

KARL FREDERICK FREED

Born:

September 25, 1942, Brooklyn, New York

Education:

Columbia University, B.S., 1963

Harvard University, A.M., 1965

Harvard University, Ph.D., 1967

Academic Positions:

Assistant Professor, Department of Chemistry and
The James Franck Institute, The University of Chicago
July 1968 - 1973

Associate Professor, Department of Chemistry and
The James Franck Institute, The University of Chicago
July 1973 - 1976

Professor, Department of Chemistry and
The James Franck Institute, The University of Chicago
July 1976 --

Director, The James Franck Institute, The University of Chicago
July 1983 - June 1986

Henry G. Gale Distinguished Service Professor, July 2006 –

Senior Fellow, Computation Institute, The University of Chicago, 2008 -

Fellowships and Visiting Positions:

National Science Foundation Graduate Fellowship, 1963-1967

NATO Postdoctoral Fellowship, 1967-1968 at Department of
Theoretical Physics, University of Manchester, England

Alfred P. Sloan Foundation Fellow, September 1969 - 1971

Dupont Faculty Fellow, 1969-1970

Guggenheim Fellow, 1972-1973

Senior Visiting Fellowship, Cavendish Laboratory,
Cambridge, England, 1972-1973

Dreyfus Teacher-Scholar Fellow, 1972-1977

Visiting Scientist, Centre Nucleaires, Strasbourg, France
August-September 1977

Visiting Scientist, Institute of Physical and Chemical Research
Saitama, Japan, October 1979

Hill Visiting Professor, University of Minnesota
Minneapolis, Minn., April-May 1984.

Visiting Professor, University of Strasbourg, April-June 1991

Visiting Scientist, IBM Research Labs, Almaden, Jan.-April 1993

Other Awards:

Tau Beta Pi (engineering honorary); Phi Lambda Upsilon (chemistry honorary)
Marlow Medal, The Faraday Division of the Chemical Society, 1973

American Chemical Society Award in Pure Chemistry sponsored by
Alpha Chi Sigma Fraternity, 1976
Denkewalter Lecturer, Loyola University of Chicago, May 1976
Phillips Lecturer, Haverford College, November 1976
Case Centennial Scholar Medal, Case Western Reserve University 1980
Fellow, American Physical Society, 1983
Fellow, American Academy of Arts and Sciences, 2007
Mulliken Lecture, University of Georgia, 2008

Editorial Work, conference organization,, etc.

Advisory Editor, Journal of Statistical Physics, 1976-1978
Advisory Editor, Chemical Physics, 1979 - 1992
Advisory Editor, Chemical Reviews, 1981-1983
Advisory Editor, Advances in Chemical Physics, 1984 --
Advisory Editor, Theoretica Chimica Acta, 1988 -1991
Advisory Editor, International Journal of Quantum Chemistry, 1995 -1999
Guest Editor, Annual Reviews of Physical Chemistry, 1979
Member, Committee of Direction, Laboratoire de Photophysique
Moleculaire, Orsay, France, September 1977
Associate Editor, Journal of Chemical Physics, 1982-1985, 2006 -
Chairman, Gordon Conference on Polymer Physics, 1996
Coorganizer conference series "Telluride Workshop on Polymer Physics"
Telluride, CO, 1999, 2001, 2003, 2005, 2007, 2009
Coorganizer conference "Structure, Dynamics and Charge Transport in
Polymeric Materials", Argonne National Laboratory, 2000
Board of directors, Telluride Science Research Center, 2003-6, 2007-10.
NIH Fellowship Review Panel, 2003--
Board of directors, Argonne-University of Chicago Joint Theory Institute, 2006-

PUBLICATIONS

1. Exact Solutions for Many-Level Multiple-Resonance Problems. K.F. Freed, *J. Chem. Phys.* **43**, 1113 (1965).
2. Considerations on the Rotation-Vibration of Triatomic Molecules. K.F. Freed and J.R. Lombardi, *J. Chem. Phys.* **45**, 591 (1966).
3. On the Hyperfine Structure of InH and the Theory of the Hyperfine Structure of Molecules in Hund's Case (C). K.F. Freed, *J. Chem. Phys.* **45**, 1714 (1966).
4. Theory of the Hyperfine Structure of Molecules: Application to $^3\Pi$ States of Diatomic Molecules Intermediate between Hund's Cases (a) and (b). K.F. Freed, *J. Chem. Phys.* **45**, 4214 (1966).
5. Valence Excited States of BeO. W.M. Huo, K.F. Freed and W. Klemperer, *J. Chem. Phys.* **46**, 3556 (1967).
6. On the N-Representability of Fermion Density Matrices. K.F. Freed, *J. Chem. Phys.* **47**, 3907 (1967).
7. Many-Body Approach to Electron Correlation in Atoms and Molecules. K.F. Freed, *Phys. Rev.* **173**, 1 (1968).
8. Generalized Perturbation Theory and its Application to the Electron Correlation in Atoms and Molecules. K.F. Freed, *Phys. Rev.* **173**, 24 (1968).
9. Geometry and Barriers to Internal Rotation in Hartree-Fock Theory. K.F. Freed, *Chem. Phys. Letters*, **2**, 255 (1968).
10. Entropy of a Confined Polymer: I. S.F. Edwards and K.F. Freed, *J. Phys. A. (London)* **2**, 145 (1969).
11. Radiative Decay of Polyatomic Molecules. K.F. Freed and J. Jortner, *J. Chem. Phys.* **50**, 2916 (1969).
12. Force Constants in Hartree-Fock Theory. K.F. Freed, *J. Chem. Phys.* **52**, 253 (1970).
13. Irreversible Electronic Relaxation in Polyatomic Molecules. K.F. Freed, *J. Chem. Phys.* **52**, 1345 (1970).
14. Cross Linkage Problem of Polymers, I. The Method of Second Quantization Applied to the Cross Linkage Problem of Polymers. S.F. Edwards and K.F. Freed, *J. Phys. C: Solid St. Phys.* **3**, 739 (1970).
15. Cross Linkage Problem of Polymers, II. Dilute Cross Linked Systems of Polymers. S.F. Edwards and K.F. Freed, *J. Phys. C: Solid St. Phys.* **3**, 750 (1970).
16. Cross Linkage Problem of Polymers, III. Dense Cross Linked Systems of Polymers. S.F. Edwards and K.F. Freed, *J. Phys. C: Solid St. Phys.* **3**, 760 (1970).
17. Internal Rotation and the Breakdown of the Adiabatic Approximation: Many-Phonon Radiationless Transitions. W.M. Gelbart, K.F. Freed and S.A. Rice, *J. Chem. Phys.* **52**, 2460 (1970).
18. Many-Body Perturbation Theory and the Variational Pairs of Quantum Chemistry. K.F. Freed, *Chem. Phys. Letters*, **4**, 496 (1970).

19. Elastic Moduli of Systems with Statistical Constraints. S.F. Edwards and K.F. Freed, *J. Phys. C: Solid St. Phys.* **3**, L31 (1970).
20. A Cluster Theory of the Electronic Structure of Disordered Systems. K.F. Freed and M.H. Cohen, *Natl. Bur. Std. (U.S.) Spec. Publ.* **323**, 505 (1972).
21. On a Stochastic Theory of Vibrational Relaxation and Dissociation. W.M. Gelbart, S.A. Rice and K.F. Freed, *J. Chem. Phys.* **52**, 5718 (1970).
22. Multiphonon Processes in the Non-Radiative Decay of Large Molecules. K.F. Freed and J. Jortner, *J. Chem. Phys.* **52**, 6272 (1970).
23. Boltzmann Statistics and Radiationless Decay in Large Molecules: Optical Selection Studies. W.M. Gelbart, K.G. Spears, K.F. Freed, J. Jortner and S.A. Rice, *Chem. Phys. Letters*, **6**, 345 (1970).
24. A Cluster Theory of the Electronic Structure of Disordered Systems. K.F. Freed and M.H. Cohen, *Phys. Rev.* **B3**, 3400 (1971).
25. Wiener Integrals and Models of Stiff Polymer Chains. K.F. Freed, *J. Chem. Phys.* **54**, 1453 (1971).
26. Self-Consistent Field Theories of the Polymer Excluded Volume Problem: I. Edwards' Functional Integral Approach. K.F. Freed, *J. Chem. Phys.* **55**, 3910 (1971).
27. Self-Consistent Field Theories of the Polymer Excluded Volume Problem: II. Reiss' Variational Approach. K.F. Freed and P. Gillis, *Chem. Phys. Letters*, **8**, 384 (1971).
28. Many-Body Theories of the Electronic Structure of Atoms and Molecules. K.F. Freed, *Ann. Rev. Phys. Chem.* **22**, 313 (1971).
29. Functional Integrals and Polymer Statistics. K.F. Freed, *Advan. Chem. Phys.* **22**, 1 (1972).
30. The Theory of Radiationless Processes in Polyatomic Molecules. K.F. Freed, *Topics in Current Chemistry*, **31**, 105 (1972).
31. Electronic Structure of Disordered Materials: A review of Current Theoretical Understanding. E.N. Economou, M.H. Cohen, K.F. Freed and E.S. Kirkpatrick, in *Amorphous and Liquid Semiconductors*, ed. J. Tauc. (Plenum, New York, 1974) p. 101.
32. On the Born-Oppenheimer Separation and the Calculation of Nonradiative Transition Rates. K.F. Freed and W.M. Gelbart, *Chem. Phys. Lett.* **10**, 187 (1971).
33. Statistical Mechanics of Systems with Internal Constraints: Rubber Elasticity. K.F. Freed, *J. Chem. Phys.* **55**, 5588 (1971).
34. Random Matrix Theory and the Master Equation for Finite Systems. W.M. Gelbart, S.A. Rice and K.F. Freed, *J. Chem. Phys.* **57**, 4699 (1972).
35. A Self-Consistent Field Theory of Electron Localization in Disordered Systems: The Anderson Transition. K.F. Freed, *J. Phys. C*, **4**, L331 (1971).
36. Proceedings of IUPAP Conference on Statistical Mechanics. eds. S.A. Rice, K.F. Freed and J. Light (University of Chicago Press, 1972).

37. Dependence of Radiationless Decay Rates in Polyatomic Molecules upon the Initially Selected Vibronic State: General Theory and Applications. D.F. Heller, K.F. Freed and W.M. Gelbart, *J. Chem. Phys.* **56**, 2309 (1972).
38. Path Integrals and Semiclassical Tunneling, Wavefunctions and Energies. K.F. Freed, *J. Chem. Phys.* **56**, 692 (1972).
39. A Derivation of the Exact Pi-Electron Hamiltonian. K.F. Freed, *Chem. Phys. Letts.* **13**, 181 (1972).
40. Electron Localization in Disordered Systems. K.F. Freed, *Phys. Rev. B.* **5**, 4802 (1972).
41. Energy Dependence of Nonradiative Decay Rates in Polyatomic Molecules. D.F. Heller and K.F. Freed, *Int. J. Quantum Chem.* **S6**, 267 (1972).
42. Towards an *Ab Initio* Determination of All the Parameters Which Appear in Semi-empirical Quantum Chemical Theories. K.F. Freed, *Chem. Phys. Lett.* **15**, 331 (1972).
43. Properties of Localized States in Disordered Materials. K.F. Freed in *Computational Methods for Large Molecules and Localized States in Solids*, eds. F. Herman, A.D. McLean and R.K. Nesbet (Plenum, New York, 1973).
44. Intramolecular Perturbation and the Quenching of Luminescence in Small Molecules. W.M. Gelbart and K.F. Freed, *Chem. Phys. Letts.* **18**, 470 (1973).
45. Completely *Ab Initio* Justification of Purely Semi-Empirical Theories. K.F. Freed, in *Energy, Structure and Reactivity*, edited by Darwin W. Smith and Walter B. McRae, (Wiley, New York 1973), p. 374.
46. Many-Body Green's Functions and Atomic and Molecular Electronic Structure. F.S.M. Tsui and K.F. Freed, in *Energy Structure and Reactivity*, edited by Darwin W. Smith and W. B. McRae, (Wiley, New York 1973), p. 210.
47. Theoretical Foundations of Purely Semi-Empirical Quantum Chemistry. K.F. Freed, *J. Chem. Phys.* **60**, 1765 (1974).
48. Many-Body Theory in Quantum Chemistry. K.F. Freed, in *Energy, Structure and Reactivity*, ed. by Darwin W. Smith and Walter B. McRae, (Wiley, New York, 1974), p. 238.
49. Pressure Dependence of Electronic Relaxation: A Stochastic Model. K.F. Freed and D.F. Heller, *J. Chem. Phys.* **61**, 3942 (1974).
50. Self Consistent Field Theory of Polymer Excluded Volume. K.F. Freed and H.P. Gillis, *Polymer Preprints*, **14**, 226 (1973).
51. Comments on Semi-Classical Methods. K.F. Freed, *Disc. Faraday Soc.* **55**, 68 (1973).
52. The Role of Accepting Modes in the Theory of Nonradiative Transitions. D.F. Heller, K.F. Freed and W.M. Gelbart, *Chem. Phys. Lett.* **23**, 56 (1973).
53. Theoretical Foundations of Purely Semi-Empirical Quantum Chemistry. II. Molecular Properties. K.F. Freed, *Chem. Phys.* **3**, 463 (1974).
54. Theoretical Foundations of Purely Semi-Empirical Quantum Chemistry. III. Repulsion Integrals, *Chem. Phys. Lett.* **24**, 275 (1974).

55. Path Integrals and Optical Potentials for Elastic and Inelastic Scattering, Chem. Phys. **10**, 393 (1975).
56. Open-Shell Generalized Perturbation Theory. K.F. Freed, Chem. Phys. **4**, 80 (1974).
57. *Ab Initio* Calculations of the Pi Electron Hamiltonian: Singlet-Triplet Splittings. S. Iwata and K.F. Freed, Chem. Phys. Lett. **28**, 176 (1974).
58. The Theory of the Dynamical Viscosity of Polymer Solutions. S.F. Edwards and K.F. Freed, J. Chem. Phys. **61**, 1189 (1974).
59. Self-Consistent Solutions for the Self-Avoiding Walk. H.P. Gillis and K.F. Freed, J. Phys. A. **7**, L116 (1974).
60. *Ab Initio* Evaluation of Correlation Contributions to the True Pi-Electron Hamiltonian: Ethylene. S. Iwata and K.F. Freed, J. Chem. Phys. **61**, 1500 (1974).
61. Relationship Between One-Electron Green's Function and Quantum Chemical Theories. F.S.M. Tsui and K.F. Freed, Chem. Phys. **5**, 337 (1974).
62. Viscosity of Polymer Solutions. S.F. Edwards and K.F. Freed, Polymer Preprints **15**, 120 (1974).
63. Polymer Viscosity in Concentrated Solutions. K.F. Freed and S.F. Edwards, J. Chem. Phys. **61**, 3626 (1974).
64. Quantum Theory of Photodissociation of Polyatomic Molecules: Application to HCN. Y.B. Band and K.F. Freed, Chem. Phys. Lett. **28**, 328 (1974).
65. Nonradiative Decay Processes in Benzene. M.G. Prais, D.F. Heller and K.F. Freed, Chem. Phys. **6**, 331 (1974).
66. Theoretical Basis for Semiempirical Pseudopotentials. K.F. Freed, Chem. Phys. Letts. **29**, 143 (1974).
67. Exactly Solvable Model for Nonradiative Decay with Variable Coupling Strength. K. Morokuma and K.F. Freed, J. Chem. Phys. **61**, 4342 (1974).
68. Dissociation Processes of Polyatomic Molecules. Y.B. Band and K.F. Freed, J. Chem. Phys. **63**, 3382 (1975).
69. Comparison Between Equations of Motion and Green's Function Methods for the Particle-Hole Response Function. F.S.M. Tsui and K.F. Freed, Chem. Phys. Letts. **32**, 345 (1975).
70. A Semiclassical Limit of Multichannel Scattering. J.R. Laing and K.F. Freed, Phys. Rev. Letts. **34**, 849 (1975).
71. Nuclear Coordinate Dependence of Electronic Matrix Elements for Radiationless Transitions. K.F. Freed and S.H. Lin, Chem. Phys. **11**, 409 (1975).
72. Response Function Theory of Electron Correlation. F.S.M. Tsui and K.F. Freed, Chem. Phys. **14**, 27 (1976).
73. Huggins Coefficient for the Viscosity of Polymer Solutions. K.F. Freed and S.F. Edwards, J. Chem. Phys. **62**, 4032 (1975).
74. A Theory for Time Resolved Emission Spectra. G.R. Fleming, O.L.J. Gijzeman, K.F. Freed and S.H. Lin, J.C.S. Faraday II, **71**, 773 (1975).

75. Screening Regimes for the Viscosity of Concentrated Polymer Solutions. K.F. Freed and S.F. Edwards, *J.C.S. Faraday Trans. II*, **71**, 2025 (1975).
76. Self-Consistent Field Theories of the Polymer Excluded Volume Problem III: A Self-Consistent Solution. H.P. Gillis and K.F. Freed, *J. Chem. Phys.* **63**, 852 (1975).
77. Configurational and Interstitial Relaxation Processes. K.F. Freed and K.F. Fong, *J. Chem. Phys.* **63**, 2890 (1975).
78. Energy Dependence of Electronic Relaxation Processes in Polyatomic Molecules. K.F. Freed, *Topics in Applied Physics*, **15**, 23 (1976).
79. Solution of Large Configuration Mixing Matrices Arising in Partitioning Technique and Applications to the Generalized Eigenvalue Problem. S. Iwata and K.F. Freed, *Chem. Phys.* **11**, 433 (1975).
80. Theoretical Basis for Semiempirical Theories. K.F. Freed in *Modern Theoretical Chemistry* **7**, 201 (1977).
81. Large Isotope Effects in Photodissociation of Polyatomic Molecules. Y.B. Band and K.F. Freed, *J. Chem. Phys.* **63**, 4479 (1975).
82. Renormalization Group and Critical Localization. A. Nitzan, K.F. Freed and M.H. Cohen, *Phys. Rev. B* **15**, 4476 (1977).
83. Enhancement of Quantum Interference Effects. A. Villaeys and K.F. Freed, *Chem. Phys.* **13**, 271 (1976).
84. Electronic Relaxation Processes in Benzene and Related Molecules. K.F. Freed, *J. Luminesc.* **12/13**, 339 (1976).
85. Theory of Collision Induced Intersystem Crossing. II. Application to Glyoxal. K.F. Freed, *Chem. Phys. Lett.* **37**, 47 (1976).
86. Theory of Collision Induced Intersystem Crossing. K.F. Freed, *J. Chem. Phys.* **64**, 1604 (1976).
87. Stochastic Model for Triplet Yields. K.H. Fung and K.F. Freed, *Chem. Phys.* **14**, 13 (1976).
88. Distribution of Vibrational Populations of CO Electronic States Produced in CO₂ Photodissociation. Y.B. Band and K.F. Freed, *J. Chem. Phys.* **64**, 4329 (1976).
89. Analysis of Exact Valence Shell Hamiltonian: Nonclassical Terms and Molecular Based Parameters. S. Iwata and K.F. Freed, *Chem. Phys. Lett.* **38**, 425 (1976).
90. Polymer Dynamics and the Hydrodynamics of Polymer Solutions. K.F. Freed in *Progress in Liquid Physics*, ed. C.A. Croxton (Wiley Interscience London, 1978) p. 343.
91. Concentration Dependence of the Translational Friction Coefficient for Polymer Solutions. K.F. Freed, *J. Chem. Phys.* **65**, 4103 (1976).
92. Excluded Volume Effect on Polymer Dynamics in Concentrated Solutions. K.F. Freed, *J. Chem. Phys.* **64**, 5126 (1976).
93. Excluded Volume Effect on Quasi-Elastic Neutron Scattering from Concentrated Polymer Solutions. K.F. Freed, S.F. Edwards and M. Warner, *J. Chem. Phys.* **64**, 5132 (1976).

94. Nonclassical Terms in the True Effective Valence Shell Hamiltonian: A Second Quantized Formalism. S. Iwata and K.F. Freed, *J. Chem. Phys.* **65**, 1071 (1976); **66**, 1765 (1977).
95. Hydrodynamic Theory for Vibrational Relaxation in Liquids. H. Metiu, D.W. Oxtoby and K.F. Freed, *Phys. Rev. A* **15**, 361 (1977).
96. Energy Distribution in Selected Fragment Vibrations in Dissociation Processes in Polyatomic Molecules. Y.B. Band and K.F. Freed, *J. Chem. Phys.* **67**, 1462 (1977).
97. Intramolecular Vibrational Relaxation: Electronic Relaxation as a Probe. K.F. Freed, *Chem. Phys. Letts.* **42**, 600 (1976).
98. A Semiclassical Magnus Approximation to Coupled Space-Time-Dependent Scattering Equations. J.R. Laing and K.F. Freed, *Chem. Phys.* **19**, 91 (1977).
99. Rotational Distributions in Photodissociation: Application to ICN. M.D. Morse, K.F. Freed and Y.B. Band, *Chem. Phys. Letts.* **44**, 125 (1976).
100. Microscopic Theory of Polymer Internal Viscosity: Mode Coupling Approximation for the Rouse Model. S.A. Adelman and K.F. Freed, *J. Chem. Phys.* **67**, 1380 (1977).
101. Critical Analysis of Equations-of-Motion-Green's Function Methods: Ionization Potentials of N₂. M.F. Herman, D.L. Yeager and K.F. Freed, *Chem. Phys. Lett.* **46**, 1 (1977).
102. Product Energy Distributions in the Dissociation of Polyatomic Molecules. K.F. Freed and Y.B. Band, *Excited States* **3**, 109 (1978).
103. Huggins Coefficient for Polymer Solutions with Excluded Volume. M. Muthukumar and K.F. Freed, *Macromolecules*, **10**, 899 (1977).
104. A Wavefunction Approach to Equations of Motion-Green's Function Methods. K.F. Freed and D.L. Yeager, *Chem. Phys.* **22**, 401 (1977).
105. Analysis of Third Order Contributions to Equations of Motion-Green's Function Excitation Energies: Application to N₂. D.L. Yeager and K.F. Freed, *Chem. Phys.* **22**, 415 (1977).
106. Comments on Photodissociation and Effective Hamiltonian Theories. K.F. Freed, *Disc. Faraday Society* **62**, 144, 313 (1977).
107. Bulk Viscosity of Polymer Solutions. H. Metiu and K.F. Freed, *J. Chem. Phys.* **67**, 3303 (1977).
108. Analytical Representation for Single Vibronic Level Decay Rates. M. Pagitsas and K.F. Freed, *Chem. Phys.* **23**, 387 (1977).
109. Rotational Mechanism for Vibrational Relaxation in Rigid Media. K.F. Freed and M. Metiu, *Chem. Phys. Letts.* **48**, 262 (1977).
110. Rotational Mechanism for Vibrational Relaxation in Rigid Media II. Interaction Potentials. K.F. Freed, D.L. Yeager and H. Metiu, *Chem. Phys. Letts.* **49**, 19 (1977).
111. Radiationless Transitions in Molecules. K.F. Freed, *Acc. Chem. Res.* **11**, 74 (1977).
112. Vibronic Coupling and Spin Sublevel Decay Rates. K.F. Freed, N. Kanamaru and E.C. Lim, *J. Chem. Phys.* **67**, 2844 (1977).

113. Comparison of Semiclassical Treatments for Evaluating Franck-Condon Transition Amplitudes for Molecular Dissociation. Y.B. Band, M.D. Morse and K.F. Freed, *J. Chem. Phys.* **68**, 2702 (1978).
114. Photodissociation: Isotope Effects and Comparisons between Theory and Experiment. M.D. Morse, K.F. Freed and Y.B. Band, *Chem. Phys. Letts.* **49**, 399 (1977).
115. Design of Natural Collision Coordinates to Describe Dissociation of Polyatomic Molecules. Y.B. Band and K.F. Freed, *J. Chem. Phys.* **68**, 1292 (1978).
116. Self-Consistent Field Theories of the Polymer Excluded Volume Problem. IV. The Linear Polymer. M. K. Kosmas and K.F. Freed, *J. Chem. Phys.* **68**, 4878 (1978).
117. Analysis of Third Order Contributions to Equations of Motion-Green's Function's Ionization Potentials: Application to N₂. M.F. Herman, D.L. Yeager and K.F. Freed, *Chem. Phys.* **29**, 77 (1977)
118. Franck-Condon Theory of Reactive Scattering. K.H. Fung and K.F. Freed. *Chem. Phys.* **30**, 249 (1978).
119. Mean Field Theory of the Hydrodynamics of Concentrated Polymer Solutions. K.F. Freed and H. Metiu, *J. Chem. Phys.* **68**, 4604 (1978).
120. Theory of Correlation Measurements of Resonance Light Scattering. A.A. Villaeys and K.F. Freed, *Chem. Phys. Letts.* **54**, 275 (1978).
121. On the Stokes Problem for a Suspension of Spheres at Finite Concentrations. K.F. Freed and M. Muthukumar, *J. Chem. Phys.* **68**, 2088 (1978).
122. Quantum Dynamics of a Molecule (Atom) in a Coherent Radiation Field. K.F. Freed and A.A. Villaeys, *J. Chem. Phys.* **70**, 3071 (1979).
123. Shake-up Peak Positions and Intensities by Many-Body Theory Methods. M.F. Herman, K.F. Freed and D.L. Yeager, *Chem. Phys.* **32**, 437 (1978).
124. Exponents for Electrical Conductivity in Disordered Materials. K.F. Freed, *J. Phys. C.* **12**, L17 (1979).
125. Theory of Concentration Dependence of Polymer Relaxation Times in Dilute Solutions. M. Muthukumar and K.F. Freed, *Macromolecules*, **11**, 843 (1978).
126. On Scaling Theories of Polymer Solutions. M.K. Kosmas and K.F. Freed, *J. Chem. Phys.* **69**, 3647 (1978).
127. Critical Exponents from Scaling with Neglect of Cut-Offs. K.F. Freed and M.K. Kosmas, *Phys. Rev. B.* **20**, 215 (1979).
128. Collision Dynamics of Collision Induced Intersystem Crossing Processes. K.F. Freed and C. Tric, *Chem. Phys.* **33**, 249 (1978).
129. Dynamics and Hydrodynamics of Suspensions of Translational-Rotation Brownian Particles at Finite Concentrations. K.F. Freed and M. Muthukumar, *J. Chem. Phys.* **69**, 2657 (1978).
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131. *Ab Initio* Calculation of the Effective Valence Shell Hamiltonian of Carbon: Simultaneous Treatment of Neutral and Ion States. D.L. Yeager, H. Sun, K.F. Freed and M.F. Herman, Chem. Phys. Lett. **57**, 490 (1978).
132. Coherence Transfer Processes in Vibrational Relaxation of Polyatomic Molecules in Condensed Media. K.F. Freed and A.A. Villaeys, Chem. Phys. **39**, 51 (1979).
133. Rotational Distributions from Photodissociations. I. Linear Triatomic Molecules. M.D. Morse, K.F. Freed and Y.B. Band, J. Chem. Phys. **70**, 3604 (1979).
134. Rotational Distributions from Photodissociations. II. Results for ICN + hv-> I + CN(X²Σ⁺). M.D. Morse, K.F. Freed and Y.B. Band, J. Chem. Phys. **70**, 3620 (1979).
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136. Analysis of Approximations and Errors in Equations of Motion Method Calculations. M.F. Herman and K.F. Freed, Chem. Phys. **36**, 383 (1979).
137. On Dynamical Scaling Theories of Individual Polymers in Solution. R.S. Adler and K.F. Freed, J. Chem. Phys. **70**, 3119 (1979).
138. On the Stokes Problem for a Suspension of Spheres at Nonzero Concentration. II. Calculations for Effective Medium Theory. M. Muthukumar and K.F. Freed, J. Chem. Phys. **70**, 5875 (1979).
139. On Rotational Effects in Radiationless Processes in Polyatomic Molecules. F. A. Novak, S.A. Rice, M.D. Morse and K.F. Freed, in *Radiationless Transitions*, ed. S.H. Lin (Academic Press, New York, 1980) p. 135.
140. Polymers as Self-Avoiding Walks. K.F. Freed, Ann. Prob. **9**, 537 (1981).
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147. *Ab Initio* Calculation of One-Center Integrals of Semiempirical Theories of Valence. K.F. Freed and H. Sun, Israel J. Chem. **19**, 99 (1980).
148. Fragment Angular Distributions from Photodissociation of Triatomic Molecules, Y.B. Band, M.D. Morse and K.F. Freed, Chem. Phys. Letts. **77**, 294 (1979).

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