - X^1\Sigma$ Resonance Series of Molecular Iodine, R.N. Zare, J. Chem. Phys. **40**, 1934-1944 (1964).

32. Empirical Evaluation of the London Potential Energy Surface for the $H + H_2$ Reaction, J.K. Cashion and D.R. Herschbach, *J. Chem. Phys.* **40**, 2358-2363 (1964).
33. Influence of Vibrations on Molecular Structure Determinations. III. Inertial Defects, D.R. Herschbach and V.W. Laurie, *J. Chem. Phys.* **40**, 3142-3153 (1964).
34. Determination of Structure by Isotopic Substitution in Molecules with Symmetrically Equivalent Atoms, A. Chutjian, *J. Mol. Spectroscopy* **14**, 361-370 (1964).
35. Coriolis Coupling in Polyatomic Molecules with Partly Frozen Vibrations, A. Chutjian, *J. Mol. Spectroscopy* **14**, 342-360 (1964).
36. Semi-classical Analysis of Weakly Inelastic Molecular Collisions, M.S. Child, *Mol. Phys.* **8**, 517-531 (1964).
37. Reactive Scattering in Molecular Beams: Evidence for a Stripping Mechanism in Reactions of Alkali Atoms with Halogens, K.R. Wilson, G.H. Kwei, J.A. Norris, R.R. Herm, J.H. Birely and D.R. Herschbach, *J. Chem. Phys.* **41**, 1154-1156 (1964).
38. Comment on the Activation Energy for the $H + H_2$ Reaction, J.K. Cashion and D.R. Herschbach, *J. Chem. Phys.* **41**, 2199-2200 (1964).
39. Magnetic Analysis of Elastic and Reactive Scattering in Crossed Molecular Beams of K Atoms with CH_3I , Br_2 , and ICl , R.R. Herm, R. Gordon and D.R. Herschbach, *J. Chem. Phys.* **41**, 2218-2219 (1964).
40. Vibration-Rotation Interaction Factors for Diatomic Molecules Calculated by Numerical Methods, J.K. Cashion, *J. Chem. Phys.* **41**, 3988-3994 (1964).
41. Recombination Detector for Atomic Hydrogen Beams, M.A.D. Fluendy, *Rev. Sci. Instr.* **35**, 1606 (1964).

42. Kingdon Cage as a Molecular Beam Detector, P.R. Brooks and D.R. Herschbach, *Rev. Sci. Instr.* **35**, 1528-1533 (1964).
- 1965 43. Molecular Beam Studies of Internal Excitation of Reaction Products, D.R. Herschbach, *App. Optics Suppl.* **2** (Chemical Lasers), 128-144 (1965).
44. Atomic and Molecular Fluorescence Excited by Photodissociation, R.N. Zare and D.R. Herschbach, *Appl. Optics Suppl.* **2** (Chemical Lasers), 193-200 (1965).
45. Franck-Condon Factors for Electronic Band Systems of Molecular Nitrogen, R.N. Zare, E.O. Larsson and R.A. Berg, *J. Mol. Spectroscopy* **15**, 117-139 (1965).
46. Charge Transfer Model for Alkali Halide Electronic Transition Strengths, R.N. Zare and D.R. Herschbach, *J. Mol. Spectroscopy* **15**, 462-472 (1965).
47. Causes of *l*-Type Doubling in the 3p(E") Rydberg State of Ammonia, M.S. Child and H.L. Strauss, *J. Chem. Phys.* **42**, 2283-2992 (1965).
48. A magnetic Velocity Selector for Hydrogen Atom Beams Using an Unfolding Technique, M.A.D. Fluendy, *J. Sci. Instr.* **42**, 489-491 (1965).
49. Reactive Scattering in Molecular Beams: Electric-Deflection Analysis of Rotational Excitation of Products, R.R. Herm and D.R. Herschbach, *J. Chem. Phys.* **43**, 2139-2140 (1965).
50. Correlation of Sodium Atom Reaction Rates with Electron Capture Cross-sections, K.R. Wilson and D.R. Herschbach, *Nature* **208**, 182-183 (1965).
51. Classical Scattering of an Atom from a Diatomic Rigid Rotor, R.J. Cross, Jr., and D.R. Herschbach, *J. Chem. Phys.* **43**, 3530-3540 (1965).

- 1966
52. Reactive Scattering in Molecular Beams, D.R. Herschbach, *Adv. Chem. Phys.* **10**, 319-393 (1966).
 53. Intermolecular Potentials and the Infrared Spectrum of the Molecular Complex $(\text{H}_2)_2$, R.G. Gordon and J.K. Cashion, *J. Chem. Phys.* **44**, 1190-1195 (1966).
 54. Reactive Scattering in Molecular Beams: Velocity Analysis of KBr Formed in the $\text{K} + \text{Br}_2$ Reaction, J.H. Birely and D.R. Herschbach, *J. Chem. Phys.* **44**, 1690-1701 (1966).
 55. Chemiluminescence in Molecular Beams. Electronic Excitation of Alkali Atoms in Exchange Reactions of Vibrationally Excited Alkali Halides, M.C. Moulton and D.R. Herschbach, *J. Chem. Phys.* **44**, 3010-3018 (1966).
 56. Book Review: Advances in Atomic and Molecular Physics, D.R. Herschbach, *Am. Scientist* **54**, 352A (1966).
 57. Properties of the $1\Sigma_g^+$ State of H_2 Calculated from an Accurate Adiabatic Potential, J.K. Cashion, *J. Chem. Phys.* **45**, 1037-1048 (1966).
 58. Determination of Intermolecular-Potential Parameters from Induced Infrared Spectra: The Complex $\text{H}_2\text{-Ar}$, J.K. Cashion, *J. Chem. Phys.* **45**, 1656-1662 (1966).
 59. Calculated Ion-to-Molecule-Ion Ratios for Electron-Bombardment Studies of Molecular Hydrogen and its Isotopes, J.K. Cashion, *J. Chem. Phys.* **45**, 1663-1666 (1966).
 60. Long-Range Scattering from Anisotropic Potentials: Dipole-Dipole Scattering, R.J. Cross, Jr., and R.G. Gordon, *J. Chem. Phys.* **45**, 3571-3582 (1966).
 61. Dipole-Dipole Scattering in Molecular Beams. Variation of Total Cross Section with Velocity and Rotational Overlap, R.J. Cross, Jr., E.A. Gislason and D.R. Herschbach, *J. Chem. Phys.* **45**, 3582-3593 (1966).

- 1967
62. Hydrogen Atom Scattering: Velocity Dependence of Total Cross Section for Scattering from Rare Gases, Hydrogen and Hydrocarbons, M.A.D. Fluendy, R.M. Martin, E.E. Muschlitz, Jr., and D.R. Herschbach, *J. Chem. Phys.* **46**, 2172-2181 (1967).
 63. Quenching of Glory Undulations in Scattering of Na Atoms from Polyhalide Molecules, E.A. Gislason and G.H. Kwei, *J. Chem. Phys.* **46**, 2838-2840 (1967).
 64. Force Constants of Diatomic Molecules. I. A General Semitheoretical Approach, Philip Empedocles, *J. Chem. Phys.* **46**, 4474-4481 (1967).
 65. Comparison of Scattering of Alkali Atoms from Benzene and Cyclohexane in Crossed Molecular Beams, J.H. Birely and R.J. McNeal, *J. Chem. Phys.* **47**, 860-861 (1967).
 66. Molecular Beam Kinetics: Reactions of K, Rb, and Cs with Br₂ and I₂, J.H. Birely, R.R. Herm, K.R. Wilson and D.R. Herschbach, *J. Chem. Phys.* **47**, 993-1004 (1967).
 67. Velocity Dependence of Total Cross Sections for Scattering of Hydrogen Atoms from Mercury, W.C. Stwalley, A. Niehaus and D.R. Herschbach, *Proc. Vth Int'l. Conf. on the Physics of Electronic and Atomic Collisions*, pp. 639-641, I.P. Flakes, Editor (Publishing House Nauka, Leningrad, 1967).
 68. Introduction for E.B. Wilson, Jr., 1966 Recipient of the James Flack Norris Award, D.R. Herschbach, *The Nucleus*, **44**, 252-254 (1967).
 69. Exchange Reactions of Alkali Atoms with Alkali Halides: A Collision Complex Mechanism, W.B. Miller, S.A. Safron, and D.R. Herschbach, *Disc. Faraday Soc.* **44**, 108-122 (1967).
 70. Comment on Electric Deflection Analysis of Product Rotational Excitation, C. Maltz and D.R. Herschbach, *Disc. Faraday Soc.* **44**, 176-178 (1967).

71. Comment on Osculating Collision Complexes, G.A. Fisk, J.D. McDonald and D.R. Herschbach, *Disc. Faraday Soc.* **44**, 228-229 (1967).
72. Comment on Jacobian Distortion in Kinematic Analysis of Reactive Scattering, E.A. Entemann and D.R. Herschbach, *Disc. Faraday Soc.* **44**, 289-291 (1967).
73. Comment on Three-and Four-Atom Collision Complexes, W.B. Miler, S.A. Safron and D.R. Herschbach, *Disc. Faraday Soc.* **44**, 291-292 (1967).
74. Vibrational Quenching of Glory Undulations in Scattering of Na from Polyatomic Gases, H.L. Kramer and P.R. LeBreton, *J. Chem. Phys.* **47**, 3367-3370 (1967).
75. Semiclassical Phase Shifts for Low-Energy "Orbiting" Collisions, R.R. Herm, *J. Chem. Phys.* **47**, 4290-4296 (1967).
- 1968 76. Molecular Beam Kinetics: Reactions of K, Rb, and Cs with Cl₂, R.Grice and P.B. Empedocles, *J. Chem. Phys.* **48**, 5352-5357 (1968).
77. Molecular Beam Kinetics: Evidence for Short-Range Attraction in Halogen Atom-Molecule Exchange Reactions, Y.T. Lee, J.D. McDonald, P.R. LeBreton and D.R. Herschbach, *J. Chem. Phys.* **49**, 2447-2448 (1968).
78. Molecular Beam Kinetics: Transition between Rebound and Stripping Mechanisms in Reactions of Alkali Atoms with Polyhalide Molecules, K.R. Wilson and D.R. Herschbach, *J.Chem. Phys.* **49**, 2676-2683 (1968).
79. Molecular Beam Kinetics: Magnetic Deflection Analysis of Scattering of Alkali Atoms from Polyhalide Molecules, R.J. Gordon, R.R.Herm, and D.R. Herschbach, *J. Chem. Phys.* **49**, 2684-2691 (1968).
80. Long-Range Interactions of Mercury Atoms, W.C. Stwalley and H.L. Kramer, *J. Chem. Phys.* **49**, 5555-5556 (1968).

81. Correlation of Dynamics with Electronic Structure in Reactions of Alkali Atoms with Triatomic Molecules, R. Grice, M.R. Cosandey, and D.R. Herschbach, *Ber. Bunsen. Physik. Chem.* **72**, 975-978 (1968).
- 1969
82. Molecular Beam Kinetics: Evidence for Preferred Geometry in Interhalogen Exchange Reactions, Y.T. Lee, P.R. LeBreton, J.D. McDonald and D.R. Herschbach, *J. Chem. Phys.* **51**, 455-456 (1969).
83. Use of an Analog Computer for the Study of Chemical Reaction Dynamics, Ch. Ottinger, *J. Chem. Phys.* **51**, 1170-1181 (1969).
84. Molecular Beam Kinetics: Reactions of K, Rb, and Cs with ICl and IBr, G.H. Kwei and D.R. Herschbach, *J. Chem. Phys.* **51**, 1742-1753 (1969).
85. Hydrogen Atom Scattering: Velocity Dependence of Total Collision Cross Sections for Rare Gases and Molecular Hydrogen, W.C. Stwalley, A. Niehaus and D. R. Herschbach, *J. Chem. Phys.* **51**, 2287-2288 (1969).
86. Comment on Quenching of Glory Undulations in Atom-Molecule Scattering, P.R. LeBreton and H.L. Kramer, *J. Chem. Phys.* **51**, 3627-3628 (1969).
87. Molecular Beam Reactive Scattering Apparatus with Electron Bombardment Detector, Y.T. Lee, J.D. McDonald, P.R. LeBreton and D.R. Herschbach, *Rev. Sci. Inst.* **40**, 1402-1408 (1969).
88. Polarizable-Ion Model for Vibrationally Excited Alkali Halides, C. Maltz, *Chem. Phys. Letts.* **3**, 707-710 (1969).
89. Collisional Excitation of K Atoms by Rare Gases and Diatomic Molecules: Correlation with Electronic Structure, R.W. Anderson, V. Aquilanti, and D.R. Herschbach, *Chem. Phys. Letts.* **4**, 5-8 (1969).

90. Molecular Beam Kinetics: Reactions of Na with CH₃I, Br₂, and ICl, J.H. Birely, E.A. Entemann, R.R. Herm and K.R. Wilson, *J. Chem. Phys.* **51**, 5461-5466 (1969).
- 1970 91. Molecular Beam Kinetics: Reactions of K Atoms with Alkyl Iodides, G.H. Kwei, J.A. Norris and D.R. Herschbach, *J. Chem. Phys.* **52**, 1317-1331 (1970).
92. Molecular Beam Kinetics: Reactions of Alkali Atoms with NO₂ and CH₃NO₂, R.R. Herm and D.R. Herschbach, *J. Chem. Phys.* **52**, 5783-5792 (1970).
93. Electronic Excitation of K Atoms in Collisions with Diatomic Molecules: Thresholds and Energy Dependence from 1-5 eV, V. Kempter, M. Menzinger, G. Schuller, D. Herschbach and Ch. Schlier, *Chem. Phys. Letts.* **6**, 97-100 (1970).
94. Collisional Excitation and Ionization of K Atoms by Diatomic Molecules: Role of Ion-Pair States, K. Lacmann and D.R. Herschbach, *Chem. Phys. Letts.* **6**, 106-110 (1970).
95. Inequalities for van der Waals Force Constants and Quantum Mechanical Sums, H.L. Kramer, *J. Chem. Phys.* **53**, 2783-2791 (1970).
96. Combination Rules for van der Waals Force Constants, H.L. Kramer and D.R. Herschbach, *J. Chem. Phys.* **53**, 2792-2800 (1970).
97. Chemical Dynamics, D.R. Herschbach, *Science Year 1971*, 281-283 (1970).
98. Semiempirical Pseudopotential Calculations of Alkali Dimer-Ion Dissociation Energies, W.S. Struve, *Chem. Phys. Letts.* **7**, 382-386 (1970).
- 1971 99. Reactive Scattering of Atoms and Diatomic Molecules, D.R. Herschbach, *Proceedings of the Conference on Potential Energy Surfaces in Chemistry*, W.A. Lester, Ed. (RA 18, IBM Research Laboratory, San Jose, Calif., 1971), pp. 44-57.

100. Optical Model Analysis of Nonreactive Collisions of Reactive Molecules: Scattering of K, Rb, Cs from CCl_4 , CH_3I and SnCl_4 , R.M. Harris and J.F. Wilson, *J. Chem. Phys.* **54**, 2088-2104 (1971).
101. Supersonic Molecular Beams of Alkali Dimers, R.J. Gordon, Y.T. Lee and D.R. Herschbach, *J. Chem. Phys.* **54**, 2393-2409 (1971).
102. Molecular Beam Kinetics: Reactions of H and D Atoms with Diatomic Alkali Molecules, Y.T. Lee, R.J. Gordon and D.R. Herschbach, *J. Chem. Phys.* **54**, 2410-2423 (1971).
103. Molecular Beam Electric Resonance Spectra of Reaction Products: Vibrational Energy Distribution in CsF from $\text{Cs} + \text{SF}_6$, S.M. Freund, G.A. Fisk, D.R. Herschbach and W. Klemperer *J. Chem. Phys.* **54**, 2510-2518 (1971).
104. Chemiluminescence in Molecular Beams: Electronic Excitation in Reactions of Cl Atoms with Na_2 and K_2 Molecules, W.S. Struve, T. Kitagawa and D.R. Herschbach, *J. Chem. Phys.* **54**, 2759-2761 (1971).
105. Translational-to-Vibrational Energy Transfer: Impulsive Approximation for Half-Collisions, R.M. Harris and D.R. Herschbach, *J. Chem. Phys.* **54**, 3652-3653 (1971).
106. Semiempirical Correlation of Potential Parameters, W.C. Stwalley, *J. Chem. Phys.* **55**, 170-175 (1971).
107. Molecular Beam Kinetics: Reactions of K and Cs with Alkyl Dihalides, E.A. Entemann, *J. Chem. Phys.* **55**, 4872-4878 (1971).
108. Molecular Beam Kinetics: Reactions of K and Cs Atoms with Unsaturated Halogenated Hydrocarbons, E.A. Entemann and G.H. Kwei, *J. Chem. Phys.* **55**, 4879-4885 (1971).

- 1972 109. Transition State Theory for Collision Complexes: Product Translational Energy Distribution, S.A. Safron, N.D. Weinstein, D.R. Herschbach and J.C. Tully, *Chem. Phys. Letts.* **12**, 564-568 (1972).
110. Molecular Beam Kinetics: Reactions of Deuterium Atoms with Halogen Molecules, J.D. McDonald, P.R. LeBreton, Y.T. Lee and D.R. Herschbach, *J. Chem. Phys.* **56**, 769-788 (1972).
111. Accurate Analytic Static and Dynamic Polarizabilities for H⁻ Via the Asymptotic Approximation, S.A. Adelman, *Phys. Rev.* **5**, 508-514 (1972).
112. Molecular Beam Kinetics: Four-Atom Collision Complexes in Exchange Reactions of CsCl and KCl and KI, W.B. Miller, S.A. Safron, and D.R. Herschbach, *J. Chem. Phys.* **56**, 3581-3592 (1972).
113. Coulomb Approximation for Analytic Multipole Polarizabilities of Ground- and Excited-State Atoms, S.A. Adelman and Attila Szabo, *Phys. Rev. Letts.* **28**, 1427-1430 (1972).
114. Rotational Polarization of Reaction Products and Reprojection of Angular Momentum, C. Maltz, N.D. Weinstein and D.R. Herschbach, *Mol. Phys.* **24**, 133-150 (1972).
115. Ballistic Mechanism for Vibrational and Rotational Energy Transfer in Ar + CsI Collisions, H.J. Loesch and D.R. Herschbach *J. Chem. Phys.* **57**, 2038-2050 (1972).
116. Chemical Dynamics, D.R. Herschbach, in *Science Year, Th* World Book Science Annual, Vol. 1973, pp. 285-287 (1972).
- 1973 117. Molecular Beam Kinetics: Long-Lived Collision Complexes in Reactions of K, Rb, and Cs with SnCl₄ and SF₆, S.J. Riley and D.R. Herschbach, *J. Chem. Phys.* **58**, 27-43 (1973).

118. Comment on Measurements of Translational Energies of Dissociation Fragments, N.D. Weinstein, *J. Chem. Phys.* **58**, 408-409 (1973).
119. Coulomb Approximation for Multiple Polarizabilities and Dispersion Forces: Analytic Static Polarizabilities of Ground and Excited State Atoms, S.A. Adelman and Attila Szabo, *J. Chem. Phys.* **58**, 687-696 (1973).
120. Transvibronic Reactions in Molecular Beams, D.R. Herschbach, in Chemiluminescence and Bioluminescence, M.J. Cormier, D.M. Hercules, and J. Lee, Eds. (Plenum Press, New York, 1973), pp. 29-42.
121. Semiempirical Pseudopotential Surfaces for Chemical Reactions: The $(AB)^+X^-$ Dialkali Halide Systems, W.S. Struve, *Mol. Phys.* **25**, 777-803 (1973).
122. Molecular Beam Electric Resonance Spectra of Reaction Products: Vibrational Energy of LiF from $Li + SF_6$, R.P. Mariella, Jr., D.R. Herschbach and W. Klemperer, *J. Chem. Phys.* **58**, 3785-3792 (1973).
123. Molecular Beam Chemistry: Persistent Collision Complex in Reaction of Oxygen Atoms with Bromine Molecules, D.D. Parrish and D.R. Herschbach, *J. Am. Chem. Soc.* **95**, 6133-6134 (1973).
124. Facile Four Centre Exchange Reactions, D.L. King and D.R. Herschbach, *Faraday Discussion Chem. Soc.*, **55**, 331-343 (1973).
125. Ten Comments on Molecular Beam Scattering, *Faraday Discussion Chem. Soc.*, **55**, (1973):
- (a) Geometrical Isomerism in Three-Atom Collision Complexes, D.R. Herschbach, 113.
 - (b) Polarization of Product Rotational Angular Momentum, D.S.Y. Hsu and D.R. Herschbach, 116-119.

- (c) Simple Model for Energy Dependence of the K + CH₃I Reaction Cross Section, R.M. Harris and D.R. Herschbach, 121-123.
 - (d) Extremely Inelastic Vibrational Energy Transfer, D.L. King, H.J. Loesch and D.R. Herschbach, 222-225.
 - (e) Electronic Excitation of K Atoms in Collisions with N₂ and CO Molecules, R.A. Larsen, H.J. Loesch, J.R. Krenos and D.R. Herschbach, 229-231.
 - (f) Chemiluminescence in Reactions of Halogen Atoms and Molecules with Alkali Dimers, W.S. Struve, J.R. Krenos D.L. McFadden and D.R. Herschbach, 314-317.
 - (g) Ion-Pair Formation in Hyperthermal Collisions of K Atoms with CH₃I and CF₃I, P.E. McNamee, K. Lacmann, and D.R. Herschbach, 318.
 - (g) Search for the Cl₂ + Br₂ Exchange Reaction, D.A. Dixon, D.L. King and D.R. Herschbach, 375-376.
 - (h) Statistical and Nonstatistical Behavior in Reactions of Halogen Atoms with Olefins, J.T. Cheung, J.D. McDonald, and D.R. Herschbach, 377-379.
 - (i) Possibility of Singlet-Triplet Transitions in Oxygen Atom Exchange Reactions, D.A. Dixon, D.D. Parrish and D.R. Herschbach, 385-387.
126. Reactive Scattering, D.R. Herschbach, Faraday Discussion Chem. Soc., **55**, 233-251 (1973).
127. Molecular Beam Chemistry: Unimolecular Decomposition of Chemically Activate Chlorobromoalkyl Radicals, J.T. Cheung, J.D. McDonald, and D.R. Herschbach, J. Am. Chem. Soc., **95**, 7889-7891 (1973).

128. Two-photon Detachment Cross Section of H^- , S.A. Adelman, *J. Phys. B: Atom. Molec. Phys.* **6**, 1986-1991 (1973).
129. Relationship Between the Coulomb and Hydrogenic Approximations for (r^k) , Attila Szabo and S.A. Adelman, *J. Phys. B: Atom. Molec. Phys.*, **6**, L193-L195 (1973).
- 1974 130. Long-Range Configuration Interaction of Ionic and Covalent States, R. Grice and D.R. Herschbach, *Mol. Phys.* **27**, 159-175 (1974).
131. ESR Spectra of Matrix Isolated CsO and RbO Molecules: $^2\Sigma$ Ground States and Inner Shell Bonding, D.M. Lindsay, D.R. Herschbach, and A.L. Kwiram, *J. Chem. Phys.* **60**, 315-317 (1974).
132. ESR Spectra of Alkali Superoxides, D.M. Lindsay, D.R. Herschbach, and A.L. Kwiram, *Chem. Phys. Letts.* **25**, 175-181 (1974).
133. Molecular Beam Chemistry: Facile Six-Center Reactions of Dimeric Chlorine with Bromine and with Hydrogen Iodide, D.L. King, D.A. Dixon, D.R. Herschbach, *J. Am. Chem. Soc.*, **96**, 3328-3330 (1974).
134. Studio delle Reazioni Chimiche con Raggi Atomici e Molecolari, D.R. Herschbach, *Scienza & Technica* **74**, 247-258 (1974).
135. Velocity Dependence of Total Collision Cross-Sections for Scattering of D_2 from Hydrocarbons, J.T. Cheung, *J. Chem. Phys.* **60**, 5113-5114 (1974).
136. Chemical Dynamics, D.R. Herschbach, *Science Year, The World Book Science Annual*, Vol. 1975, pp. 268-269 (1974).
137. Seeded Supersonic Alkali Atom Beams, R.A. Larsen, S.K. Neoh, and D.R. Herschbach, *Rev. Sci. Instr.* **45**, 1511-1516 (1974).

138. Molecular Beam Electric Resonance Analysis of Inelastic Collisions: Vibrational Relaxation of LiF Scattered by Polyatomic Molecules, R.P. Mariella, Jr., D.R. Herschbach and W. Klemperer, *J. Chem. Phys.* **61**, 4575-4581 (1974).
139. Molecular Beam Kinetics: Angle-Angular Momentum Correlation in Reactive Scattering, D.S.Y. Hsu, G.M. McClelland and D.R. Herschbach, *J. Chem. Phys.* **61**, 4927-4928 (1974).
- 1975 140. Rotational Polarization of Reaction Products: Analysis of Electric Deflection Profiles, D.S.Y. Hsu, N.D. Weinstein and D.R. Herschbach, *Mol. Phys.* **29**, 257-278 (1975).
141. Molecular Beam Kinetics: Angular Distributions and Chemiluminescence in Reactions in Alkali Dimers with Halogen Atoms and Molecules, W.S. Struve, J.R. Krenos, D.L. McFadden and D.R. Herschbach, *J. Chem. Phys.* **62**, 404-419 (1975).
142. Inversion of Orbiting Scattering from Elastic Collisions of Reactive Molecules, R.W. Anderson and D.R. Herschbach, *J. Chem. Phys.* **62**, 2666-2677 (1975).
143. Molecular Beam Kinetics: Exchange Reactions of Deuterium Atoms with Hydrogen Halides, J.D. McDonald and D.R. Herschbach, *J. Chem. Phys.* **62**, 4740-4744 (1975).
144. A Suggested Mechanism for the Visible Chemiluminescence Observed in Gas Phase Aluminum Oxidation, C.E. Kolb, M.E. Gersh and D.R. Herschbach, *Combustion and Flame* **25**, 31-41 (1975).
145. Reactive and Nonreactive Modes of Electronic Excitation and Molecular Dissociation in Hyperthermal Collisions of Alkali Atoms with Alkali Halides, S.K. Neoh and D.R. Herschbach, *J. Chem. Phys.* **63**, 1030-1032 (1975).

146. Chemiluminescence in Molecular Beams: Statistical Partitioning of Electronic Energy in the Cl + K₂ Reaction, J.R. Krenos, K.H. Bowen and D.R. Herschbach, *J. Chem. Phys.* **63**, 1696-1697 (1975).
147. Hydrogen-Atom Scattering: Energy Dependence of the Total Collision Cross Section for Mercury, W.C. Stwalley, A. Niehaus, and D.R. Herschbach, *J. Chem. Phys.* **63**, 3081-3084 (1975).
148. Molecular Beam Chemistry: Reactions Exchanging van der Waals Bonds among Three or More Halogen Molecules, D.A. Dixon and D.R. Herschbach, *J. Am. Chem. Soc.* **97**, 6268-6270 (1975).
149. Detection of Hydrogen Atom Beams by Stimulated Surface Ionization, R.J. Gordon, D.S.Y. Hsu, Y.T. Lee and D.R. Herschbach, *J. Chem. Phys.* **63**, 5056-5058 (1975).
150. Statistical Theory of Angular Momentum Polarization in Chemical Reactions, D.A. Case and D.R. Herschbach, *Mol. Phys.* **30**, 1537-1564 (1975).
- 1976 151. Molecular Beam Kinetics: Optical Model for Reactive Scattering of Alkali Atoms and Alkyl Iodides, J.L. Kinsey, G.H. Kwei and D.R. Herschbach, *J. Chem. Phys.* **64**, 2133-2148 (1976).
152. Semiclassical Theory of Inelastic Molecular Collisions: Rotational Transitions in Small Angle Dipole-Dipole Scattering, E. A. Gislason and D.R. Herschbach, *J. Chem. Phys.* **64**, 2133-2148 (1976).
153. Molecular Dynamics of Chemical Reactions, D.R. Herschbach, *Pure and Applied Chemistry* **47**, 61-73 (1976).
154. Statistical Theory of Angular Distributions and Rotational Orientation in Chemical Reactions, D. A. Case and D. R. Herschbach, *J. Chem. Phys.* **64**, 4212-4222 (1976).

155. ESR Spectra of Matrix Isolated Alkali Atom Clusters: Evidence for Chemically Bound Na₃ Molecules, D.M. Lindsay, D.R. Herschbach and A.L. Kwiram, *Mol. Phys.* **32**, 1199-1213 (1976).
156. Variation of Total Cross Section for Dipole-Dipole Scattering with Rotational Temperature of a Supersonic Beam, J.T. Cheung, *J. Chem. Phys.* **64**, 5317-5318 (1976).
157. Preface to Chemical Kinetics, D.R. Herschbach, Ed. (Series Two, Vol. 9 of International Reviews of Physical Chemistry, Butterworths, London, 1976).
158. Goals for Affirmative Action, D.R. Herschbach, F.A. Houle and S.A. Sullivan, *Chemical & Engineering News*, **54**, 3 and 34 (1976).
- 1977 159. Potential Energy Surface for Bond Exchange among Three Hydrogen Molecules, D.A. Dixon, R.M. Stevens and D.R. Herschbach, *Faraday Discussion Chem. Soc.*, **62**, 110-126 (1977).
160. Six Comments on Potential Energy Surfaces, *Faraday Discussion Chem. Soc.*, **62**, (1977).
- (a) Preferred Reaction Geometry in HMX Systems, D.R.Herschbach, 162.
- (b) Six Centre Reaction Systems: H₆, H₂Li₄, and Cl₆, D.A. Dixon and D.R. Herschbach, 162-166.
- (c) The Bond Energy-Bond Order Method, D.A. Dixon and D.R. Herschbach, 166-168.
- (d) Inelastic Energy Transfer in Chlorine Dimers, D.A. Dixon and D.R. Herschbach, 309.

- (e) Lifetime for Photodissociation of Vibrationally Excited van der Waals Molecules, D.A. Dixon, D.R. Herschbach and W. Klemperer, 341-343.
- (f) Limitations of Molecular Orbital Correlations for Reactions, D.A. Dixon and D.R. Herschbach, 343-345.
161. Asymptotic Approximation for Ionic-Covalent Configuration Mixing in Hydrogen and Alkali Hydrides, S.A. Adelman and D.R. Herschbach, *Mol. Phys.* **33**, 793-809 (1977).
162. Energy Transfer Processes Involving van der Waals Bonds, D.A. Dixon and D.R. Herschbach, *Ber. Bunsenges. Phys. Chem.* **81**, 145-150 (1977).
163. Vibrational Relaxation in Seeded Supersonic Alkali Halide Beams, R.P. Mariella, Jr., S.K. Neoh, D.R. Herschbach and W. Klemperer, *J. Chem. Phys.* **67**, 2981-2985 (1977).
- 1978 164. Angular Momentum Polarization in Molecular Collisions: Classical and Quantum Theory for Measurements Using Resonance Fluorescence, D.A. Case, G.M. McClelland and D.R. Herschbach, *Mol. Phys.* **35**, 541-573 (1978).
165. Information Theory Analysis of Angular Momentum Disposal in Chemical Reactions, D.A. Case and D.R. Herschbach, *J. Chem. Phys.* **69**, 150-158 (1978).
- 1979 166. The Blue Boy Episode, D.R. Herschbach, *ChemTech* **79**, 131 (1979).
167. Preface to Don Louis Bunker Memorial Issue, D.R. Herschbach, *J. Phys. Chem.* **83**, 4A (1979).
168. Vibrational and Rotational Relaxation of Iodine in Seeded Supersonic Beams, G.M. McClelland, K.L. Saenger, J.J. Valentini and D.R. Herschbach, *J. Phys. Chem.* **83**, 947-959 (1979).

169. Symmetry Properties of Angular Correlations for Molecular Collision Complexes, G.M. McClelland and D.R. Herschbach, *J. Phys. Chem.* **83**, 1445-1454 (1979).
170. Optical Model Analysis of H + H₂ Reactive Scattering, G.H. Kwei and D.R. Herschbach, *J. Phys. Chem.* **83**, 1550-1552 (1979).
171. Musical Metaphors: The String Quartet, D.R. Herschbach, *Catgut Acoustical Society Newsletter*, **31**, 33 (1979).
172. A. Sprague Coolidge: A Chemist of Free Spirit and Great Courage, R.G. Gordon, D.R. Herschbach, G.B. Kistiakowsky, W.N. Lipscomb and E.B. Wilson, *Harvard University Gazette* **74 (No. 34)**, 6 (1979).
173. Molecular Beam Electric Deflection Analysis of (SN)_x Vapor: Evidence for Two Tetrameric Species, R.R. Cavanagh, R.S. Altman, D.R. Herschbach and W. Klemperer, *J. Am. Chem. Soc.* **101**, 4734-4735 (1979).
174. Reactions of Alkali Atoms with Carbon Tetrachloride: Rainbow-Like Coupling of Product Angle and Energy Distributions, S.J. Riley, P.E. Siska and D.R. Herschbach, *Chem. Soc. Faraday Discussions* **67**, 27-40 (1979).
175. Six Comments on Kinetics of State-Selected Species, *Faraday Discussion Chem. Soc.*, **67**, (1979).
- (a) Energy Transfer in the Eclectic Model, P.E. Siska and D.R. Herschbach, 144-145.
- (b) Electron Attachment to (NO₂)_n Clusters, K.H. Bowen, G.W. Liesegang, and D.R. Herschbach, 145.
- (c) Atom- and Bond-Migration in Halo-Olefin Reactions, D.R. Herschbach, 250-251.
- (d) Theoretical Aspects of Collision Complexes, G.M. McClelland and D.R. Herschbach, 251-253.

- (e) An Item for the Solar Neutrino Problem: $\text{Arn}(\text{C}_2\text{Cl}_4)_m^+$ Cluster Ions, S.J. Buelow, D.R. Worsnop and D.R. Herschbach, 359.
- (f) Energy Dependence of Angular Momentum Alignment, G.M. McClelland and D.R. Herschbach, 360-362.
- 1980 176. Spin Populations in Alkali Trimer Molecules, D.M. Lindsay, D.R. Herschbach and A.L. Kwiram, *Mol. Phys.* **39**, 529-532 (1980).
177. Electronic Absorption Spectroscopy of Cooled Supersonic Expansions: Dynamics of the $^1\text{B}_{1\text{u}}$ State of Butadiene, V. Vaida and G.M. McClelland, *Chem. Phys. Letters* **71**, 436-439 (1980).
178. Surface Enhanced Raman Scattering from Molecules Adsorbed on Mercury, R. Naaman, S.J. Buelow, O. Cheshnovsky and D.R. Herschbach, *J. Phys. Chem.* **84**, 2692-2694 (1980).
- 1981 179. Pulsed Molecular Beams: A Lower Limit on Pulse Duration for Fully Developed Supersonic Expansions, K.L. Saenger, *J. Chem. Phys.* **75**, 2467-2469 (1981).
180. Electronic and Vibrational Properties of Molecules at High Pressures: Hydrogen Molecule in a Rigid Spheroidal Box, R. LeSar and D.R. Herschbach, *J. Phys. Chem.* **85**, 2798-2804 (1981).
181. The Rotating Rod Model: Opacity, Excitation, Deflection and Angular Distribution Functions from Collinear Reaction Probabilities, N. Agmon, *Chem. Phys.* **61**, 189-204 (1981).
182. Blue Shift of Iodine in Solvent Complexes Formed in Supersonic Molecular Beams, K.L. Saenger, G.M. McClelland and D.R. Herschbach, *J. Phys. Chem.* **85**, 3333-3337 (1981).

183. Molecular Beam Reactive Scattering: Exchange of van der Waals Bonds in Xe + Ar₂ Collisions, D.R. Worsnop, S.J. Buelow and D.R. Herschbach, *J. Phys. Chem.* **85**, 3024-3025 (1981).
184. Likelihood of a High Pressure Phase of Solid Hydrogen Involving Termolecular Complexes, R. LeSar and D.R. Herschbach, *J. Phys. Chem.* **85**, 3787-3792 (1981).
185. Generation of Bastard Molecular-Ions from Van der Waals Clusters: Ar_n(C₂Cl₄)_m⁺ Ions, Suspected Interlopers in Collection of Solar Neutrinos, S.J. Buelow, D.R. Worsnop and D.R. Herschbach, *Proc. Nat'l. Acad. Sci. USA*, **78**, 7250-7253 (1981).
- 1982 186. Electron Attachment to Volatile Uranyl Molecules, A. Yokozeki, E.L. Quitevis and D.R. Herschbach, *J. Phys. Chem.* **86**, 617-621 (1982).
187. Laser Excitation Spectroscopy Using Warm Supersonic Beams: The 1_{Au} ← 1_{Ag}(π* ← n) Transition in Biacetyl-d₆, K.L. Saenger, J.D. Barnwell and D.R. Herschbach, *J. Phys. Chem.* **86**, 216-220 (1982).
188. Cubic Spline Method for Solving Second-Order Differential Equations: Theory and Application to the Thomas-Fermi Model for Ions, Susanne Raynor, *J. Chem. Phys.* **66**, 409-415 (1982).
189. Diatomics-in-Molecules Approximation for Rydberg States of H₃, S. Raynor and D.R. Herschbach, *J. Phys. Chem.* **86**, 1214-1217 (1982).
190. Preface by D.R. Herschbach to *Engines, Energy, and Entropy*, by J.B. Fenn, (W.H. Freeman and Co., San Francisco, 1982).
191. Electronic Structure of Rydberg States of H₃, NeH, H₃O, NH₄, and CH₅ Molecules, S. Raynor and D.R. Herschbach, *J. Phys. Chem.* **86**, 3952-3958 (1982).

192. ESR of Matrix Isolated $K^+ \dots HCl^-$, D.M. Lindsay, M.C.R. Symons, D.R. Herschbach and A.L. Kwiram, *J. Phys. Chem.* **86**, 3789-3793 (1982).
193. Surface Enhanced Raman Study of Organic Sulfides Adsorbed on Silver: Facile Cleavage of S-S and C-S Bonds, C.J. Sandroff and D.R. Herschbach, *J. Phys. Chem.* **86**, 3277-3279 (1982).
194. Formation of Polysulfur Nitride Films on Graphite: Evidence for One-, Two- and Three-Dimensional Phases, S.R. Kelemen and D.R. Herschbach, *J. Phys. Chem.* **86**, 4388-4392 (1982).
- 1983 195. Electron Attachment to Molecular Clusters by Collisional Charge-Transfer, K.H. Bowen, G.W. Liesegang, B.S. Sanders and D.R. Herschbach, *J. Phys. Chem.* **87**, 557-565 (1983).
196. Electronic Structure of H_n^+ and HeH_n^+ Clusters, S. Raynor and D.R. Herschbach, *J. Phys. Chem.* **87**, 289-293 (1983).
197. Electron Spin Resonance Spectra of Matrix Isolated Alkali Tetroxide Molecules, D.M. Lindsay, D.R. Herschbach, *J. Phys. Chem.* **87**, 2113-2120 (1983).
198. Electron Attachment to Hydrogen Halide Clusters, E.L. Quitevis, K.H. Bowen, G.W. Liesegang and D.R. Herschbach, *J. Phys. Chem.* **87**, 2076-2079 (1983).
199. Charge Transfer from Tetrathiafulvalene to Silver and Gold Surfaces Studied by Surface Enhanced Raman Scattering, C.J. Sandroff, D.A. Weitz, J.C. Chung and D.R. Herschbach *J. Phys. Chem.* **87**, 2127-2133 (1983).
200. Angular Correlations in Chemical Reactions: Statistical Theory for Four-Vector Correlations, J.D. Barnwell, J.G. Loeser and D.R. Herschbach, *J. Phys. Chem.* **87**, 2781-2786 (1983).

201. Polarizability and Quadrupole Moment of a Hydrogen Molecule in a Spheroidal Box, R. LeSar and D.R. Herschbach, *J. Phys. Chem.* **87**, 5202-5206 (1983).
- 1984 202. Effects of High Pressure on Adsorbed Monolayers, C.J. Sandroff, H.E. King and D.R. Herschbach in High Pressure in Science and Technology, C.G. Homan and E. Whalley, Eds. (Elsevier Science Publishing Co., Inc. (1984), pp. 353-356.
203. John Bennett Fenn: Introduction to the Fennfest, C.E. Kolb and D.R. Herschbach, *J. Phys. Chem.* **88**, 4447-4448 (1984).
204. Electron Bombardment Ionization and Fragmentation of Van der Waals Clusters, D.R. Worsnop, S.J. Buelow and D.R. Herschbach, *J. Phys. Chem.*, **88**, 4506-4509 (1984).
205. High Pressure Study of the Liquid/Solid Interface: Surface Enhanced Raman Scattering from Adsorbed Molecules, C.J. Sandroff, H.E. King and D.R. Herschbach, *J. Phys. Chem.* **88**, 5647-5653 (1984).
206. George Bogdan Kistiakowsky: Memorial Minute, J.K. Galbraith, D.R. Herschbach, W. Klemperer, F. Westheimer and E.B. Wilson, *Harvard University Gazette* **80** (No. 16, 1984).
207. Three Perspectives on Schrodinger's Cat, J.G. Loeser, *Am. J. Phys.* **52**, 1089-1093 (1984).
- 1985 208. Kinetics of Displacement and Charge Transfer Reactions Probed by SERS: Evidence of Distinct Donor and Acceptor Sites on Gold Colloids, C.J. Sandroff and D.R. Herschbach, *Langmuir*, **1**, 131-135 (1985).
209. Accurate Semiclassical Electronic Structure from Dimensional Singularities, D.J. Doren and D.R. Herschbach, *Chem. Phys. Letts.* **118**, 115-119 (1985).
210. Dimensional Interpolation of Correlation Energy for Two-Electron Atoms, J.G. Loeser and D.R. Herschbach, *J. Phys. Chem* **89**, 3444-3447 (1985).

211. Relation of Vibrational Frequency Shifts to Molecular Compression in Liquid Benzene, M.R. Zakin and D.R. Herschbach, *J. Chem. Phys.* **83**, 6540-6541 (1985).
- 1986 212. High Pressure Study of Hydrogen-Bonded Pyridine-Water Complexes, M.R. Zakin, S.G. Grubb, H.E. King and D.R. Herschbach, *Physica*. **139**, 530-532 (1986).
213. High Pressure Study of Associated Media: Raman Scattering of Pyridine Complexes in Aqueous Solution, M.R. Zakin, S.G. Grubb, H.E. King and D.R. Herschbach, *J. Chem. Phys.* **84**, 1080-1088 (1986).
214. Dimensional Interpolation in Two-Electron Atoms, D.R. Herschbach, *J. Chem. Phys.* **84**, 838-851 (1986).
215. Hylleras-Pekeris Treatment of D-Dimensional Two-Electron Atoms, J.G. Loeser and D.R. Herschbach, *J. Chem. Phys.* **84**, 3882-3892 (1986).
216. Hartree-Fock Approximation for D-Dimensional Two-Electron Atoms, J.G. Loeser and D.R. Herschbach, *J. Chem. Phys.* **84**, 3893-3900 (1986).
217. Vibrational Frequency Shifts Induced by Molecular Compression of Pyridine in Solution, M.R. Zakin and D.R. Herschbach, *J. Chem. Phys.* **85**, 2376-2383 (1986).
218. Fred Kaufman: A Dedication, J.G. Anderson and D.R. Herschbach, in *Atmospheric Ozone*, Vol. I (World Meteorological Organization Report No. 16; National Aeronautics and Space Administration, Washington, D.C., 1986).
219. Molecular Beam Study of Van der Waals Bond Exchange in Collisions of Noble Gas Atoms and Dimers, D.R. Worsnop, S.J. Buelow and D.R. Herschbach, *J. Phys. Chem.*, **90**, 5121-5130 (1986).

220. Spatial Dimension As an Expansion Parameter in Quantum Mechanics, D.J. Doren and D.R. Herschbach, *Phys. Rev. A*, **34**, 2654-2664 (1986).
221. Convergence Properties and Resummation of the 1/D Expansion, D.J. Doren and D.R. Herschbach, *Phys. Rev. A*, **34**, 2665-2673 (1986).
222. Interdimensional Degeneracies, Near Degeneracies, and their Applications, D.J. Doren and D.R. Herschbach, *J. Chem. Phys.*, **85**, 4557-4562 (1986).
- 1987 223. Dimensional Expansions for Two-Electron Atoms, J.G. Loeser and D.R. Herschbach, *J. Chem. Phys.*, **86**, 2114-2122 (1987).
224. Dimension Dependence of Correlation Energies in Two-Electron Atoms, J.D. Loeser and D.R. Herschbach, *J. Chem. Phys.*, **86**, 3512-3521 (1987).
225. Electron Correlation Calibrated at the Large-D Limit, D.Z. Goodson and D.R. Herschbach, *J. Chem. Phys.*, **86**, 4997-5008 (1987).
226. Recursive Calculation of Dimensional Expansions for Two-Electron Atoms, D.Z. Goodson and D.R. Herschbach, *Phys. Rev. Letts.* **58**, 1628-1631 (1987).
227. Sports and Salaries, D.R. Herschbach, *Boston Globe*, April 17, 1987.
228. Two-Electron Atom Near the One Dimensional Limit, D.J. Doren and D.R. Herschbach, *J. Chem. Phys.*, **87**, 433-442 (1987).
229. Biographical Sketch, D.R. Herschbach, in "Les Prix Nobel 1986" (Almqvist & Wiksell Int'l., Stockholm, 1987). 113-116.

230. Molecular Dynamics of Elementary Chemical Reactions, D.R. Herschbach, in "Les Prix Nobel 1986" (Almquist & Wiksell Int'l., Stockholm, 1987), 117-166. *Chemica Scripta* **27**, 327-347 (1987); *Angew. Chem.* **99**, 1251-1275 (1987); *Angew. Chem. Int. Ed. Engl.* **26**, 1221-1243 (1987).
231. A Graduation Message, D.R. Herschbach, *Harvard Yearbook*, 1987, p. 45.
232. Dynamical Aspects of Stereochemistry, R.B. Bernstein, D.R. Herschbach and R.D. Levine, *J. Phys. Chem.* **91** 5365-5377 (1987).
233. Impulsive Model for Angular Momentum Polarization in Chemical Reactions, G.M. McClelland and D.R. Herschbach, *J. Phys. Chem.* **91**, 5509-5515 (1987).
- 1988 234. Pressure Induced Vibrational Fundamental and Overtone Frequency Shifts of Iodine Molecules in Solution, D. Ben-Amotz, M.R. Zakin, H.E. King and D. Herschbach, *J. Phys. Chem.* **92**, 1392-1394 (1988).
235. Electronic Structure from Semiclassical Dimensional Expansions: Symmetry Breaking and Bound States of the Hydride Ion, D.J. Doren and D.R. Herschbach, *J. Phys. Chem.* **92**, 1816-1821 (1988).
236. Cluster Beam Chemistry: Adduct Complexes of Hydrogen Halides with Ammonia Clusters, J.T. Cheung, D.A. Dixon and D.R. Herschbach, *J. Phys. Chem.* **92**, 2536-2541 (1988).
237. Angular Momentum Disposal in Atom Exchange Reactions, S. K. Kim and D.R. Herschbach, *Faraday Disc. Chem. Soc.* **84**, 159-169 (1988).
238. Three Comments on Dynamics of Elementary Gas-Phase Reactions, *Faraday Disc. Chem. Soc.* **84** (1988):
- (a) Kinematic Constraints on Rotational Energy Disposal, D.R. Herschbach, 98-99.

- (b) Correspondence Between Angular Momentum Limited Reactions and Inelastic Energy Transfer, S.K. Kim and D.R. Herschbach, 188-189.
 - (c) Angular Momentum Correlations, J.D. Barnwell, T.C. Maguire, and D.R. Herschbach, 182-184.
239. New Dimensions for Reaction Dynamics and Electronic Structure, D.R. Herschbach, *Faraday Disc. Chem. Soc.* **84**, 465-478 (1988).
240. Dynamics of Feeble Bonds in Molecular Complexes and Clusters, D.R. Herschbach, in *Molecular and Cluster Beam Science* (National Research Council, National Academy Press, 1988), pp. 15-29.
241. Density-Dependence of Attractive Forces for Hydrogen Stretching Vibrations of Molecules in Compressed Liquids, M. R. Zakin and D. R. Herschbach, *Chem. Phys.* **89**, 2380-2387 (1988).
242. Lewis Electron-Dot Structures as the Large-Dimension Limit, D.D. Frantz and D.R. Herschbach, *Chem. Phys.* **126**, 59-71 (1988).
243. Preface: An Homage to Otto Stern, D. R. Herschbach, *Z. Phys. D.* **10**, 109-110 (1988).
244. Pseudomolecular Atoms: Geometry of Two-Electron Intrashell Excited States, D. R. Herschbach, J. G. Loeser, and D. K. Watson, *Z. Phys. D* **10**, 195-210 (1988).
- 1989 245. Fred Kaufman - In Memoriam, J. G. Anderson and D. R. Herschbach, *J. Phys. Chem.* **93**, 1010 (1989).
246. Electron Attachment to Carbon Dioxide Clusters, E. L. Quitevis and D. R. Herschbach, *J. Phys. Chem.* **93**, 1136-1139 (1989).

247. Alignment of I₂ Molecules Seeded in a Supersonic Beam, D. P. Pullman and D. R. Herschbach, *J. Chem. Phys.* **90**, 3881-3883 (1989); *J. Chem. Soc. Faraday Trans. II*, **85**, 1244-1245 (1989).
248. Atomic Structure in Strange Dimensions, D.R. Herschbach, *Atomic Phys.* **11**, 63-81(1989).
249. Valency in Strange Dimensions, D. R. Herschbach, *Proc. of The Robert A. Welch Fd. Conf. Chem. Research XXXII* 95-116 (1989).
250. Wrong-Way Recursion Yields More Accurate Eigenparameters for the Hydrogen Molecule Ion, D. D. Frantz, D. R. Herschbach and J. D. Morgan, *Phys. Rev. A.*, **40**, 1175-1184 (1989).
251. Dimensional Scaling as a Symmetry Operation, S. Kais, D. R. Herschbach and R. D. Levine, *J. Chem. Phys.*, **91**, 7791-7796 (1989).
252. Book Review: "While You're Up, Get Me a Grant." D. R. Herschbach, *The Nucleus*, **67**, p.7 & p.23 (May,1989).
- 1990 253. Interdimensional Degeneracy and Symmetry Breaking in *D*-dimensional H₂⁺, D. D. Frantz and D. R. Herschbach, *J. Chem. Phys.*, **92**, 6668-6686 (1990).-
254. Correlation of Zeno (*Z* = 1) Line for Supercritical Fluids with Vapor-Liquid Rectilinear Diameters, Dor Ben-Amotz and D. R. Herschbach, *Israel Journal of Chemistry*, **30**, 59-68 (1990).
255. Calculation of H₂⁺ Eigenparameters in Arbitrary Dimensions, D. D. Frantz and D. R. Herschbach, *Computers & Chemistry*, **14**, 225-236 (1990) .
256. Estimation of Effective Diameters for Molecular Fluids, Dor Ben-Amotz and D. R. Herschbach, *J. Phys. Chem.*, **94**, 1038-1047 (1990).

257. Facile Alignment of Molecular Rotation in Supersonic Beams, D. P. Pullman, B. Friedrich, and D. R. Herschbach, *J. Chem. Phys.*, **93** (5), 3224-3236 (1990).
258. Paradigms in Research and Parables in Teaching, D. R. Herschbach, *Int'l Newsletter on Chem. Ed.*, **33** (June, 1990); *J. Chem. Ed.* **70** (5), 391 (1993).
- 1991 259. Approximate Separation of the Hyperradius in the Many Particle Schrödinger Equation, J. Avery, D. Z. Goodson and D. R. Herschbach. *Int'l J. Quantum Chem.* **39**, 657-666 (1991)
260. On the Possibility of Orienting Rotationally Cooled Polar Molecules in an Electric Field, B. Friedrich and D. R. Herschbach, *Z. Phys. D.* **18**, 153-161 (1991).
261. Dimensional Scaling and the Quantum Mechanical Many-body Problem, J. Avery, D. Z. Goodson, and D. R. Herschbach, *Theor. Chim. Acta* **81**, 1-20 (1991).
262. Making Grading Less Painful, Miles Pickering and D. R. Herschbach, *JCST*, **20**, 377-379 (1991).
263. Dimensional Singularity Analysis of Relativistic Equations, D. Z. Goodson, J. D. Morgan III, and D. R. Herschbach, *Physical Review A* **43**, 4617-4624 (1991).
264. Energies of Doubly Excited Two-Electron Atoms from Interdimensional Degeneracies, D. Z. Goodson, D. K. Watson, J. G. Loeser, and D. R. Herschbach, *Physical Review A* **44**, 97-102 (1991).
265. Chemistry as a Liberal Art, D. R. Herschbach, *Harvard Yearbook*, **355**, 58-59 (1991).
266. Searching for Mr. President, D. R. Herschbach and S. Khoshbin, *Harvard Magazine* **93**, (3), 15 & 100 (1991).
267. Richard Bernstein: Zestful Explorer of Collision Dynamics, D. R. Herschbach, *J. Phys. Chem.* **95**, 7963 (1991).

268. Alignment and Orientation of Rotationally Cool Molecules, B. Friedrich, D. P. Pullman and D. R. Herschbach, *J. Phys. Chem.* **95**, 8118-8129 (1991).
269. Vibrational and Rotational Inhibition of the H + Li₂ Bimolecular Exchange Reaction, S. K. Kim, S. C. Jeoung, A. L. Tan, and D. R. Herschbach, *J. Chem. Phys.* **95**, 3854-3856 (1991).
270. Dimensional Interpolation of Hard Sphere Virial Coefficients, John G. Loeser, Zheng Zhen, Sabre Kais and D. R. Herschbach, *J. Chem. Phys.* **95**, 4525-4544 (1991).
271. Electronic Tunneling and Exchange Energy in the D-dimensional Hydrogen-Molecule Ion, S. Kais, J. D. Morgan III, and D. R. Herschbach, *J. Chem. Phys.* **95**, 9028-9041 (1991).
272. Hidden Symmetry and Explicit Spheroidal Eigenfunctions of the Hydrogen Atom, Stella M. Sung and D. R. Herschbach, *J. Chem. Phys.* **95**, 7437-7448 (1991).
273. Spatial Orientation of Molecules in Strong Electric Fields and Evidence for Pendular States, Bretislav Friedrich, and D. R. Herschbach, *Nature* **353**, 412-414 (1991).
- 1992 274. Chemical Reaction Dynamics and Electronic Structure, D. R. Herschbach, in *The Chemical Bond: Structure and Dynamics*, Ahmed Zewail, Ed., Academic Press, pp.175-222 (1992).
275. High Pressure Viscosity of an Associating Polymer System: Zinc Sulfonated Polystyrene/Polystyrene-4-Vinylpyridine Copolymer Solution, R. L. Cook, H. E. King, Jr., D. G. Peiffer, *Macromolecules* **25**, 629-635 (1992).
276. Hyperspherical Sturmian Basis Functions, J. Avery and D. R. Herschbach, *Int'l. J. Quantum Chem.* **41**, 673-686 (1992).
277. Correlation of Zeno Line with Acentric Factor and Other Properties of Normal Fluids, Jiasai Xu and D. R. Herschbach, *J. Phys. Chem.* **96**, 2307-2312 (1992).

278. Sweet Seventeen, D. R. Herschbach, *Journal of Irreproducible Results* **37 (No. 1)**, 27 (1992).
279. Excitation Mechanism of the Mesospheric Sodium Nightglow, D. R. Herschbach, C. E. Kolb, X. Shi & D. R. Worsnop, *Nature* **356**, 414-416 (1992).
280. Chemical Kinetics and Dynamics of the Mesospheric Sodium Nightglow, C. E. Kolb, D. R. Worsnop, M. S. Zahniser, G. N. Robinson, X. Shi and D. R. Herschbach, in *Gas-Phase Metal Reactions*, A. Fontijn, Ed., Elsevier Science Publishers B. V., 15-27 (Amsterdam, 1992).
281. Electronic Tunneling in H_2^+ Evaluated from the Large-Dimension Limit, S. Kais, D. D. Frantz and D. R. Herschbach, *Chem. Phys.* **161**, 393-402 (1992).
282. Summation Methods for Dimensional Perturbation Theory, D. Z. Goodson and D. R. Herschbach, *Phys. Rev. A.* **46**, 5428-5436 (1992).
283. Pendular States and Spectra of Oriented Linear Molecules, J. M. Rost, J. C. Griffin, B. Friedrich and D. R. Herschbach, *Phys. Rev. Lett.* **68**, 1299-1302 (1992).
284. Molecular-Orbital Description of Doubly-Excited Atomic States Generalized to Arbitrary Dimension, J. M. Rost, S. M. Sung and D. R. Herschbach, *Phys. Rev. A.* **46**, 2410-2419 (1992).
285. On the Possibility of Aligning Paramagnetic Molecules or Ions in a Magnetic Field, B. Friedrich and D. R. Herschbach, *Z. Phys. D.* **24**, 25-31 (1992).
286. Spatial Orientation of Molecules, B. Friedrich and D. R. Herschbach, *Physics News* **1992**, 14-15 (1992).

287. High-Pressure Viscosity of Dilute Polymer Solutions in Good Solvents, R. L. Cook, H. E. King, Jr., D. G. Peiffer, *Macromolecules* **25**, 2928-2934 (1992).
288. Science Offers an Adventurous Life of Learning, D. R. Herschbach, *Shonen Jump* **44**, 185-191 (1992).
289. Large-order Dimensional Perturbation Theory for Two-Electron Atoms, D. Z. Goodson, M. López-Cabrera, John D. Morgan III, and D. R. Herschbach, *J. Chem. Phys.* **97**, 8481-8496 (1992).
290. The Diamond-Anvil Cell as a High-Pressure Viscometer, H. E. King, Jr., E. Herbolzheimer, R. L. Cook, *J. Appl. Phys.* **71**, 2071-2081 (1992).
291. High Pressure Viscosity of Simple and Polymeric Liquids, H. E. King, Jr., R. L. Cook, C. A. Herbst, (NATO ASI Conf.) in *High Pressure Chemistry, Biochemistry and Materials Science* Kluwer Academic Pubs., Netherlands), 275-290 (1992).
292. Pressure Induced Crossover from Good to Poor Solvent Behavior for Polyethylene Oxide in Water, R. L. Cook, H. E. King, Jr. and D. G. Peiffer, *Phys. Rev. Lett.* **69**, 3072-3075 (1992).
293. *Dimensional Scaling in Chemical Physics*, D. R. Herschbach, J. Avery, and O. Goscinski, Eds. (Kluwer Academic Publishers, The Netherlands, 1992), D. R. Herschbach, Preface and Epilogue, pp. 3-4 and 499-500.
294. Introduction to Dimensional Scaling, D. R. Herschbach, in *Dimensional Scaling in Chemical Physics*, (Kluwer Academic Publishers, The Netherlands, 1992), Chapter 1, pp. 7-59.
295. Tutorial for Dimensional Scaling, D. R. Herschbach, in *Dimensional Scaling in Chemical Physics*, (Kluwer Academic Publishers, The Netherlands, 1992), Chapter 2, pp. 61-80.

296. The One-Dimensional Limit, D. Z. Goodson and M. López-Cabrera, in *Dimensional Scaling in Chemical Physics*, (Kluwer Academic Publishers, The Netherlands, 1992), Chapter 4.1, pp. 115-130.
297. The Spheroidal H Atom, S. M. Sung, in *Dimensional Scaling in Chemical Physics*, (Kluwer Academic Publishers, The Netherlands, 1992), Chapter 6.1, pp. 197-216.
298. Simple Molecules and Variant Scalings, A. Tan and J. G. Loeser, in *Dimensional Scaling in Chemical Physics*, (Kluwer Academic Publishers, The Netherlands, 1992), Chapter 6.3, pp. 230-255.
299. Symmetry Breaking and Tunneling in H_2^+ , S. Kais, in *Dimensional Scaling in Chemical Physics*, (Kluwer Academic Publishers, The Netherlands, 1992), Chapter 6.4, pp. 256-274.
300. Singularity Analysis and Summation of 1/D Expansions, D. Z. Goodson and M. López-Cabrera, in *Dimensional Scaling in Chemical Physics*, (Kluwer Academic Publishers, The Netherlands, 1992), Chapter 7.1, pp. 275-314.
- 1993
301. Dense Fluids: Molecules in Perpetual Collision, D. Herschbach, Proc. Am. Phil. Soc. **137**, 532-544 (1993).
302. The Dolphin Oracle, D. R. Herschbach, Harvard Magazine **95** (No. 3), 57-59 (1993).
303. Dudley Herschbach: Autobiographical Sketch. D. Herschbach, Special Issue - J. Phys. Chem. **97**, 2041-2042 (1993).
304. Molecular Beam Chemistry: Magnetic Deflection Analysis of Monoxide Electronic States from Alkali Atom + Ozone Reactions, X. Shi, D. R. Herschbach, D. R. Worsnop, and C. E. Kolb, J. Phys. Chem. **97**, 2113-2122 (1993).

305. Hard Fluid Model for Solvent-Induced Shifts in Molecular Vibrational Frequencies, D. Ben-Amotz and D. R. Herschbach, *J. Phys. Chem.* **97**, 2295-2306 (1993).
306. A Pocket Model of Seeded Supersonic Beams, S. DePaul, D. Pullman, B. Friedrich, *J. Phys. Chem.* **97**, 2167-2171 (1993).
307. Dimensional Scaling for H_2^+ without the Born-Oppenheimer Approximation, C. A. Traynor and D. Z. Goodson, *J. Phys. Chem.* **97**, 2464-2466 (1993).
308. Dimensional Scaling for Regge Trajectories, S. Kais and G. Beltrame, *J. Phys. Chem.* **97**, 2453-2456 (1993).
309. The High Pressure Viscosity of Glass Forming Liquids Measured by the Centrifugal Force Diamond-Anvil Cell Viscometer, R. L. Cook, Chris A. Herbst and H. E. King, Jr., *J. Phys. Chem.* **97**, 2355-2361 (1993).
310. Chemical Binding from the Infinite Dimensional Limit, S. Sung and J.-M. Rost, *J. Phys. Chem.* **97**, 2479-2483 (1993).
311. High Pressure Viscosity of Glycerol Measured by Centrifugal-Force Viscometry, C. A. Herbst, R. L. Cook, and H. E. King, Jr., *Nature* **361**, 518-520 (1993).
312. Dimensional Scaling for Quasistationary States, S. Kais and D. R. Herschbach, *J. Chem. Phys.* **98**, 3990-3998 (1993).
313. Density Functionals and Dimensional Renormalization for an Exactly Solvable Model, S. Kais and D. R. Herschbach, N. C. Handy, C. W. Murray, and G. J. Laming, *J. Chem. Phys.* **99**, 417-425 (1993).
314. Large order Dimensional Perturbation Theory for Complex Energy Eigenvalues, T. C. Germann and Sabre Kais, *J. Chem. Phys.* **99**, 7739-7747 (1993).

315. Optical Spectra of Spatially Oriented Molecules: ICl in a Strong Electric Field, B. Friedrich, D. R. Herschbach, J.-M. Rost, H.-G. Rubahn, M. Renger, and M. Verbeek, *J. Chem. Soc. Faraday Trans.* **89**, 1539-1549 (1993).
316. Faculty of Arts and Sciences - Memorial Minute for E. Bright Wilson, Jr., R. G. Gordon, D. R. Herschbach, W. A. Klemperer, F. H. Westheimer, *Harvard Gazette* **88**, 13 (April 16, 1993).
317. Atomic Energies from Renormalization of the Large-dimension Limit, S. Kais, S. M. Sung, and D. R. Herschbach, *J. Chem. Phys.* **99**, 5184-5196 (1993).
318. Thermodynamic Functions of Pendular Molecules, B. Friedrich and D. R. Herschbach, *Collection of Czech Chem. Commun.* (Wichterle Festschrift) **58**, 2458-2473 (1993).
319. Paradigms in Research and Parables in Teaching, D. R. Herschbach, *J. Chem. Ed.* **70** (5), 391 (1993).
320. Molekulová Kyvadla, B. Friedrich, *Vesmir* **72**, 670-674 (1993).
- 1994
321. Large-Z and -N Dependence of Atomic Energies from Renormalization of the Large-dimension Limit, S. Kais, S. M. Sung, and D. R. Herschbach, *International J. Quantum Chem.* **49**, 657-674 (1994).
322. The $1/Z$ Expansion and Renormalization of the Large-Dimension Limit for Many-Electron Atoms, S. Kais and D. R. Herschbach, *J. Chem. Phys.* **100**, 4367-4376 (1994).
323. Molecular Beam Kinetics: Reactions of H and D Atoms with Alkali Halides, P. E. Siska and D. R. Herschbach, *Canadian J. Chem.*, **72**, 762-775 (1994).
324. Pressure and Temperature Dependent Viscosity of Two Glass Forming Liquids: Glycerol and Dibutyl Phthalate, R. L. Cook, C. A. Herbst, H. E. King, Jr., and D. R. Herschbach, *J. Chem. Phys.* **100**, 5178-5189 (1994).

325. Pendular Alignment of Paramagnetic Molecules in Uniform Magnetic Fields, A. Slenczka, B. Friedrich, and D. Herschbach, *Phys. Rev. Letts.* **72**, 1806-1809 (1994).
326. Ben Franklin's Scientific Amusements, D. R. Herschbach, *Bulletin of the American Academy of Arts and Sciences*, **48**(1), 23-43, October 1994.
327. Dimensional Perturbation Theory on the Connection Machine, T. C. Germann, B. M. Boghosian, and D. R. Herschbach, *Comp. in Phys.* **8**, 712-721 (1994).
328. A linear algebraic method for exact computation of the coefficients of the 1/D expansion of the Schrödinger equation, M. Dunn, T. C. Germann, D. Z. Goodson, C.A. Traynor, J.D. Morgan III, D. K. Watson, and D. R. Herschbach, *J. Chem. Phys.* **101**, 5987-6004 (1994).
329. Statistical Model for Delocalized Π Bonding in the C_{60} Molecule, D. J. Lacks and S. Kais, *Chem. Phys. Letters* **218**, 229-233 (1994).
330. EBW, Beloved Mentor, D. R. Herschbach, *The Nucleus* **72** (5), 7-9 (Jan., 1994).
331. Hybridization of Rotor States in Parallel Electric and Magnetic Fields, B. Friedrich, A. Slenczka, and D. Herschbach, *Chem. Phys. Lett.* **221**, 333-340 (1994).
332. Spectroscopy of Pendular Molecules in Parallel Electric and Magnetic Fields, B. Friedrich, A. Slenczka, and D. R. Herschbach, *Canadian J. Phys.* **72**, 897-908 (1994).
333. Large-Dimension Limit Yields Generic Reduced Potential Curves for H_2^+ , H_2 , HHe^+ , and He_2^{++} , S. Kais, T. C. Germann, and D. R. Herschbach, *J. Phys. Chem.* **98**, 11015-17 (1994)

334. Determination of the Electric Dipole Moment of $ICl(B^3\Pi_0)$ From Pendular Spectra, A. Slenczka, B. Friedrich, and D. R. Herschbach, *Chem. Phys. Letts.* **224**, 238-242 (1994).
335. The Impossible Takes a Little Longer, D. R. Herschbach, *Proc. National Sciences Symp., Naval Research Laboratory*, July, 53-64 (1994).
- 1995 336. Stastna hvězda Sternova-Gerlachova experimentu, B. Friedrich and D. R. Herschbach, *Cs. cas. fyz.* **45**, 75-86 (1995).
337. On "Nobel Legacy," by D. R. Herschbach, *Chemical & Engineering News*, October 2, p. 4-5, (1995).
338. Collection Optics with Fourier Spatial Filter for Molecular Beam Spectroscopy, A. Slenczka, and B. Friedrich, *Czech. J. Phys.* **45**, 41 (1995).
339. A Theoretical Study of 2, 2'; 5', 2''-Terthiophene (α -T) and its Analogs: I. Correlation of Electronic Structure and Energies with Herbicidal Phototoxicity, D. C. S. Friedman and P. Friedman, *Theochem* **333**, 71-78 (1995).
340. Discovering Widener, D. R. Herschbach, in *Voices for the Stacks* (K. E. Carpenter & R. F. Thomas, Eds.), *Harvard Library Bulletin*, **6**(3), 70-71 (1995).
341. Collisional Alignment of Molecular Rotation: Simple Models and Trajectory Analysis, D. Pullman, B. Friedrich, and D. R. Herschbach, *J. Phys. Chem.* **99**, 7407 (1995).
342. Ben Franklin's "Scientific Amusements," by D. R. Herschbach, *Harvard Magazine* **98**(2), p. 36-46, Nov. - Dec. (1995).
343. The Quantum Interpretation of the Intelligence Quotient, D. Herschbach, *Annals of Improbable Research* **1**, 9-10 (1995).

344. Circular Rydberg States of the Hydrogen Atom in a Magnetic Field, T. Germann, D. R. Herschbach, M. Dunn, and D. K. Watson, *Phys. Rev. Lett.* **74**, 658-661 (1995).
345. Alignment and Trapping of Molecules in Intense Laser Fields, B. Friedrich and D. R. Herschbach, *Phys. Rev. Lett.*, **74**, 4623-4626 (1995).
346. Heisenberg Certainty Lecture, D. Herschbach, *Annals of Improbable Research* **1** (1), 16 (Jan. 1995).
347. Spatial Taming and Trapping of Molecules, B. Friedrich and D. R. Herschbach, *J. Chinese Chem. Soc.* **42**, 111-117 (1995).
348. Pendular States of Molecules in Strong Electric and Magnetic Fields, B. Friedrich and D. R. Herschbach, *Comments At. Mol. Phys.* **32**(1), 47-55 (1995).
349. Electric Dipole Moments of Pendular Molecules, Bretislav Friedrich, *Intern. Rev. Phys. Chem.* **14** (1), 113-126 (1995).
350. The Shape of Molecular Collisions, D. R. Herschbach, in *Science and Society* (M. Moskovits, Ed.; House of Anansi Press, Ltd., Concord, Ontario), John Polanyi Festival, Toronto, Canada, 13-28 (1995).
351. Preface: Aristotle, Jefferson, and Teknos, D. R. Herschbach, *Teknos* **4**, 4-5, 1995 [Published by Thomas Jefferson High School for Science & Technology, Alexandria, Virginia].
352. Book Review: "The Curse of the Research Class," D. R. Herschbach, for *Grant Application Writer's Handbook* by Liane Reif-Lehrer, *The Nucleus* **73**(10), 10 (1995).
353. An Accurate Analytical Wavefunction for Circular Rydberg States of the H Atom in a Magnetic Field, T. C. Germann, *J. Phys. B: Atom, Molecular and Optical Physics* **28**, L531-L536 (1995).

354. Polarization of Molecules Induced by Intense Nonresonant Laser Fields, B. Friedrich and D. R. Herschbach, *J. Phys. Chem.* **99**(42), 15686-93 (1995).
355. Book Review: Masterpiece of a Master, D. R. Herschbach on *Adventures of a Chemist Collector*, by Alfred Bader (Weidenfeld & Nicolson Ltd., London, 1995), *Chemistry & Biology*, **2**(12), 803-804, December (1995).
356. Degrees of Honor, D. R. Herschbach, *Harvard Magazine* **98**(1), 103-104, September-October (1995).
357. Buffer Gas Loading of Atoms and Molecules into a Magnetic Trap, John Doyle, B. Friedrich, J. Kim and D. Patterson, *Phys. Rev. A* **52**, R2515 (1995)
358. Zdenek Herman, Bohemian at Large, B. Friedrich, M. Henchman, and D. Herschbach, in *Z. Herman Festschrift*, *J. Phys. Chem.* **99**, 15318 (1995).
- 1996 359. Imaginary Gardens with Real Toads, by D. R. Herschbach, Conference on *The Flight from Science and Reason*, *Annals of the New York Academy of Sciences*, **775**, 11-30 (1996).
360. Statistical Mechanics of Pendular Molecules, B. Friedrich and D. Herschbach, *Int'l Reviews in Physical Chem.* **15** (1), 325-344 (1996).
361. Polarizability Interaction in Molecules and Double-Well Tunneling, B. Friedrich and D. R. Herschbach, Special Issue of *Z. Phys. D* for Hund Festschrift, **36**, 221-228 (1996).
362. Book Review: A Time When Science and Politics were Friends, D. R. Herschbach on *Science and the Founding Fathers* by I. B. Cohen (Norton, 1996), *Physics World*, January 1996, pp. 43-44.
363. Benjamin Franklin, D. R. Herschbach, *Macmillan Encyclopedia of Physics*, **2**, J. S. Rigden, Ed. (Macmillan Publishing Co., New York, NY, 1996), pp. 622-623.

364. Tracking Tunneling, B. Friedrich and D. R. Herschbach, *Scientific American*, **274**, 10, January 1996.
365. Dimensional Scaling and Renormalization, D. R. Herschbach, *Int'l J. Quantum Chem.* **57**(3), 295-308 (1996).
366. Teaching Chemistry as a Liberal Art, D. R. Herschbach, in *AAC&U Liberal Education* **82**(4), 10-17 (1996).
367. Cluster Beam Chemistry: Hydration of Nuclei Acid Bases; Ionization Potentials of Hydrated Adenine and Thymine, S. K. Kim, W. Lee, and D. R. Herschbach, *J. Phys. Chem.* **100**, 7933-7937 (1996).
368. The Stern-Gerlach Experiment, B. Friedrich and D. R. Herschbach, *Macmillan Encyclopedia of Physics*, **4**, J. S. Rigden, Ed. (Macmillan Publishing Co., New York, NY, 1996), pp. 1534-1536.
369. Dimensional Expansions for Atomic Systems, D. Watson, M. Dunn, T. C. Germann, D. R. Herschbach, D. Z. Goodson, J. R. Walkup in *New Methods in Quantum Theory* (C. A. Tsipis, V. S. Popov, D. R. Herschbach, J. Avery, Eds.), Kluwer Academic, Dordrecht, 83-97 (1996).
370. Alignment Enhanced Spectra of Molecules in Intense Nonresonant Laser Fields, B. Friedrich and D. R. Herschbach, *Chem. Phys. Letts.*, **262**, 41-46 (1996).
371. Book Review: D. R. Herschbach on *Misunderstanding Science? The Public Reconstruction of Science and Technology*, in *Science Spectra*, **7**, pp. 76-77, Alan Irwin and Brian Wynne, Eds. (Cambridge University Press, 1996).
372. Dimensional Scaling, J. G. Loeser and D. R. Herschbach in *New Methods in Quantum Theory* (C. A. Tsipis, V. S. Popov, D. R. Herschbach, J. Avery, Eds.), Kluwer Academic, Dordrecht, 1-32 (1996).

- 1997 373. Chemistry: Blithe Sibling of Physics, D. R. Herschbach, *Physics Today* **50**, 11-13 (April 1997).
374. Fullerene Perspectives, D. R. Herschbach, Reply to Rudy Baum's article in *C&EN News*, *C&EN News* **75**(7), 6 (1997).
375. The Odyssey of Y. T. Lee: "Should be All Right," D. Herschbach, *J. Phys. Chem.* **101**, 6341-6345 (1997).
376. Molecular Beam Chemistry: Formation of Benzene and Other Higher Hydrocarbons from Small Alkanes and Alkenes in a Catalytic Supersonic Nozzle, Lina Shebaro, Sameer R. Bhalotra, D. R. Herschbach, *J. Phys. Chem.* **101**, 6775-6780 (1997).
377. A Storage Ring for Polar Molecules, Daniel P. Katz, *J. Chem. Phys.* **107**(20), 8491-8501 (1997).
378. Unloading Straw Toads, D. R. Herschbach, *Science* **276**, 1954 (1997).
379. His Evangelical Zeal, D. Herschbach, In *Optical, Electric and Magnetic Properties of Molecules: A Review of the Work of A. D. Buckingham*, D. C. Clary and B. J. Orr, Eds. (Elsevier Science, North-Holland, Amsterdam, 1997), xv-xvi.
380. Facile Production of Higher Hydrocarbons from Ethane in a Catalytic Supersonic Nozzle, Lina Shebaro, Benjamin Abbott, Theodore Hong, Alkwin Slenczka, Bretislav Friedrich, D. R. Herschbach, *Chem. Phys. Letts.* **271**, 73-78 (1997).
381. Buffer-Gas Loading and Magnetic Trapping of Atomic Europium, J. Kim, B. Friedrich, D. Katz, D. Patterson, J. Weinstein, R DeCarvalho, and J. Doyle, *Phys. Rev. Lett.*, **78**, 3665 (1997).
382. Preface, D. R. Herschbach in *Voyages in Conceptual Chemistry*, D. H. Barouch (Jones & Bartlett, Pubs., Sudbury, MA., 1997, xv-xvi).

383. Szilard and His Dolpins, D. R. Herschbach, in Leo Szilard Centenary Volume, pp. 157-162, George Marx, Ed. (Eötvös Physical Society, Budapest, 1998).
384. The Impossible Takes a Little Longer, D. R. Herschbach, *The Nucleus*, **76**, pp 37-39 (Summer, 1998).
385. Approximate Solution for Electron Correlation through the Use of Schwinger Probes, D. Mazziotti, *Chemical Physics Letters* **289**, 419-427 (1998).
386. Probing Weakly-Bound Species with Nonresonant Light: Dissociation of He₂ Induced by Rotational Hybridization, B. Friedrich, Manish Gupta and D. Herschbach, *Collection of Czech Chem. Commun.* **63**, 1089-1093 (1998).
387. Trapping Molecules and Liberating Catalysts, D. R. Herschbach, in Chemical Research - 2000 and Beyond: Challenges and Visions, Paul Barkan, Ed. (ACS Books/Oxford University Press, New York, 1998) pp. 113-128.
388. 3,5- Contracted Schrödinger Equation: Determining Quantum Energies and Reduced Density Matrices Without Wave Functions, David Mazziotti, Proc. of the Sanibel Symposium in International Journal of Quantum Chemistry, **70**, 557-570 John Wiley & Sons, Inc. (1998).
389. Imaginárni zahrady s reálnymi ropuchami, D. R. Herschbach, *Vesmír* **77**(4), 165-169 (March 1998); Imaginárni zahrady s reálnymi ropuchami II, D. R. Herschbach, *Vesmír* **77**, 225-229 (April 1998), translated by Zdenek Herman, 1998.
390. Contracted Schrödinger Equation: Determining Quantum Energies and Two-Particle Density Matrices without Wavefunctions, David A. Mazziotti, *Phys. Rev. A* **57**, 4219-4234 (1998).
391. Space Quantization: Otto Stern's Lucky Star, B. Friedrich and D. R. Herschbach, in Daedalus, *Science and Culture*, **127**, 165-191 (1998).

392. Magnetic Trapping of Atomic Chromium, J. D. Weinstein, R. DeCarvalho, J. Kim, D. Patterson, B. Friedrich, and J. M. Doyle, *Phys. Rev. A* **57**, R3173 (1998).
393. Towards Magnetic Trapping of Molecules, B. Friedrich, R. DeCarvalho, J. Kim, D. Patterson, J. D. Weinstein, and J. M. Doyle, *J. Chem. Soc., Faraday Trans.*, **94**, 1783, (1998)
394. Spectroscopy of Buffer-Gas Cooled Vanadium Monoxide in a Magnetic Trapping Field, J. D. Weinstein, R. DeCarvalho, K. Amar, A. Boca, B. C. Odom, B. Friedrich, J. M. Doyle, *J. Chem. Phys.* **109**, 2656 (1998).
395. Probing Weakly-Bound Species with Nonresonant Light: Dissociation of He₂ Induced by Rotational Hybridization, B. Friedrich, M. Gupta, and D. Herschbach, *Coll. Czech. Chem. Commun.* **63**, 1089 (1998).
396. Magnetic Trapping of Calcium Monohydride Molecules, J. D. Weinstein, R. DeCarvalho, T. Guillet, B. Friedrich, and J. M. Doyle, *Nature (London)* **395**, 148 (1998).
397. Time Evolution of Pendular States Created by the Interaction of Molecular Polarizability with a Pulsed Nonresonant Laser Field, M. Rodriguez, M. Gupta, B. Friedrich, and J. Ortigoso, *J. Chem. Phys.* **110**, 3870 (1998).
398. Zeeman Spectroscopy of CaH Molecules in a Magnetic Trap, B. Friedrich, J. D. Weinstein, R. DeCarvalho, and J. M. Doyle, *J. Chem. Phys.* **110**, 2376 (1998).
399. Effect of pendular orientation on the reactivity of H + DCI: a Quasiclassical Trajectory Study, F. J. Aoiz, B. Friedrich, V. J. Herrero, V. Sáez Rábanos, J. E. Verdasco, *Chem. Phys. Letts.*, **289**, 132-140 (1998).

- 1999 400. Preface, D. R. Herschbach, in *Science Careers, Gender Equity, and the Changing Economy*, Conf. Proc., Washington, D. C., Oct. 28, 1996 (The Radcliffe Public Policy Institute, Radcliffe College, Cambridge, MA. 1999).
401. Book Review: "When conflict tests your convictions," D. R. Herschbach on *Physicists in Conflict: From Antiquity to the New Millennium* by Neil A. Porter, 1998, *Physics World*, April 1999, pp. 41-42, Institute of Physics Publishing, Bristol and Philadelphia.
402. Preface, D. R. Herschbach, *Journal of Undergraduate Sciences*, **5** (2), p. 2, 1999.
403. Obituary, Gerhard Herzberg (1904-99), "Patriarch of Modern Molecular Spectroscopy", D. R. Herschbach, *Nature*, **398**, 670, 22 April (1999).
404. Changes in the Gardens of Science, Wrought by Women, D. R. Herschbach, *The Annals of the New York Academy of Sciences*, **869**, 66-74 (1999).
405. Spectral Difference Methods for Solving Differential Equations, D. Mazziotti, *Chem. Phys. Letts.*, **299**, 473-480 (1999).
406. Chemical Physics: Molecular Clouds, Clusters and Corrals, D. R. Herschbach, *Revs. Mod. Phys.* **71**, S411-S418 (1999).
407. How to Get a Calf into the Barn, D. R. Herschbach, *Harvard Yearbook*, **363**, p. 74 (1999).
408. Observation of the $A^2\Sigma^+ \leftarrow X^2\Pi$ Electronic Transition of NaO, S. Joo, D. R. Worsnop, C. E. Kolb, S. K. Kim, and D. R. Herschbach, *J. Phys. Chem. A*, **103**, 3193-3199 (1999).

409. The Thirteenth Labor of Hercules, D. R. Herschbach in *The Thirteenth Labor, Improving Science Education*, for The Wright Center for Science Education, Tufts University, Chap. 7, pp. 61-70, E. J. Chaisson and Tae-Chang Kim, Eds., Gordon and Breach Publishers, 1999.
410. Introduction: Dudley Herschbach, for "The Responsibility of the Scientist," by John C. Polanyi, *Bulletin of the American Academy of Sciences*, **52**(5), 36-38 (May/June 1999).
411. Enhanced Orientation of Polar Molecules by Combined Electrostatic and Nonresonant Induced Dipole Forces, B. Friedrich and D. R. Herschbach, *J. Chem. Phys.*, **111**(14), 6157-6160 (1999).
412. Pursuit of N-representability for the contracted Schrödinger equation through density-matrix reconstruction, D. A. Mazziotti, *Phys. Rev. A*, **60**, 3618-3626 (1999).
413. Comparison of contracted Schrodinger and coupled cluster theories, D. A. Mazziotti, *Phys. Rev. A* **60**, 4396-4408 (1999).
414. The KLMN of X-Ray Spectroscopy: Dolejšek's Discovery of the N-Series, B. Friedrich, *Physics in Perspective* **1**, 384-389 (1999).
415. Molecules in a Magnetic Trap, J. M. Doyle and B. Friedrich, *Chemistry in Britain*, **35**, 31 (1999). (Also published in *Revista Espanola de Fisica* **13**, 15-19 (1999); *Vesmir* **78**, 552-554 (1999)).
416. Manipulating Molecules via Combined Static and Laser Fields, B. Friedrich and D. R. Herschbach, *J. Phys. Chem.*, **A** **103**, 10280-10288 (1999).
417. A Mechanical Means to Produce Intense Beams of Slow Molecules, Manish Gupta and D. R. Herschbach, *J. Phys. Chem.*, **103**, 10670-10673 (1999).

418. Boson Correlation Energies from Reduced Hamiltonian Interpolation, D. Mazziotti and D. R. Herschbach, *Phys. Rev. Lett.*, **83**, 5185-5189 (1999).
419. Molecules are Cool, J. M. Doyle and B. Friedrich, *Nature*, **401**, 749 & 751 (1999).
420. Buffer-gas Loaded Magnetic Traps for Atoms and Molecules: A Primer, R. deCarvalho, J.M. Doyle, B. Friedrich, T. Guillet, J. Kim, D. Patterson, and J. D. Weinstein, *Europ. Phys. J. D*, **7**, 289-309 (1999).
421. Epilogue: Linus Pauling, Quintessential Chemist, D. R. Herschbach, in *Pauling's Legacy - Modern Modelling of the Chemical Bond*, Theoretical and Computational Chemistry **6**, 749-754 (1999), Z. B. Maksic and W. J. Orville-Thomas, Ed., Elsevier Science, Amsterdam.
422. Time Evolution of Pendular States Created by the Interaction of Molecular Polarizability with a Pulsed Nonresonant Laser Field, J. Ortigoso, M. Rodriguez, M. Gupta and B. Friedrich, *J. Chem. Phys.* **110**, 3870-3875 (1999).
- 2000 423. Slowing of Supersonically Cooled Atoms and Molecules by Time-varying Nonresonant Induced Dipole Forces, B. Friedrich, *Phys. Rev. A* **61**, 025403 1-4 (2000).
424. Steric Proficiency of Polar $^2\Sigma$ Molecules in Congruent Electric and Magnetic Fields, B. Friedrich and D. Herschbach, *Physical Chemistry Chemical Physics*, **2**, 419-428 (2000).
425. Simulation of the Hyperfine-resolved Zeeman Spectrum of Eu Atoms in a Magnetic Trap, Long Cai, B. Friedrich, J. M. Doyle, *Phys. Rev. A*, **61**, 033412-1 - 033412-5 (2000).
426. To Seek the Light, D. Herschbach, in Proceedings of the Int. Conf. for the Discovery of Polonium and Radium - Its Scientific and Philosophical Consequences, Benefits and Threats to Mankind, Pgs. 251-256. J. Kornacki, Ed., Centrum Upowszechniania Nauki PAN, Warsaw, 2000.

427. Heavenly Reading, Review by B. Friedrich of "Walther Nernst and the Transition to Modern Physical Science," by Diana Kormos Barkan, in *Angew. Chem. Int. Ed.* **39**, 2017-2018 (2000).
428. Obituary, Kent R. Wilson (1937-2000): Inspiring Architect of Laser Chemistry, D. Herschbach, *Nature* **405**, 902 (2000).
429. The Zeno ($Z = 1$) Behavior of Equations of State: An Interpretation across Scales from Macroscopic to Molecular, M.C. Kutney, M. T. Reagan, K. A. Smith, J. W. Tester, and D. R. Herschbach, *J. Phys. Chem. B* **104**, 9513-9525 (2000).
430. Fifty Years in Physical Chemistry: Homage to Mentors, Methods, and Molecules, D. Herschbach, *Ann. Rev. Phys. Chem.* **51**, 1-39 (2000).
431. Boson Correlation Energies and Density Matrices from Reduced Hamiltonian Interpolation, D. A. Mazziotti and D. Herschbach, *Phys. Rev. A.* **62**, 043603-1 - 043603-10 (2000).
432. Atomic and Molecular Beams in Chemical Physics: A Continuing Odyssey, D. Herschbach, in *Atomic and Molecular Beams*, R. Campargue, Ed. (Springer-Verlag, Berlin, 2000), pp. 3-40.
433. Genius in the Word Count?, D. Herschbach, *Stanford Magazine*, **28** (No. 6), 17-18 (Nov./Dec. 2000).
434. Fine Structure, Alignment, and Orientation of $^{32}\text{S}^{16}\text{O}$ and $^{16}\text{O}^{18}\text{O}$ Molecules in Congruent Electric and Magnetic Fields, A. Boca and B. Friedrich, *J. Chem. Phys.* **112**, 3609-3619 (2000).
- 2001 435. Time-Dependent Alignment and Orientation of Molecules in Combined Electrostatic and Pulsed Nonresonant Laser Fields, Long Cai, J. Marango, and B. Friedrich, *Phys. Rev. Lett.* **86**, 775-778 (2001).

436. Molecular Beams Entwined with Quantum Theory: A Bouquet for Max Planck, D. Herschbach, *Annalen der Physik*, **10**, 163-176 (2001).
437. The Odyssey of Kent Wilson: Holding Molecules in the Light, D. Herschbach, *Ultrafast Phenomena XII Symposium*, T. Elsaesser, S. Mukammel, M. M. Murnane, H. F. Scherer, Eds., (Springer-Verlag, Berlin, 2001), pp. 3-9.
438. Introduction to Harold Johnston Festschrift, D. R. Herschbach, C. E. Miller, C. B. Moore, and S. E. Schwartz, *J. Phys. Chem. A* **105**, 1385 (2001).
439. Slowing and Speeding Molecular Beams by Means of a Rapidly Rotating Source, M. Gupta and D. R. Herschbach, *J. Phys. Chem. A* **105**, 1626-1637 (2001).
440. Chemical Kinetics of the NaO + O Reaction, J. Griffin, D. R. Worsnop, R. C. Brown, D. R. Herschbach, and C. E. Kolb, *J. Phys. Chem. A* **105**, 1643-1648 (2001).
441. The Science of Elections, Steven J. Brams and D. R. Herschbach, *Science* **292**, 1449 (2001).
442. Understanding the Outstanding: Zipf's Law and Positive Deviants, D. Herschbach, in The Sourcebook: Academic Excellence. A Study of the Role of Research in the Natural Sciences at Undergraduate Institutions, Research Corporation, pp. 70-74 (2001).
443. Tuning DNA Strings: Modulating the Rate of DNA Replication with Mechanical Tension, A. Goel, M. D. Frank-Kamenetskii, T. Ellenberger, and D. Herschbach, *Proc. Nat'l. Acad. Sci.* **98**, 8485-8489 (2001).
444. Recurring Molecular Alignment Induced by Pulsed Nonresonant Laser Fields, L. Cai and B. Friedrich, *Collect. Czech. Chem. Commun.* **66**, 991-1004 (2001).

- 2002 445. Franklin, Benjamin, D. Herschbach, in Encyclopedia of Global Environmental Change Vol. 1 - *The Earth System: Physical and Chemical Dimensions of Global Environmental Change*, M. MacCracken and J. Perry, Eds, (John Wiley & Sons, 2002), p. 390.
446. Unifying Themes in DNA Replication: Reconciling Single Molecule Kinetic Studies with Structural Data on DNA Polymerases, A. Goel, T. Ellenberger, M. D. Frank-Kamanetskii, D. Herschbach, *J. Biom. Str. Dyn.* **19**, 1-14 (2002).
447. Patent: US 6,420,699 B1, July 16, 2002
Method and Apparatus for Altering the Velocity of Molecules,
Dudley R. Herschbach and Manish Gupta
448. Manipulating Molecules via Combined Electrostatic and Pulsed Nonresonant Laser Fields, B. Friedrich, in ACS Symposium Series 821 - Laser Control and Manipulation of Molecules, A. D. Bandrauk, Y. Fujimura, and R. J. Gordon, Eds, (American Chemical Society, 2002), pp. 286-303.
449. Statistical Theory of Angular Momentum Polarization in Chemical Reactions, D. A. Case and D. Herschbach, *Molecular Physics* **100**, 109-125 (2002).
- 2003 450. The Impossible Takes a Little Longer, D. Herschbach, in Science Literacy for the 21st Century, Stephanie P. Marshall, Judith A. Scheppler, & Michael J. Palmisano, Eds., (Prometheus, 2003), p. 131.
451. Book Review: "America's Founding Citizen Scientist," D. R. Herschbach on *Benjamin Franklin* by Edmund S. Morgan, 2002, (Yale University Press), Chem. & Eng. News, February 10, 2003, pp. 43-44.
452. High pressure structure and equation of state nitrosonium nitrate from synchrotron x-ray diffraction, Y. Song, M. Somayazulu, H. Mao, R. J. Hemley, and D. Herschbach, *J. Chem. Phys.*, **118**, 8350, (2003).

453. The Parable of Two Frogs, D. Herschbach in *A Tribute to Brother Blue & Ruth Edmonds Hill*, League for the Advancement of New England Storytelling (LANES), 2003, (Yellow Moon Press), pp. 145-146.
454. Paul Doughty Bartlett, Memorial Minute, D. R. Herschbach, W. N. Lipscomb, F. H. Westheimer, G. L. Verdine, Harvard Gazette, April 24 (2003), p. 34.
455. Controlling the Speed and Direction of Molecular Motors that Replicate DNA, Anita Goel and D. R. Herschbach, in *Fluctuations and Noise in Biological, Biophysical, and Biomedical Systems*, S. M. Bezrukov, H. Frauenfelder, F. Moss, Eds., Proc. of SPIE **5110**, pp. 63-68 (2003).
456. High-pressure stability, transformations and vibrational dynamics of nitrosonium nitrate from synchrotron infrared and Raman spectroscopy, Y. Song, R. J. Hemley, X. Liu, M. Somayazulu, H. Mao, D. R. Herschbach, J. Chem. Phys., **119**, 2232-2240, (2003).
457. Tuning and switching a DNA polymerase motor with mechanical tension, Anita Goel, R. Dean Astumian, D. Herschbach, PNAS **100**, 9699-9704 (2003).
458. Book Review: "Our Founding Grandfather," D. R. Herschbach on *Benjamin Franklin: An American Life* by Walter Isaacson, 2003 (Simon and Schuster), *Harvard Magazine*, **106**, 28-35 (Sept/Oct., 2003).
459. Book Review, Dudley Herschbach: *Cohesion: A Scientific History of Intermolecular Forces* by J. S. Rowlinson, in *Physics Today*, **56**, 68 (Nov., 2003).
460. Stern and Gerlach: How a Bad Cigar Helped Reorient Atomic Physics, Bretislav Friedrich and Dudley Herschbach, *Physics Today*, **56**, 53-59 (2003).

461. Phases of N₂O₄ at High Pressures and High Temperatures, Yang Song, R. J. Hemley, Ho-kwang Mao, D. R. Herschbach, *Chem. Phys. Letts.* **382**, 686-692 (2003).
462. Book Review: "Living the Electric Dream," D. R. Herschbach on *Draw the Lightning Down: Benjamin Franklin and Electrical Technology in the Age of Enlightenment* by Michael Schiffer, 2003 (University of California Press), *Physics World*, December 2003, pp. 39 & 40.
- 462.b Photodissociation of Oriented HXeI Molecules Generated from HI-Xe_n Clusters, N.H. Nahler, R. Baumfalk, U. Buck, Z. Bihary, R. B. Gerber and B. Friedrich, *J.Chem. Phys.*, **119**, 224 (2003).
463. Separation of a Benzene and Nitric Oxide Mixture by a Molecule Prism, B.S. Zhao, S.H. Lee, H.S. Chung, S. Huang, W.K. Kang, B. Friedrich, D. S. Chung, *J. Chem. Phys.* **119**, 8905-8909 (2003).

2004

464. A Cool Pulsed Molecular Micro-Beam, Bum Suk Zhao, Marta Castillejo, Doo Soo Chung, Bretislav Freidrich, D. R. Herschbach, *Rev. Sci. Inst.* **75**, 146-150 (2004).
465. Electron Localization-delocalization Transitions in Dissociation of the C₄⁻ Anion: A Large-D Analysis, Qicun Shi, Sabre Kais, D. R. Herschbach, *J. Chem. Phys.* **120**, 2199-2207 (2004).
466. Dependence of DNA Polymerase Replication Rate on External Forces: A Model Based on Molecular Dynamics Simulations, Ioan Andricioaei, Anita Goel, D. R. Herschbach, Martin Karplus, *Biophysical Journal* **87**, 1478-1497 (2004).
467. Generation of Methane in the Earth's Mantle: In situ High *P-T* Measurements of Carbonate Reduction, Henry Scott, Russ Hemley, Ho-kwang Mao, Dudley Herschbach,

Laurence Fried, W. Michael Howard, PNAS **39**, 14023-14026 (2004).

468. Benjamin Franklin & Joseph Priestly: Kindred Kites...Amiable Airs, Dudley Herschbach, *Franklin Gazette*, **14**, 6-8 (2004).
469. Ben Franklin in His Own Words, Dudley Herschbach, *Physics Today* **57**, 20 (November, 2004).

2005

470. High Pressure Vibrational Spectroscopy of Sulfur Dioxide, Y. Song, Z. Liu, R. J. Hemley, Ho-kwang Mao, and D. R. Herschbach, *J. Chem. Phys.* **122**, 174511-1 - 174511-9 (2005).
471. "Einstein's Heirs: Szilard and Sakharov," Dudley Herschbach, in *Einstein – Peace Now! – Visions and Ideas*, Reiner Braun and David Krieger, Eds (Wiley-VCH GmbH & Co., Weinheim, 2005), pp 233-239.
- "Einsteins Erben: Szilard und Sacharow," in *Frieden Heute--Visionen and Ideen*, Reiner Braun and David Krieger, Eds (Melzer Verlag GmbH, Neu Isenburg, 2005), pp 277-285.
472. "Stern and Gerlach at Frankfurt: Experimental Proof of Space Quantization," Bretislav Friedrich and Dudley Herschbach, in *Stern-Stunden Höhepunkte Frankfurter Physik*, Wolfgang Trageser, Ed (Drukerei Stolinski, Malsch, 2005), pp 149-171.
473. Bohr's 1913 Molecular Model Revisited, A. A. Svidzinsky, M. O. Scully, D. Herschbach, *Proc. Nat'l Acad. Sci.* **102**, 11985-11988 (2005).
474. A Simple and Surprisingly Accurate Approach to the

Chemical Bond Obtained from Dimensional Scaling, A. Svidzinsky, M. O. Scully, D. R. Herschbach, *Physical Review Letters* **95**, 080401-1 - 080401-4 (2005).

475. Forward, D. R. Herschbach for *University Chemistry* by Peter E. Siska (Benjamin-Cummings Pub. Co., (December 2005).

476. "Nitrogen-containing Molecular Systems at High Pressures and Temperatures," Y. Song, J. Hemley, H. K. Mao, and D. R. Herschbach, in *Chemistry under Extreme Conditions*, Manaa, R., Ed. (Elsevier Science, 2005) pp189-222

2006

477. Chemical Stereodynamics: Retrospect and Prospect, D. Herschbach, *Eur. Phys. J. D* **38**, 3-13 (2006).

478. Obituary, George Hsing Kwei, D. R. Herschbach and J. L. Kinsey, *Physics Today* **59**, 88 (April 2006).

479. Manipulation of Slow Molecular Beams by Static External Fields, Tim McCarthy, Michael Timko, D. R. Herschbach, *J. Chem. Phys.* **125**, 133501 (2006)

2007

480. Dimensional Scaling Treatment of Stability of Atomic Anions Induced by Superintense, High-frequency laser fields, Qi Wei, Sabre Kais, D.R. Herschbach, *The Journal of Chemical Physics* **127**, 094301 (2007)

2008

481. Einstein as a Student, D. R. Herschbach in *Einstein for the 21st Century: His Legacy in Science, Art, and Modern Culture*, P.L. Galison, G. Holton, S.S. Schweber, Eds (Princeton Univ. Press, 2008), pp. 217-238; 336-338.

482. Bohr model and dimensional scaling analysis of atoms and molecules, A Svidzinsky, G. Chen, S. Chin, M. Kim, D. Ma, R. Murawski, A. Sergeev, M. Scully, and D. Herschbach,, *International Reviews in Physical Chemistry* **27**, 665-723 (2008).
483. Dimensional scaling treatment of stability of simple diatomic molecules induced by superintense, high-frequency laser fields, Qi Wei, Sabre Kais, D. R. Herschbach, *J. Chem. Phys.* **129**, 214110 (2008)

Submitted:

Comment: Seeding liberal arts courses with science parables, D. Herschbach, *Science News* (submitted, 2008).