

## Publications

**Alan J. Heeger**

1. Magnetic Properties of  $\text{KMnF}_3$ , Bull. Amer. Phys. Soc. 5 188 (1960).
2. Relaxation Processes in a Canted Antiferromagnet, Bull. Amer. Phys. Soc. 6 160 (1961).
3. Magnetic Properties of  $\text{KMnF}_3$ . II. Weak Ferromagnetism, Phys. Review 123 1652 (1961).
4. Double Resonance and Nuclear Cooling in an Antiferromagnet, Phys. Rev Lett. 7 307 (1961).
5. Relaxation of  $\text{Mn}^{55}$  Nuclear Magnetization in Antiferromagnetic  $\text{KMnF}_3$ . Bull. Amer. Phys. Soc. 7 54 (1962).
6. Nuclear-Antiferromagnetic Double Resonance, Proc. int. Conf. Magnetic and Electric Resonance and Relaxation, Eindhoven, 1962 (John Wiley & Sons, inc. NY) pg.694.
7. Spin-Wave instability and Premature Saturation in Antiferromagnetic Resonance, Phys. Rev. Lett. 10 53 (1963).
8. Direct Observation of  $\text{Mn}^{55}$  Nuclear Resonance in Ferromagnetic  $\text{MnFe}_2\text{O}_4$ , Bull. Amer. Phys. Soc. 11, (8) 213 (1963).
9.  $\text{Mn}^{55}$  Nuclear Resonance in Manganese Ferrite (With S. K. Ghosh and T.G. Blocker, III) Suppl. J. Appl. Phys. (1963), J. Appl. Phys. 34 44 (Pt. 2) 1034 (1963).
10. Excitation of Nuclear Magnetic Resonance Modes in Antiferromagnetic  $\text{KMnF}_3$ . Suppl. To J. Appl Phys. (1963), J. Appl. Phys. 33 1052 (1963).
11. Spin Wave instability and Premature Saturation in Antiferromagnetic Resonance, Phys. Rev. 131. 608 (1963).
12. Slow and Fast Relaxation Effects in Manganese Ferrite, Bull. Amer. Phys. Soc. 8 618 (1963).
13. Nuclear Resonance in the Ferromagnetic Spiral  $\text{MnCr}_2\text{O}_4$ , Proc. int. Conf. Magnetism, Nottingham, 1964, pg.395.
14. Nuclear and Ferromagnetic Relaxation in  $\text{MnFe}_2\text{O}_4$  (With S.K. Ghosh and T.G. Blocker, III) J. Appl. Phys. 35 3 (part 2) 840 (1964).
15. Temperature Dependence of the Sublattice Magnetization in Ferromagnetic  $\text{MnFe}_2\text{O}_4$ , (With T. Houston), J. Appl. Phys. 35 3 (part 2) 836 (1964).
16. Slow and Fast Relaxation in Magnetic Resonance in Ferromagnetic  $\text{MnFe}_2\text{O}_4$  (With T. G. Blocker, III and S. K. Ghosh), Phys. Rev. 134. 2A A399 (1964).
17. Determination of the Cone Angles in the Ferromagnetic Spiral  $\text{MnCr}_2\text{O}_4$  (with T. W. Houston), Phys. Lett. 10 29 (1964).

- 11 6. Specific Heat Studies of the Spin-Peierls Transition, T. Wei, A. J. Heeger, M. B. Salamon and G. E. Delker, Solid State Commun. 21 595 (1977).
18. Nuclear Magnetic Resonance in Ferromagnetic  $\text{MnFe}_2\text{O}_4$  (with T.W. Houston), Phys. Rev. 135, 3A, A661 (1964).
19. Mn55 Nuclear Magnetic Resonance in Antiferromagnetic  $\text{RbMnF}_3$  (with D.T. Teaney), J. Appl. Phys. 35, 3 (Part 2) 846 (1964).
20. Magnetization of Spin Impurities in Ferromagnets (with H. Callen and D. Hone). Phys. Lett. 17, 233 (1965).
21. Localized Impurity States in Metals: Evaluation of  $(U + 4J)$ , Phys. Lett. 15 786 (1965).
22. Mn NMR in  $\text{Mn}_3\text{O}_4$  (with T. W. Houston), J. Appl. Phys. 37 1234 (1966).
23. Mn55 Spin Relaxation in  $\text{MnFe}_2\text{O}_4$ , J. Appl. Phys. 37 1236 (1966).
24. Localized Impurity States in Metals: Dilute Solutions of Ni in Be (with A.P. Klein), J. Appl. Phys. 37 1346 (1966).
25. Localized Impurity States in Metals: Dilute Alloys of Ni in Be (with A.P. Klein), Phys. Rev. 144 458 (1966).
26. Effect of Mean Free Path On the Ruderman-Kittel-Kasuya-Yosida Spin-Density Oscillations, (with A.P. Klein and P. Tu), Phys. Rev. Lett. 17, 803 (1966).
27. Spin-Wave Impurity Effects in Iron-Manganese Ferrites, (with T. W. Houston), J. Appl. Phys. 38, 1285 (1967).
28. Paramagnetic Relaxation of Manganese in Copper Metal (with A.C. Gossard and J.H. Wernick), J. Appl. Phys. 38, 1251 (1967).
29. Nuclear Magnetic Resonance in Dilute Alloys of Fe, Mn and Cu in Aluminum (with J.M. Brettell), Phys. Rev. 153, 319 (1967).
30. Ground State of the Kondo Many-Body Scattering Problem, (with M.A. Jensen), Phys. Rev. Lett. 18 488 (1967).
31. Ferromagnetic Relaxation in Manganese-Iron Spinels (with T.G. Blocker, III), J. Appl. Phys. 38 1111 (1967).
32. Evidence For A Singlet Ground State in the Magnetic Impurity Problem, (with M.A. Jensen, L.B. Welsh and G. Gladstone), Phys. Rev. Lett. 18, 997 (1967).
33. Properties of Magnetically Dilute Alloys in Magnetism and Magnetic Materials, 1967, Ed. By Haas and Jarret (Academic Press, NY. 1967).
34. the Magnetic Impurity Problem: Nuclear Magnetic Resonance Studies of the Ground State, Phys. Rev. 172, 302 (1968).

35. Measurement of the s-d Admixture For Mn in Cu, Phys. Rev. Lett. 20 302 (1968).
36. NMR Results For the Singlet Ground State of Fe in Cu (with L.B. Welsh and M.A. Jensen), J. Appl. Phys. 39 2, (Part 1), 696 (1968).
37. Nuclear Resonance Study of the Ferromagnetic Spiral  $\text{MnCr}_2\text{O}_4$  (with T. W. Houston), J. Phys. Chem. Solids, 29 1085 (1968).
38. Ground State of the Magnetic Impurity Problem: Nuclear-Magnetic-Resonance Studies of Dilute Copper Alloys (with L.B. Welsh, M.A. Jensen and G. Gladstone), Phys. Rev. 172 302 (1968).
39. Mechanism For the 1st Order Phase Transition in FeRh, J. Appl. Phys. 40 1368 (1969).
40. Suppression of the Kondo Many-Body Scattering effect, Phys. Rev. Lett. 22 1420 (1969).
41. Experimental Study of the Low Temperature Spin Correlation in the Magnetic Impurity Problem, Phys. Rev. 182, 584 (1969).
42. Relaxation des Spins Nucleaires Dans les Alliages Dilues, Solid State Commun. 7 287 (1969).
43. Localized Moments and Non-Moments in Metals: the Kondo Effect, Solid State Phys. 23, Ed. By Seitz, Turnbull and Ehrenreich.
44. The Conduction Electron Spin Distribution Around Fe Impurities in Cu For  $T < T_k$ , Solid State Commun. 8 17 (1970).
45. Spin Fluctuation Effects With Strongly Magnetic Impurities, Helvetic Physica Acta (1970).
46. Pressure Dependence of the FeRh First-Order Phase Transition, J. Appl. Phys. 41 4751 (1970).
47. Metal-insulator Transition in An Organic Solid: Experimental Realization of the One-Dimensional Hubbard Model, A.J. Epstein, S. Etemad, A.F. Garito and A.J. Heeger, Solid State Commun. 9 1803 (1971).
48. Metal-insulator Transition and Antiferromagnetism in a One-Dimensional Organic Solid, A.J. Epstein, S. Etemad, A.F. Garito and A.J. Heeger, Phys. Rev. B 5 952 (1972).
49. Enhanced Nuclear Relaxation in a One-Dimensional Metal Near the Mott Transition, E. Ehrenfreund, E.F. Rybaczewski, A.F. Garito and A.J. Heeger, Phys. Rev. Lett. 28 873 (1972).
50. Excitonic Polarons in Molecular Crystals, P.M. Chaikin, A.F. Garito and A.J. Heeger, Phys. Rev. B 5 4966 (1972).
51. Low Temperature Specific Heat of Some TCNQ Compounds, S. Etemad, A. F. Garito and A. J. Heeger, Phys. Lett. 40A 45 (1972).
52. The Role of Disorder in a Class of One-Dimensional Conductors, E. Ehrenfreund, S. Etemad, L.B. Coleman, E.F. Rybaczewski, A.F. Garito and A.J. Heeger, Phys. Rev. Lett. 29, 269 (1972)

53. Non-Magnetic Semiconducting Phase of (NMP)(TCNQ), L.B. Coleman, S.K. Khanna, A.F. Garito, A.J. Heeger and B. Morosin, Phys. Lett. 42A, 15 (1972).
54. Experimental Study of Spin Fluctuations in A One-Dimensional Antiferromagnet, E. Ehrenfreund, E.F. Rybaczewski, A.F. Garito, A.J. Heeger and P. Pincus, Phys. Rev. B 7, 421(1973).
55. Conductivity Studies On High Purity N-Methylphenazinium Tetracyanoquinodimethane, L.B. Coleman, J.A. Cohen, A.F. Garito and A.J. Heeger, Phys. Rev. B 7 2122 (1973).
56. Magnetic Properties of Conducting Organic Salts, A.J. Heeger and A.F. Garito, A.I.P. Conf. Proc. 10 1476 (1973).
57. The Role of Small Polarons in the Metal-insulator Transition, P.M. Chaikin, A.F. Garito and A.J. Heeger, J. Chem. Phys. 58 2336 (1973).
58. Low Temperature Specific Heat of (TTF)(TCNQ), T. Wei, S. Etemad, A.F. Garito and A.J. Heeger, Phys. Lett. 45A 269 (1973).
59. Optical Properties of (TTF)(TCNQ) in the Visible and Infrared, A.A. Bright, A.F. Garito and A.J. Heeger, Solid State Commun. 13 943 (1973).
60. Superconducting Fluctuations and the Peierls instability in an Organic Solid, L.B. Coleman, M.J. Cohen, D.J. Sandman, F.G. Yamagishi, A.F. Garito and A.J. Heeger, Solid State Commun. 12 1125 (1973).
61. Thermoelectric Power of TTF-TCNQ, P.M. Chaikin, J.F. Kwak, T.E. Jones, A.F. Garito and A.J. Heeger, Phys. Rev. Lett. 31 601(1973).
62. (TTF)(TCNQ): A One-Dimensional Organic Metal, A.F. Garito and A.J. Heeger, in Collective Properties of Physical Systems, Ed. B. Lundquist and S. Lundqvist, Nobel Symp. 24 129 (1973).
63. The Design and Synthesis of Organic Metals, A.F. Garito and A.J. Heeger, Accts. Chem. Res. 7 232 (1974).
64. Elastic Properties of One-Dimensional Compounds, M. Barmatz, L.R. Testardi, A.F. Garito and A.J. Heeger, Solid State Commun. 15 1299 (1974).
65. Electrical Conductivity of Tetrathiofulvalinium-Tetracyanoquinodimethane (TTF)(TCNQ), M. J. Cohen, L.B. Coleman, A. F. Garito and A.J. Heeger, Phys. Rev. B 10, 1298 (1974).
66. Evidence For Strong Coulomb interactions in (Alkali)+(TCNQ)-Salts, S.K. Khanna, A.A. Bright, A.F. Garito and A.J. Heeger, Phys. Rev. B 10 2139 (1974).
67. A Gradient Sublimator For Purification and Crystal Growth of Organic Donor and Acceptor Molecules, A.R. McGhie, A.F. Garito and A.J. Heeger, J. Cryst. Growth 22 295 (1974).
68. Infrared Conductivity of Tetrathiofulvalene Tetracyanoquinodimethane Films, D.B. Tanner, C.S. Jacobsen, A.F. Garito and A.J. Heeger, Phys. Rev. Lett. 32 1301 (1974).

69. Magnetic Susceptibility Studies of (TTF)(TCNQ) and Related Organic Metals, J. C. Scott, A. F. Garito and A. J. Heeger, Phys. Rev. B 10, 3131(1974).
70. Microwave Properties of High-Purity Tetrathiofulvalene Tetracyanoquinodimethane (TTF)(TCNQ), S. K. Khanna, E. Ehrenfreund, A. F. Garito and A. J. Heeger, Phys. Rev B 10 2205 (1974).
71. Optical Conductivity Studies in a One-Dimensional Organic Metal: (TTF)(TCNQ), A.A.Bright, A. F. Garito and A. J. Heeger, Phys. Rev. B 10 1328 (1974).
72. Single-Crystal Reflectance Studies of Tetrathiafulvalene Tetracyanoquinodimethane, C.S. Jacobsen, D. B. Tanner, A. F. Garito and A.J. Heeger, Phys. Rev. Lett. 33 1559 (1974).
73. Anisotropic Dielectric Constant of TTF-TCNQ Observed by Dielectric Resonance, S.K. Khanna, A.F. Garito. A.J. Heeger and R.C. Jaklevic, Solid State. Commun. 16 667 (1975).
74. Anisotropic Thermoelectric Power of TTF-TCNQ, J. F. Kwak, P. Chaikin, A.A. Russell, A.F. Garito and A.J. Heeger, Solid State Commun. 16 729 (1975).
75. The Electronic Properties of TTF-TCNQ, A.J. Heeger and A.F. Garito, Proc. Saarbrucken Conf. One-Dimensional Conductors, ed. H.G. Schuster, in Lecture Notes in Physics (Springer-Verlag, 1975).
76. Electronic Properties of TTF-TCNQ, A.J. Heeger and A.F. Garito, in Low Dimensional Cooperative Phenomena, ed. H.J. Keller (Plenum Press, NY, 1975) p.89.
77. Epitaxial Crystalline Films of the Metallic Polymer (SN)<sub>x</sub>, A.A. Bright, M.J. Cohen, A.F. Garito, A.J. Heeger, C.M. Mikulski and A.G. MacDiarmid, Appl. Phys. Lett. 26, 612 (1975).
78. Magnetic Properties of Poly(Metal Phosphinates): the Effects of Structural Disorder on 1D Antiferromagnetic Chains, J.C. Scott, A.F. Garito, A.J. Heeger, P. Nannelli and H.D. Gillman, Phys. Rev. B 12, 356 (1975).
79. Neutron-Scattering Study of the 38- and 54-K Phase Transitions in Deuterated Tetrathiafulvalene-Tetracyanoquinodimethane (TTF-TCNQ), R. Comes, S. M. Shapiro, G. Shirane, A. F. Garito and A.J. Heeger, Phys. Rev. Lett. 35 1518 (1975).
80. Nuclear Spin-Lattice Relaxation and Local Susceptibilities in Tetrathiofulvalene Tetracyanoquinodimethane, E. F. Rybaczewski, A. F. Garito, A. J. Heeger and E. Ehrenfreund. Phys. Rev. Lett. 34 524 (1975).
81. Optical Reflectance of Polymeric Sulfur Nitride Films from the Ultraviolet to the Infrared, A.A. Bright. M.J. Cohen, A.F. Garito, A.J. Heeger, C.M. Mikulski, P.J. Russo and A.G. MacDiarmid, Phys. Rev. Lett. 34, 206 (1975).
82. Synthesis and Structure of Metallic Polymeric Sulfur Nitride, (SN)<sub>x</sub>, and Its Precursor, Disulfur Dinitride, S<sub>2</sub>N<sub>2</sub>, C.M. Mikulski, P.J. Russo, M.S. Saran, A.G. MacDiarmid, A.F. Garito and A.J Heeger, J. Am. Chem. Soc. 97 6358 (1975).

83. Synthesis and Structure of the Polymeric Metal,  $(\text{SN})_x$ , and Its Precursor,  $\text{S}_2\text{N}_2$ , A.G. MacDiarmid, C.M. Mikulski, P.J. Russo, M.S. Saran, A.F. Garito and A.J. Heeger, Chem. Commun. 476 (1975).
84. Theory of Microwave Losses of One-Dimensional Conductors in the Skin Effect Regime: Application to TTF-TCNQ, M. Cohen, S. K. Khanna, W. J. Gunning, A. F. Garito and A. J. Heeger, Solid State Commun. 17, 367 (1975).
85. TTF-TCNQ: Evidence of Alternating Chains in a Derivative Salt, L.B. Coleman, F.G. Yamagishi, A.F. Garito, A.J. Heeger, D.J. Dahm, M.G. Miles and J.D. Wilson, Phys. Lett. 51A, 412 (1975).
86. X-Ray-Diffuse-Scattering Evidence for a Phase Transition in Tetrathiofulvalene-Tetracyanoquinodimethane (TTF-TCNQ), F. Denoyer, R. Comes, A. F. Garito and A.J. Heeger, Phys. Rev. Lett. 35, 445 (1975).
87. Elastic-Neutron-Scattering Study of the Phase Transitions in Tetrathiofulvalene-Tetracyanoquinodimethane (TTF-TCNQ), R. Comes, G. Shirane, S. M. Shapiro, A. F. Garito and A. J. Heeger, Phys. Rev. B 14, 2376 (1976).
88. Electrical Conductivity of  $(\text{SN})_x$ , C.K. Chiang, M.J. Cohen, A.F. Garito, A. J. Heeger, C.M. Mikulski and A.G. MacDiarmid, Solid State Commun. 18 1451 (1976).
89. The Electronic Properties of TTF-TCNQ, M.J. Cohen, L.B. Coleman, A F. Garito and A.J. Heeger, Phys. Rev. B 13, 5111 (1976).
90. Far-infrared Single Crystal Studies of TTF-TCNQ, L. B. Coleman, C. R. Fincher, Jr., A. F. Garito and A. J. Heeger, Physica Status Solidi (b) 75 239 (1976).
91. Infrared Studies of the Energy Gap in Tetrathiofulvalene-Tetracyanoquinodimethane (TTF-TCNQ), D.B. Tanner, C. S. Jacobsen, A. F. Garito and A. J. Heeger, Phys. Rev. B 13, 3381(1976).
92. Neutron Scattering Study of 49 K Phase Transition in TTF-TCNQ, W. D. Ellenson, R. Comes, S. M. Shapiro, G. Shirane, A. F. Garito and A. J. Heeger, Solid State Commun. 20 53 (1976).
93. Nonlinear Transport in TTF-TCNQ at Low Temperatures, M. J. Cohen, P.R. Newman and A. J. Heeger, Phys. Rev. Lett. 37, 1500 (1976).
94. Nuclear Relaxation Studies of the Spin-Peierls Transition, L. S. Smith, E. Ehrenfreund, A. J. Heeger, L. V. Interrante, J. W. Bray, H. R. Hart and I. S. Jacobs, Solid State Commun. 19. 377 (1976).
95. Phonon Dispersion and Kohn Anomaly in TetrathiofulvaleneTetracyanoquinodimethane (TTF-TCNQ), G. Shirane, S. M. Shapiro, R. Comes, A. F. Garito and A. J. Heeger, Phys. Rev. B 14 2325 (1976).
96. Plasmon Dispersion and Anisotropy in Polymeric Sulfur-Nitride,  $(\text{SN})_x$ , C. H. Chen, J. Silcox, A. F. Garito, A. J. Heeger and A. G. MacDiarmid, Phys. Rev. Lett. 36 525 (1976).

97. Poly(Metal Phosphinates): Antiferromagnetism in Disordered Linear Polymers, J. C. Scott, T. S. Wei, A. F. Garito and A. J. Heeger, AIP **29** 506 (1976).
98. The Solid State Polymerization of  $S_2N_2$  to  $(SN)_x$ , M. J. Cohen, A. F. Garito, A. J. Heeger, M. S. Saran, C. M. Mikulski and A. G. MacDiarmid, J. Am. Chem. Soc. **98.13**, 3844 (1976).
99.  $^{13}C$  Knight Shift in TTF-TCNQ ( $^{13}C$ ): Determination of the Local Susceptibility, E.F. Rybaczewski, L. S. Smith, A. F. Garito, A. J. Heeger and B. G. Silbernagel, Phys.Rev. B **14**, 2746 (1976).
100. Stability of Polymeric Sulfur Nitride,  $(SN)_x$ , to Air, Oxygen and Water Vapor, C. M. Mikulski, A. G. MacDiarmid, A. F. Garito and A. J. Heeger, Inorg. Chem. **15** 2943 (1976).
101. Synthesis and Selected Properties of Polymeric Sulfur Nitride,  $(SN)_x$ , A. G. MacDiarmid, C. M. Mikulski, M. S. Saran, P. J. Russo, M. J. Cohen, A. A. Bright, A.F. Garito and A. J. Heeger, Proc. Symp. Inorganic Solids with Unusual Electronic Properties, Advances in Chemistry Series **150** 63 (1976).
102. Transport Properties and Dielectric Constant of DSeDTF-TCNQ, S. K. Khanna, C. K. Chiang, A. F. Garito and A. J. Heeger, Solid State Commun. **18**, 1405 (1976).
103. X-Ray Observations of  $2k_f$  and  $4k_v$  Scatterings in TTF-TCNQ. J. P. Pouget, S. K. Khanna, F. Denoyer, R. Comes, A. F. Garito and A. J. Heeger, Phys. Rev. Lett. **37** 437 (1976).
104. Formation of Crystalline Epitaxial Films of the Metallic Polymers,  $(SN)_x$ , by the Thermal Decomposition of  $S_4N_4$  Vapour, E. J. Louis, A. G. MacDiarmid, A. F. Garito and A. J. Heeger, J.C.S. Chem. Commun. 426 (1976).
105. Anisotropic Meissner Effect in the Linear-Chain Mercury Compound  $Hg_{2.86}AsF_6$ , R. Spal, C.K. Chiang, A. Denenstein, A.J. Heeger, N.D. Miro and A.G. MacDiarmid, Phys. Rev. Lett. **39** 650 (1977).
106. Anomalous Electrical Properties of Linear Chain Mercury Compounds, C. K. Chiang, R. Spal, A. Denenstein, A. J. Heeger, N. D. Miro and A. G. MacDiarmid, Solid State Commun. **22** 293 (1977).
107. Charge Density Wave Phenomena in TTF-TCNQ and Related Organic Conductors, in Chemistry and Physics of One-Dimensional Metals, A. J. Heeger, NATO Advanced Study Institutes Series, B: Physics, ed. H. J. Keller (Plenum, NY, 1977) Vol.25, p.87.
108. Effect of Uniaxial Stress on Electrical Conductivity of Sulphur Nitride Polymers. C. K. Chiang, A. J. Heeger and A. G. MacDiarmid, Phys. Lett. **60A**. 375 (1977).
109. Electrical Conductivity in Doped Polyacetylene, C. K. Chiang, C. R. Fincher, Jr., Y.W. Park, A. J. Heeger, H. Shirakawa, E. J. Louis, S. C. Gau and A. G. MacDiarmid, Phys. Rev. Lett. **39** 1098 (1977).
110. Electron-Electron interaction Strength in TTF-TCNQ, E. Ehrenfreund and A. J. Heeger, Phys. Rev. B **16** 3830 (1977).

111. Infrared Studies of the Energy Gap and Electron-Phonon interaction in K-TCNQ, D. B. Tanner, C. S. Jacobsen, A. A. Bright and A. J. Heeger, Phys. Rev. B **16** 3238 (1977).
112. A "Metallic" Derivative of Polymeric Sulphur Nitride: Poly(thiazyl bromide),  $(\text{SNBr}_{0.4})_x$ , M. Akhtar, J. Kleppinger, A. G. MacDiarmid, J. Milliken, M. J. Moran, C.K. Chiang, M. J. Cohen, A. J. Heeger and D. L. Peebles, J.C.S. Chem. Commun. 473 (1977)
113. Nonlinear Transport in Pinned One-Dimensional Charge-Density Wave Systems, M. J. Cohen and A. J. Heeger, Phys. Rev. B **16** 688 (1977).
114. Nuclear Magnetic Resonance Studies of the Linear Chain Mercury Compound  $\text{Hg}_{2.86}\text{AsF}_6$ , E. Ehrenfreund, P. R. Newman, A. J. Heeger, N. D. Miro and A. G. MacDiarmid, Phys. Rev. B **16** 1781 (1977).
115. Optical Properties of Linear-Chain Mercury Compounds, D. L. Peebles, C. K. Chiang, M. J. Cohen, A. J. Heeger, N. D. Miro and A. G. MacDiarmid, Phys. Rev. B **15** 4607 (1977).
117. Spin Resonance of Tetramethyltetrathiafulvalene Tetracyanoquinodimethane: A Comparison with Tetrathiafulvalene Tetracyanoquinodimethane, E. Ehrenfreund, S. K. Khanna, A. F. Garito and A. J. Heeger, Solid State Commun. **22**, 139 (1977).
118. Synthesis of Electrically Conducting Organic Polymers: Halogen Derivatives of Polyacetylene,  $(\text{CH})_x$ , H. Shirakawa, E. J. Louis, A. G. MacDiarmid, C. K. Chiang and A. J. Heeger, J.C.S. Chem. Commun. 578 (1977).
119. Temperature Dependent Microwave Dielectric Constant of TTF-TCNQ and Related One-Dimensional Conductors, W. J. Gunning, S. K. Khanna, A. F. Garito and A. J. Heeger, Solid State Commun. **21** 765 (1977).
120. Temperature and Frequency Dependence of the Nuclear Relaxation Rate in  $\text{Qn}(\text{TCNQ})_2$ , E. Ehrenfreund and A. J. Heeger, Solid State Commun. **24** 29 (1977).
121.  $^{31}\text{P}$  NMR Studies of the Linear Chain Magnets: Poly(metal phosphinates), L. S. Smith, P. R. Newman, A. J. Heeger, A. F. Garito, H. O. Gillman and P. Nannelli, J. Chem. Phys. **66** 5428 (1977).
122. Transport and Optical Properties of Polythiazyl Bromides:  $(\text{SNBr}_{0.4})_x$ , C. K. Chiang, M. J. Cohen, D. L. Peebles, A. J. Heeger, M. Akhtar, J. Kleppinger, A. G. MacDiarmid, J. Milliken and M. J. Moran, Solid State Commun. **23** 607 (1977).
123. Transverse Acoustic Modes in Tetrathiafulvalene Tetracyanoquinodimethane S. M. Shapiro, G. Shirane, A. F. Garito and A. J. Heeger, Phys. Rev. B **15** 2413 (1977).
124. X-Ray Studies of  $2k_F$  and  $4k_F$  Anomalies in TTF-TCNQ, S. K. Khanna, J. P. Pouget, R. Comes, A. F. Garito and A. J. Heeger, Phys. Rev. B **16** 1468 (1977).
125. Effect of Controlled Disorder on the Electrical Properties of TTF-TCNQ: High Temperature Regime, C. K. Chiang, M. J. Cohen, P. R. Newman and A. J. Heeger, Phys. Rev. B **16** 5163 (1977).

126. One-Dimensional Phonons and "Phase-Ordering" Phase Transition in  $\text{Hg}_{3-\delta}\text{AsF}_6$ , J.M. Hastings, J. P. Pouget, G. Shirane, A. J. Heeger, N. D. Miro and A. G. MacDiarmid, Phys. Rev. Lett. **39** 1484 (1977).
127. Novel Route to Metallic Polythiazyl Bromides: Direct Bromination of  $\text{S}_4\text{N}_4$ , M. Akhtar, C. K. Chiang, A. J. Heeger and A. G. MacDiarmid, J.C.S. Chem. Commun. 846 (1977).
128. "Polymer", A. G. MacDiarmid, A. J. Heeger and A. F. Garito, McGraw Hill Yearbook Science and Technology (1977).
129. Charge Density Wave Phenomena in One-Dimensional Metals: TTF-TCNQ and Related Organic Conductors, in Highly Conducting One-Dimensional Solids, A. J. Heeger, ed. J. Devreese (Plenum Pub. Corp., 1979) p.69.
130. Nuclear Magnetic Resonance and Static Magnetic Susceptibility of  $\text{AsF}_6$ -intercalated Graphite, B. R. Weinberger, J. Kaufer, A. J. Heeger, E. R. Falardeau and J. E. Fischer, Solid State Commun. **27** 163 (1978).
131. Low-Temperature Specific Heat of N-Methylphenazinium-tetracyanoquinodimethane (NMP-TCNQ), T. Wei, A. J. Heeger, D. J. Sandman and A. P. Fisher, III, Phys. Rev. B **17**, 2050 (1978).
132. A Neutron Diffraction Investigation of the Crystal and Molecular Structure of the Anisotropic Superconductor  $\text{Hg}_3\text{AsF}_6$ , A. J. Schultz, J. M. Williams, N. D. Miro, A.G. MacDiarmid and A. J. Heeger, J. Inorg. Chem. **17** 646 (1978).
133. Positive Microwave Dielectric Constants of Metallic One-Dimensional Conductors, W. J. Gunning, A. J. Heeger, I. F. Shchegolev and S. P. Zolotukhin, Solid State Commun. **25**, 981(1978).
134. Synthesis and Constitution of the Metallic Mercury Chain Compound,  $\text{Hg}_{2.82}(\text{AsF}_6)_{0.94}$ , N. D. Miro, A. G. MacDiarmid, A. J. Heeger, A. F. Garito. C. K. Chiang, A. J. Schultz and J. M. Williams, J. Inorg. Nuclear Chem. **40**, 1351(1978).
135. Synthesis of Highly Conducting Films of Derivatives of Polyacetylene  $(\text{CH})_x$ , C.K. Chiang, M.A. Druy, S. C. Gau, A.J. Heeger, E.J. Louis, A.G. MacDiarmid, Y.W. Park and H. Shirakawa. J. Am. Chem. Soc. **100** 1013 (1978).
136. Non-Linear Transport in Tetrathiofulvalene-Tetracyanoquinodimethane: An Electron Spin Resonance Study, W. J. Gunning and A. J. Heeger, Solid State Commun. **27** 843 (1978).
137. Polymeric Sulfur Nitride,  $(\text{SN})_x$ , and Its Halogen Derivatives, M. Akhtar, C.K. Chiang, M.J. Cohen, A.J. Heeger, J. Kleppinger, A.G. MacDiarmid, J. Milliken, M.J. Moran and D.L. Peebles, in Organometallic Polymers, eds. C.E. Carraher, Jr., J.E. Sheats and C.U. Pittman, Jr. (Academic Press. NY, 1978) p.301.
138. Anisotropic Knight Shift and Nuclear Spin-Spin Interactions in the Incommensurate-Linear-Chain Mercury Compound  $\text{Hg}_{3-\delta}\text{AsF}_6$ , E. Ehrenfreund, J. Kaufer, A. J. Heeger, N. D. Miro and A. G. MacDiarmid, Phys. Rev. B **17** 4181(1978).

139. Conduction Electron Spin Resonance in Acceptor-Type Graphite Intercalation Compounds, S. K. Khanna, E. R. Falardeau, A. J. Heeger and J. E. Fischer, Solid State Commun. **25** 1059 (1978).
140. Polyacetylene, (CH)<sub>x</sub>: n-Type and p-Type Doping and Compensation, C. K. Chiang, S. C. Gau, C. R. Fincher, Jr., Y. W. Park, A. G. MacDiarmid and A. J. Heeger, Appl. Phys. Lett. **33** 18 (1978).
141. Anisotropic Optical Properties of Pure and Doped Polyacetylene, C. R. Fincher, Jr., D.L. Peebles, A. J. Heeger, M. A. Druy, Y. Matsumura, A. G. MacDiarmid, H. Shirakawa and S. Ikeda, Solid State Commun. **27** 489 (1978).
142. Synthesis of Metallic Polythiazyl Halides from Tetrasulfur Tetranitride, M. Akhtar, C.K. Chiang, A. J. Heeger, J. Milliken and A. G. MacDiarmid, Inorg. Chem. **17** 1539 (1978).
143. Magnetic Field Induced Residual Resistivity in Quasi-One-Dimensional Hg<sub>3-δ</sub>AsF<sub>6</sub>, D.P. Chakraborty, R. Spal, C.K. Chiang, A.M. Denenstein, A.J. Heeger and A.G. MacDiarmid, Solid State Commun. **27**, 849 (1978).
144. The Chemical and Physical Properties of the Reaction Product Between Trimethylammonium Iodide and TCNQ. A Ternary 1-D Semiconductor with "Metal-Like" Conductivity, M. A. Abkowitz, J.W. Brill, P.M. Chaikin, A.J. Epstein, M.F. Froix, C.H. Griffiths, W. Gunning, A.J. Heeger, W. A. Little, J.S. Miller, M. Novatny, D.B. Tanner and M.L. Slade, Synthesis and Properties of Low-Dimensional Materials, eds. J. S. Miller and A. J. Epstein, Ann. N.Y. Acad. Sci. **313**, 459 (1978).
145. Synthesis and Properties of Halogen Derivatives of (SN)<sub>x</sub> and (CH)<sub>x</sub>, M. Akhtar, C.K. Chiang, M. J. Cohen, J. Kleppinger, A. J. Heeger, E. J. Louis, A. G. MacDiarmid, J. Milliken, M. J. Moran, D. L. Peebles and H. Shirakawa, Synthesis and Properties of Low-Dimensional Materials, eds. J. S. Miller and A. J. Epstein. Ann. N.Y. Acad. Sci. **313**, 726 (1978).
146. Hg<sub>3-δ</sub>AsF<sub>6</sub>: A Novel Anisotropic Synthetic Metal, A. J. Heeger and A. G. MacDiarmid, Synthesis and Properties of Low-dimension Materials, eds. J. S. Miller and A. J. Epstein, Ann. N.Y. Acad. Sci. **313**, 800 (1978).
147. Dielectric Constant and Microwave Conductivity of the Vanadium Bronze Na<sub>0.33</sub>V<sub>2</sub>O<sub>5</sub>, W. J. Gunning, A. J. Heeger, R. H. Wallis, N. Sol and A. Zylbersztein, Solid State Commun. **26** 155 (1978).
148. <sup>13</sup>C NMR of Cis and Trans Polyacetylene, M. M. Maricq, J.S. Waugh, A. G. MacDiarmid, H. Shirakawa and A. J. Heeger, J. Am. Chem. Soc. **100** 7729 (1978).
149. Elastic Neutron Scattering of the "Phase Ordering" Phase Transition in Hg<sub>3-δ</sub>AsF<sub>6</sub>, J. P. Pouget, G. Shirane, J. M. Hastings, A. J. Heeger, N. D. Miro and A. G. MacDiarmid. Phys. Rev. B **18** 3645 (1978).
150. Conducting Polymers: Halogen Doped Polyacetylene, C. K. Chiang, Y. W. Park, A.J. Heeger, H. Shirakawa, E. J. Louis and A. G. MacDiarmid, J. Chem. Phys. **69** 5098 (1978).

151. Effect of Controlled Defects on the Microwave Transport and Dielectric Constant of Tetrathiofulvalene-Tetracyanoquinodimethane, W. J. Gunning and A. J. Heeger, Phys. State. Sol. (b) 95 433 (1979).
152. Infrared Reflectance of Irradiated TTF-TCNQ: A Comparison of the Optical and Low Frequency Transport, W. J. Gunning and A. J. Heeger. Solid State Commun. 29 585 (1979).
153. Anisotropic Electrical Conductivity of Partially Oriented Polyacetylene. Y. W. Park, M. A. Druy, C. K. Chiang, A. G. MacDiarmid, A. J. Heeger, H. Shirakawa and S. Ikeda. J. Poly. Sci.: Poly. Lett. Ed. 17 195 (1979).
154. Energy Gap in the Phonon Dispersion of the Linear Mercury Chains in  $\text{Hg}_{3-8\Delta}\text{AsF}_6$ , I.U. Heilmann, J. M. Hastings, G. Shirane, A.J. Heeger and A.G. MacDiarmid, Solid State Commun. 29 469 (1979).
155. Effects of Controlled Disorder on the Phase Transitions and Charge Density Wave State in Tetrathiofulvalene-Tetracyanoquinodimethane, W. J. Gunning. C. K. Chiang, A. J. Heeger and A. J. Epstein. Physica Status Solidi (b)96 145 (1979).
156. Electronic Structure of Polyenes and Polyacetylene, C. B. Duke. A. Paton, W. R. Salaneck, H. R. Thomas, E. W. Plummer, A. J. Heeger and A. G. MacDiarmid, Chem. Phys. Lett. 59 146 (1978).
157. Magnetic Spin Susceptibility of  $\text{AsF}_6$ -Intercalated Graphite: Determination of the Density of States at the Fermi Energy, B. R. Weinberger, J. Kaufer, A. J. Heeger, J.E. Fischer, M. Moran and N. A. W. Holzwarth, Phys. Rev. Lett. 41, 1417 (1978).
158. Elastic- and Inelastic-Neutron Scattering Study of TetrathiofulvaleneTetracyanoquinodimethane (TTF-TCNQ): New Results, J. P. Pouget, S. M. Shapiro, G. Shirane, A. F. Garito and A. J. Heeger, Physical Review B 19, 1792 (1979).
159. Electron Spin Resonance of Polyacetylene and  $\text{AsF}_6$ -Doped Polyacetylene, I. B. Goldberg, H. R. Crowe, P. R. Newman, A. J. Heeger and A. G. MacDiarmid, J. Chem. Phys. 70 1132 (1979).
160. Semiconductor-Metal Transition in Doped  $(\text{CH})_x$ : Thermoelectric Power, Y. W. Park, A. Denenstein, C. K. Chiang, A. J. Heeger and A. G. MacDiarmid, Solid State Commun. 29 747 (1979).
161. Magnetic Susceptibility of Doped Polyacetylene, B. R. Weinberger, J. Kaufer, A. J. Heeger, A. Pron and A. G. MacDiarmid, Physical Review B 20 223 (1979).
162.  $\text{Hg}_{3-8}\text{AsF}_6$ : Incommensurate Linear Chains with Quasi-One-Dimensional Lattice Dynamics and Electronic Properties, A. J. Heeger and A. G. MacDiarmid, Molecular Metals, ed. W. Hatfield (Plenum Press, 1979) p.419.
163. Neutron Investigation of the Dynamical Properties of the Mercury Chain Compound,  $\text{Hg}_{3-8}\text{AsF}_6$ , I.U. Heilmann, J. D. Axe, J.M. Hastings, G. Shirane, A.J. Heeger and A.G. MacDiarmid, Physical Review B 20, 751(1979).

164. Donor and Acceptor States in Lightly Doped Polyacetylene,  $(\text{CH})_x$ , C. R. Fincher, Jr., M. Ozaki, A. J. Heeger and A. G. MacDiarmid, Physical Review B **19** 4140 (1979).
165. Electronic Structure of Polyacetylene: Optical and Infrared Studies of Undoped Semiconducting  $(\text{CH})_x$  and Heavily Doped Metallic  $(\text{CH})_x$ , C. R. Fincher, Jr., M. Ozaki, M. Tanaka, D. Peebles, L. Lauchlan, A. J. Heeger and A. G. MacDiarmid, Phys. Rev. B **20** 1589 (1979).
166. Superconductivity in  $\text{Hg}_{3.8}\text{AsF}_6$ : Absence of Surface Mercury, R. Spal, C.-E. Chen, A. Denenstein, A. R. McGhie, A. J. Heeger and A. C. MacDiarmid, Solid State Commun. **32** 641(1979).
167. Solitons in Polyacetylene, W. P. Su, J. R. Schrieffer and A. J. Heeger, Physical Rev. Lett. **42** 1698 (1979).
168. Incommensurate Sliding Charge Density Waves in One-Dimensional Metals, A. J. Heeger, Comments Solid State Phys. **IX** 65 (1979).
169. Photoelectron Spectra of  $\text{AsF}_6$ -Doped Polyacetylenes, W. R. Salaneck, H. R. Thomas, C. B. Duke, A. Paton, E. W. Plummer, A. J. Heeger and A. G. MacDiarmid, J. Chem. Phys. **71** 2044 (1979).
170. Junction Formation with Pure and Doped Polyacetylene, M. Ozaki, D. L. Peebles, B.R.Weinberger, C. K. Chiang, S. C. Gau, A. J. Heeger and A. C. MacDiarmid, Appl. Phys. Lett. **35** 83 (1979).
171. 1d-3d Crossover in the Lattice Dynamics of  $\text{Hg}_{3.8}\text{AsF}_6$ : Low Temperature Specific Heat, D. Moses, A. Denenstein, A. J. Heeger, P. J. Nigrey and A. G. MacDiarmid, Physical Rev. Lett. **43** 369 (1979).
172. Phonon Drag and Sliding Charge Density Waves in One-Dimensional Metals, A. J. Heeger, M. Weger and M. Kaveh, Proc. Conf. Quasi-One-Dimensional Conductors, Dubrovnik, 1978 (Springer-Verlag, 1979).
173. Non-Linear Transport in TTF-TCNQ: Recent Results, M. J. Cohen, W. J. Gunning and A. J. Heeger, Proc. Conf. Quasi-One-Dimensional Conductors, Dubrovnik, 1978 (Springer-Verlag, 1979).
174. 1d-3d Crossover Phase Transition in TTF-TCNQ, W. J. Gunning, C. K. Chiang, A. J. Heeger and A. J. Epstein, Proc. Conf. Quasi-One-Dimensional Conductors, Dubrovnik, 1978 (Springer-Verlag, 1979).
175. Semiconducting and Metallic Organic Polymers: Chemically Doped Polyacetylene,  $(\text{CH})_x$ , A. J. Heeger and A. G. MacDiarmid, Proc. Conf. Quasi-One-Dimensional Conductors, Dubrovnik, 1978 (Springer-Verlag, 1979).
176. Synthesis and Properties of Semiconducting and Metallic Derivatives of Polyacetylene,  $(\text{CH})_x$ , A. J. Heeger and A. G. MacDiarmid, Proc. Conf. Quasi-One-Dimensional Conductors, Dubrovnik, 1978 (Springer-Verlag, 1979).

177. Synthesis, Structure and Electrical Properties of Doped Polyacetylene, C.K. Chiang, A.J. Heeger and A.G. MacDiarmid, Proc. Int. Conf. Transport Processes in Macromolecular Systems, 1978, Konigstein/Ts, Germany, Ber. Bunsenges Phys. Chem. 83 407 (1979).
178. Electrochemistry of Polyacetylene,  $(\text{CH})_x$ : Electrochemical Doping of  $(\text{CH})_x$  Films to the Metallic State, P. J. Nigrey, A. G. MacDiarmid and A. J. Heeger, Chem. Commun. 96, 594 (1979).
179. Semiconducting and Metallic Organic Polymers: Chemically Doped Polyacetylene,  $(\text{CH})_x$ , A. J. Heeger and A. G. MacDiarmid, Molecular Metals, ed. W. Hatfield (Plenum Press, 1979).
180. Thermoelectric Power of Linear Mercury Chain Compound, C. K. Chiang, R. Spal, A. Denenstein, A. J. Heeger, N. D. Miro and A. G. MacDiarmid, in Thermoelectricity in Metallic Conductors. eds. Frank J. Blatt and Peter A. Schroeder (Plenum Press, NY, 1979) p.395.
181. Phase Transitions in the thermopower of TTF-TCNQ Single Crystals, C. K. Chiang, A. F. Garito and A. J. Heeger, in thermoelectricity in Metallic Conductors, eds. Frank. J. Blatt and Peter A. Schroeder (Plenum Press, NY, 1979) p.377.
182. Variable-Density Conducting Polymers: Conductivity and Thermopower Studies of a New Form of Polyacetylene:  $(\text{CH})_x$ , G. E. Wnek, J. C. W. Chien, F. E. Karasz, M. A. Druy, Y. W. Park, A. G. MacDiarmid and A. J. Heeger, J. Poly. Sci. : Poly. Lett. Ed. 17 779 (1979).
183. Polymerization of Acetylene, J. C. W. Chien, F. E. Karasz, G. E. Wnek, A. J. Heeger and A. G. MacDiarmid, J. Poly. Sci.; Poly. Lett. Ed. 18 45 (1980).
184. Tensile Properties and Partial Alignment of Polyacetylene,  $(\text{CH})_x$ , Films, M. A. Druy, C.-H. Tsang, N. Brown, A. J. Heeger and A. G. MacDiarmid, J. Poly. Sci.: Poly. Phys. Ed. 18, 429 (1980).
185. Nascent Morphology of Polyacetylene, F. E. Karasz, J. C. W. Chien, R. Galkiewicz, G. E. Wnek, A. J. Heeger and A. G. MacDiarmid, Nature 282 286 (1979).
186. Anomalous Magnetoresistance of Quasi-One-Dimensional  $\text{Hg}_{3.8}\text{AsF}_6$ , D. P. Chakraborty, R. Spal, A.M. Denenstein, K.-B. Lee, A.J. Heeger and M.Ya. Azbel, Physical Rev. Lett. 43 1832 (1979).
187. Electron Spin Resonance Studies of Magnetic Soliton Defects in Polyacetylene, B.R. Weinberger, E. Ehrenfreund, A. Pron, A. J. Heeger and A. G. MacDiarmid, J. Chem. Phys. 72 4749 (1980).
188. Photoelectron Spectroscopy of Iodine-Doped Polyacetylene, W. R. Salaneck, H. R. Thomas, R. W. Bigelow, C. B. Duke, E. W. Plummer, A. J. Heeger and A. G. MacDiarmid, J. Chem. Phys. 72 3674 (1980).
189. Magnetic Field Induced Residual Resistivity and Anisotropic Superconductivity in the Linear Chain Compound  $\text{Hg}_{3.8}\text{AsF}_6$ , R. Spal, D. P. Chakraborty, C.K. Chiang, A. Denenstein, A. J. Heeger and A. G. MacDiarmid, Proc. Dubrovnik Conf. Quasi-One-Dimensional Conductors, 1978, Lecture Notes in Physics 96, eds. S. Barisic, A. Bejelic, J. R. Cooper and B. Leontic (Springer-Verlag, 1979).

190. Polyacetylene,  $(\text{CH})_x$ : Photoelectrochemical Solar Cell, S. N. Chen, A. J. Heeger, Z. Kiss, A. G. MacDiarmid, S. C. Gau and D. L. Peebles, Appl. Phys. Letts. 36 96 (1980).
191. X-Ray Scattering Study of One-Dimensional Lattice Dynamics in  $\text{Hg}_{3-8}\text{AsF}_6$ , R. Spal, C.-E. Chen, T. Egami, P. J. Nigrey and A. J. Heeger, Physical Rev. B 21, 3110 (1980).
192. Electrical Transport in Doped Polyacetylene, Y. W. Park, A. J. Heeger, M. A. Druy and A. G. MacDiarmid, J. Chem. Phys. 73, 946 (1980).
193. Semiconductor Properties of Polyacetylene, p- $(\text{CH})_x$ : n-CdS Heterojunctions, M. Ozaki, D. Peebles, B. R. Weinberger, A. J. Heeger and A. G. MacDiarmid, J. Appl. Phys. 51, 4252 (1980).
194. Soliton Excitations in Polyacetylene, W. P. Su, J. R. Schrieffer and A. J. Heeger, Physical Rev. B 22 2099 (1980).
195. 'Organic Metals' - Synthesis of a New Type of Organic Metal Derived from Polyacetylene,  $(\text{CH})_x$ , M. K. Kletter, T. Woerner, A. Pron, A. G. MacDiarmid, A. J. Heeger and Y. W. Park, J.C.S. Chem. Commun. 1350, 426 (1980).
196. Amplitude Solitons in Incommensurate Peierls Systems: Implications for TTF-TCNQ, J. A. Krumhansl, B. Horowitz and A. J. Heeger, Solid State Commun. 34, 945 (1980).
197. Organic Metals and Semiconductors; the Chemistry of Polyacetylene,  $(\text{CH})_x$ , and Its Derivatives, A. G. MacDiarmid and A. J. Heeger, Syn. Mtls. 1 101(1980).
198. Microwave Properties of Low-Density  $(\text{CH})_x$ , A. Feldblum, Y. W. Park, A. J. Heeger, A. G. MacDiarmid, G. Wnek, F. Karasz and J. C. W. Chien, J. Poly. Sci., Poly. Phys. Ed. 19 173 (1981).
199. Nature of the Open State in Long Polynucleotide Double Helices: Possibility of Soliton Excitations, S. W. Englander, N. R. Kallenbach, A. J. Heeger, J. A. Krumhansl and S. Litwin, Proc. Nat. Acad. Sci. USA, 77 7222 (1980).
200. Specific Heats of Pure and Doped Polyacetylene, D. Moses, A. Denenstein, A. Pron, A. J. Heeger and A. G. MacDiarmid, Solid State Commun. 36 219 (1980).
201. Momentum Dependence of Electronic Excitations in Polyacetylene, J. J. Ritsko, E. J. Mele, A. J. Heeger, A. G. MacDiarmid and M. Ozaki, Physical Rev. Lett. 44 1351 (1980).
202. Solitons in Polyacetylene: Magnetic Susceptibility, S. Ikehata, J. Kaufer, T. Woerner, A. Pron, M. Druy, A. Sivak, A. J. Heeger and A. G. MacDiarmid, Physical Rev. Lett. 45 1123 (1980).
203. Solitons in Polyacetylene: Effects of Dilute Doping on Optical Absorption Spectra, N. Suzuki, M. Ozaki, S. Etemad, A. J. Heeger and A.G. MacDiarmid, Physical Rev. Lett. 45 1209 (1980); Erratum, Phys. Rev. Lett. 45 1463 (1980).
204. Conducting Organic Polymers; Doped Polyacetylene, A. J. Heeger and A. G. MacDiarmid, in The Physics and Chemistry of Low Dimensional Solids, ed. Luis Alcacer (D. Reidel Publishing Co., 1980) p.353.

205. Organic Metals and Semiconductors; the Chemistry of Polyacetylene,  $(\text{CH})_x$ , and Its Derivatives, A.G. MacDiarmid and A.J. Heeger, in The Physics and Chemistry of Low Dimensional Solids, ed. Louis Alcacer (D. Reidel Publishing Co., 1980) p.393.
206. 'Organic Metals': New Classes of p-Type Dopants for Converting Polyacetylene,  $(\text{CH})_x$ , into the 'Metallic' State, S. C. Gau, J. Milliken, A. Pron, A. J. Heeger and A.G. MacDiarmid, J.C.S. Chem. Commun. 662 (1979).
207. Photoelectron Spectroscopy of  $[\text{CH}(\text{AsF}_6)_{0.1}]_x$ , W. R. Salaneck, H. R. Thomas, C.B. Duke, E. W. Plummer, A. J. Heeger and A.G. MacDiarmid, Syn. Mtls. 1 133 (1980).
208. Microwave Properties of Low-Density  $(\text{CH})_x$ , A. Feldblum, Y.W. Park, A.J. Heeger, A.G. MacDiarmid, G. Wnek, F. Karasz, and J.C.W. Chien, J. Polym Sci., Polym. Phys. Ed. 19 173 (1981).
209. Solitons in Polyacetylene: A Summary of Experimental Results, A.J. Heeger and A.G. MacDiarmid, Proc. Int. Conf. on Physics in One Dimension, Aug. 24-29, 1980, Fribourg, Switzerland, Physics in One Dimension, eds. J. Bernasconi and T. Schneider (Springer-Verlag, Berlin-Heidelberg, 1981) 179.
210. Solitons in Polyacetylene: A Summary of Experimental Results, A.J. Heeger and A.G. MacDiarmid, Proc. Int. Conf. on Low Dimensional Synthetic Metals, Aug. 10-15, 1980, Helsingor, Denmark, Chemica Scripta 17 115 (1981).
211. Soliton Photogeneration in Trans- $(\text{CH})_x$ , S. Etemad, M. Ozaki, A.J. Heeger and A.G. MacDiarmid, Proc. Int. Conf. Low Dimensional Synthetic Metals, Aug. 10-15, 1980, Helsingor, Denmark, Chemica Scripta 17 115 (1981).
212. Nature of the Arsenic-Fluorine Species in  $\text{AsF}_5$ -Doped Polyacetylene,  $(\text{CH})_x$ , A.G. MacDiarmid and A.J. Heeger, Proc. Int. Conf. Low Dimensional Synthetic Metals, Helsingor, Denmark, Aug. 10-15, 1980, Chemica Scripta 17 143 (1981).
213. Light-Weight Rechargeable Storage Batteries Using Polyacetylene,  $(\text{CH})_x$ , as the Cathode-Active Material, P.J. Nigrey, D. MacInnes, Jr., D.P. Nairns, A.G. MacDiarmid and A.J. Heeger, J. Electrochem. Soc. 128 1651 (1981).
214. Utilization of Polyacetylene,  $(\text{CH})_x$ , in the Fabrication of Rechargeable Batteries, P.J. Nigrey, D. MacInnes, Jr., C.P. Nairns, A.G. MacDiarmid, and A.J. Heeger, Amer. Chem. Soc. Conductive Polymers, ed. R.B. Seymour (Plenum, NY, 1981) 227.
215. Logarithmic Dependence of the Low Field Magnetoresistance in  $\text{Hg}_{3-x}\text{AsF}_6$ , M. Weger, D. Moses, A. Denenstein, K.-B. Lee, P.J. Nigrey, and A.J. Heeger, Physical Rev. B 23 5993 (1981).
216. Semiconducting and Metallic Polymers: From Quantum Chemistry to New Technology, A.G. MacDiarmid, and A.J. Heeger, Int. J. Quantum Chem., Quantum Chem. Symp. 15 243 (1981).
217. Semiconducting and Metallic Polymers: New Science with Potential for New Technology, A.J. Heeger, Comments Sol. State Phys. 10 53 (1981).

218. Experimental Studies of Sodium-Doped Polyacetylene: Optical and ESR Results for Metallic  $[\text{CHNa}_y]_x$ , T.-C. Chung, A. Feldblum, A.J. Heeger, and A.G. MacDiarmid, J. Chem. Phys. **74** 5504 (1981).
219. Magnetic Susceptibility of Iodine Doped Polyacetylene: The Effects of Nonuniform Doping, A.J. Epstein, H. Rommelmann, M.A. Druy, A.J. Heeger, and A.G. MacDiarmid, Sol. State Commun. **38** 683 (1981).
220. Infrared-Active Vibrational Modes of Charged Solitons in  $(\text{CH})_x$  and  $(\text{CD})_x$ , S. Etemad, A. Pron, A.J. Heeger, A.G. MacDiarmid, E.J. Mele and M.J. Rice, Physical Rev. B Condens. Matter **23** 5137 (1981).
221. Organic Batteries: Reversible n- and p-type Electrochemical Doping of Polyacetylene,  $(\text{CH})_x$ , D. MacInnes, Jr., M.A. Druy, P.J. Nigrey, D.P. Nairns, A.G. MacDiarmid and A.J. Heeger, Chem. Commun. 318 (1981).
222. Photoconductivity in Polyacetylene, S. Etemad, M. Ozaki, T. Mitani, A.J. Heeger, and A.G. MacDiarmid, Sol. State Commun. **40** 75 (1981).
223. The Mechanism of Schottky-Barrier Formation in Polyacetylene, J.R. Waldrop, M.J. Cohen, A.J. Heeger, and A.G. MacDiarmid, Appl. Phys. Lett. **38** 53 (1981).
224. Inter-Soliton Electron Hopping Transport in Trans- $(\text{CH})_x$ , D. Moses, J. Chen, A. Denenstein, A.J. Heeger, and A.G. MacDiarmid, Sol. State Commun. **40** 1007 (1981).
225. X-Ray Scattering from the "Incommensurate" Phase of  $\text{K}_2\text{SeO}_4$ , J. Chen, Y. Schlesinger, and A.J. Heeger, Physical Rev. B **24** 5139 (1981).
226. Proton NMR Studies of the Structure of Trans- $(\text{CH})_x$ , S. Ikehata, M. Druy, T. Woerner, A.J. Heeger, and A. G. MacDiarmid, Sol. State Commun. **39** 1239 (1981).
227. Transport, Magnetic and Structural Studies of Polyacetylene, A.J. Heeger and A.G. MacDiarmid, Mol. Cryst. Liq. Cryst. **77** 1 (1981).
228. Electronic Excitations in Polyacetylene, S. Etemad, A.J. Heeger, L. Lauchlan, T.-C. Chung, and A.G. MacDiarmid, Mol. Cryst. Liq. Cryst. **77** 43 (1981).
229. Nature of Interaction of Polyacetylene,  $(\text{CH})_x$ , with Arsenic Pentafluoride and with Selected Nitronium Salts, A. Pron, A.G. MacDiarmid, and A.J. Heeger. Mat. Sci. **7** 313 (1981).
230. Photoexcitations in Polyacetylene, L. Lauchlan, S. Etemad, T.-C. Chung, A.J. Heeger, and A.G. MacDiarmid, Physical Rev. B **24** 3701 (1981).
231. Doping of  $(\text{CH})_x$  Films to the Metallic State with Xenon Fluorides and Iodine Pentafluoride, H. Selig, A. Pron, M.A. Druy, A.G. MacDiarmid, and A.J. Heeger, J. Chem. Soc. **24** 1288 (1981).
232. Synthesis and Characterization of Bromine Substituted Polyacetylene, M.J. Kletter, A.G. MacDiarmid, A.J. Heeger, E. Faulques, S. Lefrant, P. Bernier, F. Barbarin, J. P. Blanc, J.P. Germain, and H. Robert. Mol. Cryst. Liq. Cryst. **83** Part D (1981).

233. Commensurate-Incommensurate Transition in  $K_2SeO_4$ : X-Ray Scattering, C.E. Chen, Y. Schlesinger, and A.J. Heeger, Physical Rev. B **24** 5139 (1981).
234. Infrared Photoacoustic Spectroscopy of Conducting Polymers: Undoped and n-doped Polyacetylene, A.G. MacDiarmid, S.M. Riseman, S.I. Yaniger, E.M. Eyring, D. MacInnes, and A.J. Heeger, Appl. Spec. **35** 557 (1981).
235. Inter-Soliton Electron Hopping Transport in  $Trans-(CH)_x$ , A.G. MacDiarmid, D. Moses, J. Chen, A. Denenstein, M. Kaveh, T.-C. Chung, and A.J. Heeger, Sol. State Commun. **40** 1007 (1981).
236. Recent Advances in the Chemistry and Physics of Polyacetylene: Solitons as a Means of Stabilizing Carbonium Ions and Carbonions in Doped  $(CH)_x$ , A.G. MacDiarmid and A.J. Heeger, Proc. Mol. Electron. Devices Workshop, Oct. 22, 1981, ed. F.L. Carter, Washington, DC, 208 (1981).
237. Electrical Conductivity of Heavily Doped Polyacetylene at Ultralow Temperatures, C.M. Gould, D.M. Bates, H.M. Bozler, A.J. Heeger, M.A. Druy, and A.G. MacDiarmid, Physical Rev. B **23** 6820 (1981).
238. Synthesis and Characterization of Polyacetylene, A.G. MacDiarmid, M.J. Kletter, A.J. Heeger, E. Faulques, S. Lefrant, P. Bernier, F. Barbarin, J.P. Blanc, J.P. Germain, and H. Robert, Mol. Cryst. Liq. Cryst. **83** 1197 (1982).
239. The Effect of Non-Uniform Doping on Electrical Transport in  $Trans-(CH)_x$ : Studies of the Semiconductor-Metal Transition, D. Moses, A. Denenstein, J. Chen, P. McAndres, T. Woerner, A.J. Heeger, and A.G. MacDiarmid, Physical Rev. B **25** 7652 (1982).
240. Structural Determination of the Symmetry-Breaking Parameter in  $Trans-(CH)_x$ , C.R. Fincher, C.E. Chen, A.J. Heeger, A.G. MacDiarmid, and J.B. Hastings, Physical Rev. Lett. **48** 100 (1982).
241. X-Ray Scattering by One Dimensional Chains: Power Diffraction, C.E. Chen, Y. Schlesinger, and A.J. Heeger, Physical Rev. B **25** 1786 (1982).
242. Susceptibility of  $LiC_6$ : Density of States and Orbital Paramagnetism, S. Ikehata, J. Milliken, A.J. Heeger, and J.E. Fischer, Physical Rev. B **25** 2472 (1982).
243. Electrochemical Isomerization of  $Cis-(CH)_x$  to  $Trans-(CH)_x$ , T.C. Chung, A.G. MacDiarmid, A. Feldblum, and A.J. Heeger, J. Poly. Sci., Poly. Lett. **20** 427 (1982).
244. Opto-Electrochemical Spectroscopy of  $Trans-(CH)_x$ , A. Feldblum, J.H. Kaufman, S. Etemad, A.J. Heeger, T.-C. Chung, and A.G. MacDiarmid, Physical Rev. B **26** 815 (1982).
245. Pressure Dependence of the Photoabsorption of Polyacetylene, D. Moses, A. Feldblum, A. Denenstein, T.-C. Chung, A.J. Heeger, and A.G. MacDiarmid, Mol. Cryst. Liq. Cryst. **83** 1119 (1982).

246. Pressure Dependence of the Photoabsorption of Polyacetylene, D. Moses, A. Feldblum, E. Ehrenfreund, A.J. Heeger, T.-C. Chung, and A.G. MacDiarmid, Physical Rev. B 26 3361 (1982).
247. ESR Studies of Trans-(CH)<sub>x</sub> During Photoexcitation, J.D. Flood, E. Ehrenfreund, A.J. Heeger, and A.G. MacDiarmid, Solid State Commun. 44 1055 (1982).
248. Picosecond Photoinduced Dichroism in trans-(CH)<sub>x</sub>: Direct Measurement of Soliton Diffusion, Z. Vardeny, J. Strait, D. Moses, T.-C. Chung, and A.J. Heeger, Physical Rev. Lett. 49 1657 (1982).
249. Chemical and Electrochemical Isomerization of Polyacetylene: In-Situ Optical Studies, A. Feldblum, A.J. Heeger, T.-C. Chung, and A.G. MacDiarmid, J. Chem. Phys. 77 5114 (1982).
250. Metallic Covalent Polymers: (SN)<sub>x</sub> and (CH)<sub>x</sub> and Their Derivatives, A.G. MacDiarmid and A.J. Heeger, 1st ACS Meeting, Las Vegas, March 25 - April 2, Organic Coatings and Appl. Poly. Sci. Proc. 46 151 (1982).
251. Electron Paramagnetic Resonance Saturation Characteristics of Pristine and Doped Polyacetylene, A.G. MacDiarmid, J.C.W. Chien, G.E. Wnek, F.E. Karasz, J.M. Warakowski, L.C. Dickenson, and A.J. Heeger, Macromol. 15 614 (1982).
252. Electrochemistry of Polyacetylene (CH)<sub>x</sub>: Lightweight Rechargeable Batteries Using (CH)<sub>x</sub> as the Cathode- and Anode-Active Materials, P.J. Nigrey, A.G. MacDiarmid and A.J. Heeger, Mol. Cryst. Liq. Cryst. 83 1341 (1982).
253. Direct Synthesis of Oriented Polyacetylene, (CH)<sub>x</sub>, from Acetylene Gas, A.G. MacDiarmid, T. Woerner, and A.J. Heeger, J. Polym. Sci.: Polymer Lett. Ed. 20 305 (1982).
254. Electrochemistry of Polyacetylene, (CH)<sub>x</sub>: Characteristics of Polyacetylene Cathodes, A.G. MacDiarmid, K. Kaneto, M. Maxfield, D.P. Nairns, and A.J. Heeger, J. Chem. Soc., Faraday Trans. I, 78 3417 (1982).
255. Bromine-Substituted Polyacetylene, [CH<sub>1-y</sub>Br<sub>y</sub>]<sub>x</sub>: Synthesis and Characterization, M.J. Kletter, A.J. Heeger, E. Faulques, S. Lefrant, and P. Bernier, J. Polym. Sci.: Polymer Lett. Ed. 20 211 (1982).
256. Conducting Polymers, A.G. MacDiarmid and A.J. Heeger, McGraw Hill Yearbook of Science and Technology, 174 (1982).
257. Electrochemical Voltage Spectroscopy of Trans-(CH)<sub>x</sub>, J.H. Kaufman, J.W. Kaufer, A.J. Heeger, R. Kaner, and A.G. MacDiarmid, Physical Rev. B 26 2327 (1982).
258. Electrochemical Characteristics of the Partly Oxidized Polyacetylene (CH<sup>+</sup>y)<sub>x</sub> Electrode, A.G. MacDiarmid, K. Kaneta, M. Maxfield, D.P. Nairns, and A.J. Heeger, ECS Meeting, Detroit, MI, October 17-21, Extended Abstracts 82-2 41 (1982).
259. Role of Elemental Mercury in the Superconductivity of Mercury Arsenic Fluoride, J.E. Schirber, A.J. Heeger, and P.J. Nigrey, J. Physical Rev B: Condens. Matter 26 6291 (1982).

260. Structural Determination of the Symmetry-Breaking Parameter in *trans*-(CH)<sub>x</sub>, A.G. MacDiarmid, C.R. Fincher, Jr., C.E. Chen, A.J. Heeger, and J.B. Hastings, Physical Rev. Lett. **48** 100 (1982).
261. Absolute Spin Susceptibility of Lithium Graphite (LiC<sub>6</sub>): Density of States and Orbital Paramagnetism, A.J. MacDiarmid, S. Ikehata, J.W. Milljken, A.J. Heeger, and J.E. Fischer, Phys. Rev. B: Condens. Matter **25** 1726 (1982).
262. Structure, Morphology and Electronic Properties of *trans*-(CH)<sub>x</sub>, C.R. Fincher, D. Moses, A.J. Heeger, and A.G. MacDiarmid, Synth. Met. **6** 243 (1983).
263. Electric Field Enhanced Diffusion in *trans*-(CH)<sub>x</sub>, J.H. Kaufman, E.J. Mele, A.J. Heeger, R. Kaner, and A.G. MacDiarmid, J. Electrochem. Soc. **130** 571 (1983).
264. Absolute Raman Scattering Cross Sections of *trans*-(CH)<sub>x</sub>, L. Lauchlan, S.P. Chen, S. Etemad, M. Kletter, A.J. Heeger, and A.G. MacDiarmid, Physical Rev. B **27** 2301 (1983).
265. Picosecond Photoinduced Optical Anisotropy in *trans*-(CH)<sub>x</sub>: Direct Measurement of Soliton Diffusion, Z Vardeny, J. Strait, D. Moses, T.-C. Chung, and A.J. Heeger, J. Phys. Coll. **C3** 403 (1983).
266. Lightweight Rechargeable Batteries Using (CH)<sub>x</sub> as the Cathode- and/or Anode-Active Material, A.G. MacDiarmid, P.J. Nigrey, D. MacInnes, Jr., D.P. Nairns, and A.J. Heeger, Energy Technol. **10** 675 (1983).
267. Effect of Energetic C<sup>+6</sup> Irradiation on Transport Properties of *trans*-(CH)<sub>x</sub> and *trans*-(CD)<sub>x</sub>, J. Kaufer, W.K. Wells, T. Woerner, L. Lauchlan, D.J. Heeger, S. Etemad, and A.J. Heeger, J. Chem. Phys. **78** 7459 (1983).
268. Recent Advances in the Chemistry and Physics of Polyacetylene: Solitons as a Means of Stabilizing Carbonium Ions and Carbanions in Doped (CH)<sub>x</sub>, A.G. MacDiarmid and A.J. Heeger, in Molecular Electronic Devices, Ed. Forrest L. Carter (Marcel Dekker, Inc., NY and Basel, (1983) 259.
269. Polarons and Solitons in *trans*-(CH)<sub>x</sub>: An Optical Study, S. Etemad, A. Feldblum, A.G. MacDiarmid, T.-C. Chung, and A.J. Heeger, J. Phys. Coll. **C3** 413 (1983).
270. The Effect of Vibronic Transition on the Interband Optical-Absorption in (CH)<sub>x</sub>, E. Ehrenfreund, D. Moses, and A.J. Heeger, J. de Phys. Coll. **C3** 491 (1983).
271. The Aqueous and Non-Aqueous Electrochemistry of Polyacetylene: Application in High Power Density Rechargeable Batteries, A.G. MacDiarmid, R.B. Kaner, R.J. Mammone, and A.J. Heeger, J. Phys. Coll. **C3** 543 (1983).
272. The Aqueous and Non-Aqueous Electrochemistry of Polyacetylene: Application in High Power Density Rechargeable Batteries, A.G. MacDiarmid, R. B. Kaner, R.J. Mammone, and A.J. Heeger, Org. Coatings and Appl. Poly. Proc. **48** 531 (1983).
273. Photogeneration of Solitons in *trans*-(CH)<sub>x</sub>: The Reversed Spin-Charge Relation of the Photoexcitations, J.D. Flood and A.J. Heeger, J. Phys. Coll. **C3** 2356 (1983).

274. Photogeneration of Solitons in *trans*-(CH)<sub>x</sub>: The Reversed Spin-Charge Relation of the Photoexcitations, J.D. Flood and A.J. Heeger, Physical Rev. B 28 2356 (1983).
275. Photoexcitations in *trans*-(CH)<sub>x</sub>: A Fourier-Transform Infrared Study, G.B. Blanchet, C.R. Fincher, T.-C. Chung, and A.J. Heeger, Physical Rev. Lett. 50 1938 (1983).
276. Neutral Solitons in Polyacetylene: Implications of the ENDOR Results, A.J. Heeger and J.R. Schrieffer, Solid State Commun. 48 207 (1983).
277. Rod-to-Coil Transition of a Conjugated Polymer in Solution, K.C. Lim, C.R. Fincher, Jr., and A.J. Heeger, Physical Rev. Lett. 50 1934 (1983).
278. Charge Transport at Mid-Gap in *Trans*-(CH)<sub>x</sub>: An Electro-Chemical Study, J.H. Kaufman, T.-C. Chung, and A.J. Heeger, Solid State Commun. 47 585 (1983).
279. Electric Field Enhanced Diffusion in Polyacetylene, J.H. Kaufman, A.J. Heeger, R. Kaner, E.J. Mele, and A.G. MacDiarmid, J. Phys. Coll. C3 577 (1983).
280. Electric Field Enhanced Diffusion in Polyacetylene, J.H. Kaufman, A.J. Heeger, R. Kaner, E.J. Mele, and A.G. MacDiarmid, J. Electrochem. Soc. 130 571 (1983).
281. Excitation Profile for Photogeneration of Solitons in *Trans*-(CH)<sub>x</sub>, G.B. Blanchet, C.R. Fincher, and A.J. Heeger, Physical Rev. Lett. 51 2132 (1983).
282. Gelation of Rodlike Macromolecules, M. Sinclair, K.C. Lim, and A.J. Heeger, Physical Rev. Lett. 51 1768 (1983).
283. Optical Anisotropy of Partially Aligned Polyacetylene Film Polymerized Directly from Gaseous Acetylene, T. Woerner, A.G. MacDiarmid, A. Feldblum, and A.J. Heeger, J. Poly. Sci., Poly. Lett. Ed. 22 119 (1984).
284. Ordered States for Polymers: Rod-To-Coil Transition of a Conjugated Polymer in Solution, K.C. Lim, C.R. Fincher, and A.J. Heeger, 12th annual NATAS Conference Proceedings, Mol. Cryst. Liq. Cryst. 105 329 (1984).
285. Reversible Optical Anisotropy and Induced Rigidity in Polydiacetylene Films, S.A. Casalnuova, K.C. Lim, and A.J. Heeger, Makromol. Chem. Rapid. Commun. 5 77 (1984).
286. Solitons or Not in Polyacetylene (and Does It Matter?), A.J. Heeger, G. Blanchet, T.-C. Chung, and C.R. Fincher, Proc. Los Alamos Conference on Synthetic Metals, Synth. Met. 9 173 (1984).
287. Synthesis and Properties of Chemically Coupled Poly(thiophene), M. Kobayashi, J. Chen, T.-C. Chung, F. Moraes, A.J. Heeger, and F. Wudl, Synth. Met. 9 77 (1984).
288. Theory of the Rod-To-Coil Transition in Polydiacetylene, A.J. Berlinsky, F. Wudl, K.C. Lim, C.R. Fincher, and A.J. Heeger, J. Poly. Sci., Poly. Phys. Ed. 22 847 (1984).

289. (TMTSF)<sub>2</sub>F<sub>2</sub>PO<sub>2</sub>: An Unusual Member of the (TMTSF)<sub>2</sub>X Family of Organic Metals, S. Cox, R.M. Boysel, D. Moses, F. Wudl, J. Chen, S. Ochsenein, and A.J. Heeger, Solid State Commun. **49** 259 (1984).
290. Solitons at High Density in *trans*--(CH)<sub>x</sub>: Collective Transport by Mobile, Spinless Charged Solitons, T.-C. Chung, F. Moraes, J.D. Flood, and A.J. Heeger, Physical Rev. B: Rapid Commun. **29** 2341 (1984).
291. Arsenic Pentafluoride-Doped Polyacetylene: Chemical Composition of the Dopant Species, A. Pron, A.G. MacDiarmid, and A.J. Heeger, Synth. Met. **9** 115 (1984).
292. Optical Studies of Pyrolyzed Polyacrylonitrile, T.-C. Chung, Y. Schlesinger, S. Etemad, A.G. MacDiarmid, and A.J. Heeger, J. Poly. Sci.: Poly. Phys. Ed. **22** 1239 (1984).
293. Charge Storage in Doped Poly(thiophene): Optical and Electrochemical Studies, T.-C. Chung, J.H. Kaufman, A.J. Heeger, and F. Wudl, Physical Rev. B **30** 702 (1984).
294. Electric Field Coupling to Slow Elastic Modes in Gels of Conjugated Polymers, A. Kapitulnik, S. Casalnuovo, K.C. Lim, and A.J. Heeger, Physical Rev. Lett. **53** 469 (1984).
295. Poly(isothianaphthene), F. Wudl, M. Kobayashi, and A.J. Heeger, J. Org. Chem. **49** 3382 (1984).
296. Poly(thiophene): A Stable Polymer Cathode Material, J. H. Kaufman, T.-C. Chung, A.J. Heeger, and F. Wudl. J. Electrochem. Soc. **131** 2092 (1984).
297. Photoexcitations in Poly(thiophene): Photoinduced Infrared Absorption and Photoinduced Electron-Spin Resonance, F. Moraes, H. Schaffer, M. Kobayashi, A.J. Heeger, and F. Wudl, Phys. Rev. B: Rapid Commun. **30** 2948 (1984).
298. Spontaneous Nematic Alignment in Conjugated-Polymer Gels, S.A. Casalnuovo and A.J. Heeger, Physical Rev. Lett. **53** 2254 (1984).
299. Fundamental Electrochemical Studies of Polyacetylene, J.H. Kaufman, T.-C. Chung, and A.J. Heeger, J. Electrochem. Soc. **131** 2847 (1984).
300. Doped Poly(thiophene): Electron Spin Resonance Determination of the Magnetic Susceptibility, F. Moraes, D. Davidov, M. Kobayashi, T.-C. Chung, J. Chen, A.J. Heeger, and F. Wudl. Syn. Mtls. **10** 169 (1985).
301. Charge Storage in Conducting Polymers: Solitons, Polarons and Bipolarons, A.J. Heeger, Poly. J. **17** 201 (1985).
302. Conformation of Polydiacetylene Macromolecules in Solution: Field Induced Birefringence and Rotational Diffusion Constant, K.C. Lim, A. Kapitulnik, R. Zacher, and A.J. Heeger, J. Chem. Phys. **82** 516 (1985).
303. Spectroscopic and Light Scattering Studies of the Conformational (Rod-to-Coil) Transition of Poly(diacetylene) in Solution, K.C. Lim and A.J. Heeger, J. Chem. Phys. **82** 522 (1985).

304. Electron Spin Echo Modulation and Relaxation in Polythiophene, D. Davidov, F. Moraes, A.J. Heeger, and F. Wudl, Solid State Commun. 53 497 (1985).
305. Soliton Lattice to Metal: A First Order Phase Transition, J. Chen, T.-C. Chung, F. Moraes, and A.J. Heeger, Solid State Commun. 53 757 (1985).
306. Novel Organic Conductors: Effect of Structure on Band Gap, F. Wudl, M. Kobayashi, N. Colaneri, R.M. Boysel, and A.J. Heeger, Mol. Cryst. Liq. Cryst. 118 199 (1985).
307. *In-Situ* Studies of Electrochemical Charge Transfer Processes in Conducting Polymers, A.J. Heeger, Mol. Cryst. Liq. Cryst. 125 289 (1985).
308. Resistivity of Polydiacetylene Gels, M. Sinclair, M. Isogai, and A.J. Heeger, J. Chem. Phys. 82 4317 (1985).
309. The Electronic and Electrochemical Properties of Poly(isothianaphthene), M. Kobayashi, N. Colaneri, M. Boysel, F. Wudl, and A.J. Heeger, J. Chem. Phys. 82 5717 (1985).
310. Charge Storage and Charge Transport in Conducting Polymers: Solitons, Polarons and Bipolarons, A.J. Heeger, Phil. Trans. R. Soc. Lond. A 314 17 (1985).
311. Conducting Polymers: New Materials and New Concepts, A.J. Heeger, Frontiers in Materials Technologies, ed. M.A. Meyers and O.T. Inal (Elsevier, Amsterdam, 1985) Ch. 10.
312. X-Ray Diffraction Study of the CDW Phase in  $(\text{TaSe}_4)_2\text{I}$ : Determination of the CDW Modulation Amplitude, K.B. Lee, D. Davidov, and A.J. Heeger, Solid State Commun. 54 673 (1985).
313. First-Order Transition to a Metallic State in Polyacetylene: A Strong Coupling Polaronic Metal, S. Kivelson and A.J. Heeger, Physical Rev. Lett. 55 308 (1985).
314. First-Order Phase Transition to the Metallic State in Doped Polyacetylene: Solitons at High Energy, J. Chen, T.-C. Chung, F. Moraes and A.J. Heeger, Localization and Metal-Insulator Transitions, ed. Hellmut Fritzsche and David Adler (Plenum Publ. Corp., 1985).
315. X-Ray Scattering from Polythiophene: Crystallinity and Crystallographic Structure, Z. Mo, K.B. Lee, Y.B. Moon, M. Kobayashi, A.J. Heeger, and F. Wudl, Macromol. 18 1972 (1985).
316. First Order Transition to a Novel Metallic State in  $[\text{Na}_y^+(\text{CH})^{-y}]_x$ : *In-Situ* Electron Spin Resonance During Chemical and Electrochemical Doping, F. Moraes, J. Chen, T.-C. Chung, and A.J. Heeger, Synth. Met. 11 271 (1985).
317. Geometric and Electronic Structures of Isothianaphthene and Thieno[3,4-C]Thiophene: A Theoretical Investigation, J.L. Bredas, B. Themans, J.M. Andre, A.J. Heeger, and F. Wudl, Synth. Met. 11 343 (1985).
318. Soliton Photogeneration in Trans-Polyacetylene: Light-Induced Electron Spin Resonance, F. Moraes, Y.W. Park, and A.J. Heeger, Synth. Met. 13 113 (1986).

319. Reply to Comment on Polydiacetylene Macromolecules in Solution: Electric Field Induced Birefringence, K.C. Lim, A. Kapitulnik, R. Zacher, and A.J. Heeger, J. Chem. Phys. **84** 1058 (1986).
320. Charge Storage in Spinless Solitons in Trans-(CH)<sub>x</sub>: In-Situ Magnetic-Resonance Measurements During P-Type Electrochemical Doping, J. Chen and A.J. Heeger, Physical Rev. B. **33** 1 (1986).
321. Polyacetylene, (CH)<sub>x</sub>: New Concepts and New Phenomena, A.J. Heeger, Handbook of Conducting Polymers, Vol. 2, ed. T. Skotheim (Marcel-Dekker, NY, 1986) p. 729.Q
322. Metal Poly(benzodithiolenes), C.W. Dirk, M. Bousseau, P.H. Barrett, F. Moraes, F. Wudl, and A.J. Heeger, Macromolecules **19** 266 (1986).
323. Photogeneration of Confined Soliton Pairs (Bipolarons) in Polythiophene, Z. Vardeny, E. Ehrenfreund, O. Brafman, M. Nowak, H. Schaffer, A.J. Heeger, and F. Wudl, Physical Rev. Lett. **56** 671 (1986).
324. Electrochemical and Opto-Electrochemical Properties of Poly(isothianaphthene), N. Colaneri, M. Kobayashi, A.J. Heeger, and F. Wudl, Synth. Met. **14** 45 (1986).
325. Highly Conducting Acetylene - CO Copolymers and Limitations of the Soliton Model, F. Wudl and A.J. Heeger, Nature **319** 697 (1986).
326. Elasticity of Poly(diacetylene) Gels: Measurements by Electric Field Coupling, A. Kapitulnik, K.C. Lim, S.A. Casalnuovo, and A.J. Heeger, Macromolecules **19** 676 (1986).
327. Electrically Conducting Polymers, A.J. Heeger and A.G. MacDiarmid, in Encyclopedia of Materials Science and Engineering, Ed. Michael B. Bever (Pergamon Press, Oxford) p. 1399 (1986).
328. Confined Soliton Pairs (Bipolarons) in Polythiophene: In-Situ Magnetic Resonance Measurements, J. Chen, A.J. Heeger, and F. Wudl, Solid State Commun. **58** 251 (1986).
329. Alkali Vapor Phase Doping of Polyacetylene, D. Moses, N. Colaneri, and A.J. Heeger, Solid State Commun. **58** 8 (1986).
330. Picosecond Photoconductivity in Trans-Polyacetylene, M. Sinclair, D. Moses, and A.J. Heeger, Solid State Commun. **59** 6 (1986).
331. Infrared Activity of Photoexcitations in Polythiophene, H.E. Schaffer and A.J. Heeger, Solid State Commun. **59** 7 (1986).
332. Semiconducting Polymers: Fast Response Non-Linear Optical Materials, A.J. Heeger, D. Moses, and M. Sinclair, Synth. Met. **15** 95 (1986).
333. Towards Organic Polymers with Very Small Intrinsic Band Gaps. I. Electronic Structure of Polyisothianaphthene and Derivates, J.L. Brédas, A.J. Heeger, and F. Wudl, J. Chem. Phys. **85** (8) 4673 (1986).

334. Phenyl-Capped Octaaniline (COA): An Excellent Model for Polyaniline, F.-L. Lu, Fred Wudl, M. Nowak, and A.J. Heeger, J. Amer. Chem. Soc. **108** 8311 (1986).
335. Characterization of the Nematic Gel Phase of Polydiacetylene 4BCMU in Toluene: Competition Between Gelation and Liquid Crystal Alignment, D. Spiegel, A. Kapitulnik, and A.J. Heeger, Macromol. (1986).
336. Electrochromic Switching of the Optical Properties of Polyisothianaphthene, H. Yashima, M. Kobayashi, K.-B. Lee, D. Chung, A.J. Heeger, and F. Wudl, J. Electrochem. Soc. **134** (1) 46 (1987).
337. Spectroscopic Studies of Soluble Poly(3-alkylthienylenes), S. Hotta, S.D.D.V. Rughooputh, A.J. Heeger, and F. Wudl, Macromol. **20** 212 (1987).
338. Polyaniline is Poly-Para-Phenyleneamineimine: Proof of Structure by Synthesis, D. Vachon, R.O. Angus, Jr., F.L. Lu, M. Nowak, Z.X. Liu, H. Schaffer, F. Wudl, and A.J. Heeger, Synth. Met. **18** 297 (1987).
339. Nonlinear Excitations and Nonlinear Phenomena in Conductive Polymers, A.J. Heeger, D. Moses, and M. Sinclair, Synth. Met. **17** 343 (1987).
340. Measurement of the Third Order Susceptibility of Trans-Polyacetylene by Third Order Harmonic Generation, M. Sinclair, D. Moses, A.J. Heeger, K. Vilhelmsson, B. Valk, and M. Salour, Solid State Commun. **61** (4) 221 (1987).
341. Water-Soluble Conducting Polymers, A.O. Patil, Y. Ikenoue, F. Wudl, and A.J. Heeger, J. Amer. Chem. Soc. **109** 1858 (1987).
342. Chromism of Soluble Polythienylenes, S.D.D.V. Rughooputh, S. Hotta, A.J. Heeger, and F. Wudl, J. Polym. Sci. Part B: Polymer Phys. **25** 1071 (1987).
343. X-Ray Scattering from Sodium-Doped Polyacetylene: Incommensurate-Commensurate and Order-Disorder Transformations, M. Winokur, Y.B. Moon, and A.J. Heeger, Physical Rev. Lett. **58** 2329 (1987).
344. Polarons and Bipolarons on a Conducting Polymer in Solution, M.J. Nowak, S.D.D.V. Rughooputh, S. Hotta, and A.J. Heeger, Macromol. **20** 965 (1987).
345. Soluble Conducting Polymers: The Poly(3-Alkylthienylenes), S.D.D.V. Rughooputh, M. Nowak, S. Hotta, A.J. Heeger, and F. Wudl, Makromol. Chem. Macromol. Symp. **8** 171 (1987).
346. Self-Doped Conducting Polymers, A.O. Patil, Y. Ikenoue, N. Basescu, N. Colaneri, J. Chen, F. Wudl, and A.J. Heeger, Synth. Met. **20** 151 (1987).
347. Poly(p-phenyleneamineimine): Synthesis and Comparison to Polyaniline, F. Wudl, R.O. Angus, F.L. Lu, P.M. Allemand, D.J. Vachon, M. Nowak, Z.X. Liu, and A.J. Heeger, J. Amer. Chem. Soc. **109** 2577 1987.

348. High Electrical Conductivity in Doped Polyacetylene, N. Basescu, Z.-X. Liu, D. Moses, A.J. Heeger, H. Naarmann, and N. Theophilou, Nature **327** 403 (1987).
349. Bipolarons in Poly(3-methylthiophene): Spectroscopic, Magnetic and Electrochemical Measurements, N. Colaneri, M. Nowak, D. Spiegel, S. Hotta, and A.J. Heeger, Physical Rev. B **36** 7964 (1987).
350. Conducting Polymer Composites of Soluble Polythiophenes in Polystyrene, S. Hotta, S.D.D.V. Rughooputh, and A.J. Heeger, Synth. Met. **22** (1) 79 (1987).
351. Infrared Photoexcitation and Doping Studies of Poly(3-methylthienylene), Y.H. Kim, S. Hotta, and A.J. Heeger, Physical Rev. B **36** 7486 (1987).
352. Localized Phonons Associated with Solitons in Polyacetylene: Coupling to the Non-Uniform Mode, H.E. Schaffer, R.H. Friend, and A.J. Heeger, Physical Rev. B **36** 7537 (1987).
353. Metal-Polymer Schottky Barriers on Cast Films of Soluble Poly(3-alkylthiophenes), H. Tomozawa, D. Braun, S. Phillips, and A.J. Heeger, Synth. Met. **22** 63 (1987).
354. The Missing Bond Charge Repulsion in the Extended Hubbard Model: Effects in Polyacetylene, S. Kivelson, W.-P. Su, J.R. Schrieffer, and A.J. Heeger, Physical Rev. Lett. **58** (18),1899 (1987).
355. Nonlinear Excitations and Nonlinear Phenomena in Conductive Polymers, A.J. Heeger, D. Moses, and M. Sinclair, A.C.S. Symposium Series 1987 346, 372-80.
356. Photogeneration of Nonlinear Excitations in Semiconducting Polymers: Fast Response Nonlinear Optical Phenomena, A.J. Heeger, D. Moses, and M. Sinclair, "Solid State Sciences" series (Springer-Verlag).
357. Solitons, Polarons and Bipolarons: The Fundamental Nonlinear Excitations and Charge Storage Configurations of Conducting Polymers, A.J. Heeger in New Conducting Polymers, ed. Hiroyuki Sasabe (CMC Publishers, Tokyo, Japan), 1987.
358. X-Ray Scattering from Oriented Durham Polyacetylene: Structural Relaxation and the Nature of the Interchain Phase Order of the Bond Alternation Pattern, Y. Moon, M. Winokur, A.J. Heeger, J. Barker, and D.C. Bott, Macromol. **20** 2457 (1987).
359. Polarons and Bipolarons in Doped Polythiophene: A Theoretical Investigation, J.-L. Bredás, F. Wudl, and A.J. Heeger, Solid State Commun. **63** (7) 577 (1987).
360. Direct Evidence of the Importance of Electron-Phonon Coupling in  $\text{La}_2\text{CuO}_4$ : Photoinduced IR Active Vibrational Modes, Y.H. Kim, A.J. Heeger, L. Acedo, G. Stucky, and F. Wudl, Physical Rev. B **36** (13) (1987).
361. Carrier Photogeneration and Mobility in Polydiacetylene: Fast Transient Photoconductivity, D. Moses, M. Sinclair, and A.J. Heeger, Physical Rev. Lett. **58** (25) 2710 (1987).
362. Photoinduced Absorption and Resonant Raman Scattering of Polythiophene, Z. Vardeny, E. Ehrenfreund, O. Brafman, A.J. Heeger, and F. Wudl, Synth. Met. **18** 183 (1987).

363. Optical Measurements on Oriented Thin  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$  Films: Lack of Evidence for Excitonic Superconductivity, I. Bozovic, D. Kirillov, A. Kapitulnik, K. Char, M.R. Hahn, M.R. Beasley, T.H. Geballe, Y.H. Kim, and A.J. Heeger, Physical Rev. Lett. **59** (19) 2219 (1987).
364. Soluble Conducting Polymers: The Poly(3-Alkylthienylenes), S.D.D.V. Rughooputh, M. Nowak, S. Hotta, A.J. Heeger, and F. Wudl, Synth. Met. **21** 41 (1987).
365. Conformational Defects in Durham Polyacetylene: Photo-induced IR Absorption, R.H. Friend, H.E. Schaffer, A.J. Heeger, and D.C. Bott, J. Phys. C: Solid State Phys. **20** 6013 (1987).
366. Polarization Dependence of Transient Photoconductivity in *Trans*-Polyacetylene, M. Sinclair, D. Moses, R.H. Friend, and A.J. Heeger, Physical Rev. B **36** (8) 4296 (1987).
367. Intrinsic Conductivity of Conducting Polymers, S. Kivelson and A.J. Heeger, Synth. Met. **22** 371 (1988).
368. Optical Properties of Conducting Polymers, A.O. Patil, A.J. Heeger, and F. Wudl, Chem. Rev. **88** 183 (1988).
369. *In-situ* Electron Spin Resonance Experiments on Polyacetylene During Electrochemical Doping, J. Chen and A.J. Heeger, Synth. Met. **24** (4) 311 (1988).
370. Comment on the Missing Bond-Charge Repulsion in the Extended Hubbard Model, S. Kivelson, W.-P. Su, J.R. Schrieffer, and A.J. Heeger, Physical Rev. Lett. **60** (1) (1988).
371. Verification of the "Cation-Popping" Doping Mechanism of Self-Doped Polymers, Y. Ikenoue, J. Chaing, A.O. Patil, F. Wudl, and A.J. Heeger, J. Amer. Chem. Soc. **110** 2983 (1988).
372. A Study on Crystal Structure of  $\text{CHCl}_3$ -Soluble Fraction of Polythiophene, Mo Zhishen, Z. Hongfang, W. Fosong, Y.B.Moon, A.J.Heeger, and F. Wudl, Chinese J. Applied Chem. **5** (1) 42 (1988).
373. Long-lifetime Charged Photo-excitations in Polydiacetylenes: Strongly Localized Bipolarons, Y.H. Kim, M. Nowak, Z.G. Soos, and A.J. Heeger, J. Phys. C.: Solid State Phys. **21** L503 (1988).
374. Electrically Conductive Polyacetylene Fibres Through *In Situ* Polymerization in Carrier Gels, J.C. Chiang, P. Smith, A.J. Heeger, and F. Wudl, Polymer Commun. **29** 161 (1988).
375. Solitons in Conducting Polymers, A.J. Heeger, S. Kivelson, J.R. Schrieffer, and W.-P. Su, Reviews of Modern Physics **60** (3) (July 1988).
376. Mechanism for Photogeneration of Metastable Charged Solutions in Polyacetylene, N.F. Colaneri, R.H. Friend, H.E. Schaffer, and A.J. Heeger, Physical Rev. B **38** (6) 3960 (1988).
377. Persistence Lengths of Conjugated Polymers in Solution: a Simple Model, D.R. Spiegel, P.A. Pincus, A.J. Heeger, Polymer Commun. **264** (29) (1988).
378. Photo-induced Absorption of Poly(3-Hexylthiophene) in Solution, D. Spiegel, A.J. Heeger, Polymer Communications **29** 266 (1988).

379. Photoexcitation and Doping Studies of Poly(3-hexylthiophene), Y.H. Kim, D. Spiegel, S. Hotta, and A.J. Heeger, Physical Rev. B **38** (8) 5490 (1988).
380. Transient Photoconductivity in Oriented Trans-Polyacetylene Prepared by the Naarmann-Theophilou Method, S.D. Phillips, and A.J. Heeger, Physical Rev. B **38** (9) 6211 (1988).
381. Photoinduced Localized Charged Excitations in Polyaniline, Y.H. Kim, C. Foster, J. Chiang, and A.J. Heeger, Synth. Met. **26** 49 (1988).
382. Photoinduced Self-Localized Structural Distortions in  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ : Direct Evidence of Polarons or Bipolarons, Y.H. Kim, C.M. Foster, and A.J. Heeger, Physical Rev. B **38** (10) 6478 (1988).
383. Anisotropy of the Third Order Nonlinear Optical Susceptibility in a Degenerate Ground State Conjugated Polymer: Trans-(CH) $_x$ , M. Sinclair, D. Moses, K. Agaki, and A.J. Heeger, Physical Rev. B **38** (15) 10724 (1988).
384. Time-Resolved Waveguide Modulation of a Conjugated Polymer, M. Sinclair, D. McBranch, D. Moses, and A.J. Heeger, Appl. Phys. Lett. **53** (24) 2374 (1988).
385. Electrically-Conductive Fibers of Polyaniline Spun from Solutions in Concentrated Sulfuric Acid, A. Andreatta, Y. Cao, J.C. Chiang, A.J. Heeger, and P. Smith, Synth. Met. **26** 383 (1988).
386. The Relationship Between Charge Transfer and Structure in Alkali Doped Polyacetylene, M.J. Winokur, Y.B. Moon, A.J. Heeger, J. Barker, and D.C. Bott, Solid State Commun. **68** (12) 1055 (1988).
387. The Role of Solitons in the First  $B_u$  Excited State of Polyene Chains: From Short Polyenes to Polyacetylene, J.-L. Brédas and A.J. Heeger, Chem. Phys. Lett. **154** (1) 56 (1989).
388. Magnetic Susceptibility of Crystalline Polyaniline, C. Fite, Y. Cao, and A.J. Heeger, Solid State Commun. **70** (3) 245 (1989).
389. Electrochemical Studies of Self-Doped Conducting Polymers: Verification of the "Cation-Popping" Doping Mechanism, Y. Ikenoue, J. Chiang, A.O. Patil, F. Wudl, and A.J. Heeger, Synth. Met. **30** 305 (1989)
390. Spectroscopy and Transient Photoconductivity of Partially Crystalline Polyaniline, S.D. Phillips, G. Yu, Y. Cao, and A.J. Heeger, Phys. Rev. B **39** (15) 10702 (1989).
391. X-Ray Scattering from Crystalline Polyaniline, Y.B. Moon, Y. Cao, P. Smith, and A.J. Heeger, Polymer Commun. **30** 196 (1989).
392. Charge Storage on a Conducting Polymer In Solution, M.J. Nowak, D. Spiegel, S. Hotta, A.J. Heeger, and P.A. Pincus, Macromol. **22** 2917 (1989).
393. Photoinduced Self-Localized Polarons in  $\text{Th}_2\text{Ba}_2\text{Ca}_{(1-x)}\text{Gd}_x\text{Cu}_2\text{O}_8$ : A Proposal for Van Der Waals Pairing, C.M. Foster, A.J. Heeger, G. Stucky, and N. Herron, Solid State Commun. **71** 945 (1989).

394. Infrared-Active Vibrational Modes of Heavily Doped "Metallic" Polyacetylene, Y.H. Kim and A.J. Heeger, Physical Rev. B **40** (12) 8393 (1989).
395. Fast Transient Photoconductivity in Polydiacetylene: Carrier Photogeneration, Carrier Mobility and Carrier Recombination, D. Moses and A.J. Heeger, J. Phys.: Condens. Matter **1** 7395 (1989).
396. Transient Photoinduced Conductivity in Semiconducting Single Crystals of  $\text{YBa}_2\text{Cu}_3\text{O}_{6.3}$ : Search for Photoinduced Metallic State and for Photoinduced Superconductivity, G. Yu, A.J. Heeger, G. Stucky, N. Herron, and E.M. McCarron, Solid State Commun. **72** (4) 345 (1989).
397. Electroabsorption of Polyacetylene, S. D. Phillips, R. Worland, G. Yu, T. Hagler, R. Freedman, Y. Cao, V. Yoon, J. Chiang, W.C. Walker, and A.J. Heeger, Physical Rev. B **40** (14) 9751 (1989).
398. Spectroscopic Studies of Polyaniline in Solution and in Spin-Cast Films, Y. Cao, P. Smith, and A.J. Heeger, Synth. Met. **32** 263 (1989).
399. Influence of Chemical Polymerization Conditions on the Properties of Polyaniline, Y. Cao, A. Andreatta, A.J. Heeger, and P. Smith, Polymer **30** 2305 (1989).
400. Photogenerated Carriers in  $\text{La}_2\text{CuO}_4$ ,  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$  and  $\text{Tl}_2\text{Ba}_2\text{Ca}_{(1-x)}\text{Gd}_x\text{Cu}_2\text{O}_8$ : Polarizability-Induced Pairing of Polarons, C.M. Foster, A.J. Heeger, Y.H. Kim, and G. Stucky, Synth. Met. **33** 171 (1989).
401. Theoretical Investigation of Gas-Phase Torsion Potentials along Conjugated Polymer Backbones: Polyacetylene and Polythiophene, J.L. Brédas and A.J. Heeger, Macromol. **23** 1150 (1990).
402. Magnetic Susceptibility of One-Dimensional Metallic Chains in Solution, C. Fite, Y. Cao, and A.J. Heeger, Solid State Commun. **73** (9) 607 (1990).
403. Percolation on a Self-Assembled Network: Decoration of Polyethylene Gels with Conducting Polymer, A. Fizazi, J. Moulton, K. Pakbaz, S.D.D.V. Rughooputh, P. Smith and A.J. Heeger, Physical Rev. Lett. **64** (18) 1990.
404. Mechanical and Electrical Properties of Poly-(2,5-Thienylene Vinylene) Fibers, S. Tokito, P. Smith, and A.J. Heeger, Synth. Met. **36** 183 (1990).
405. Electrically Conductive Polyblend Fibres of Polyaniline and Poly-(p-phenylene terephthalamide), A. Andreatta, A.J. Heeger, and P. Smith, Polymer Commun. **31** 275 (1990).
406. Polyaniline Processed from Sulfuric Acid and in Solution in Sulfuric Acid: Electrical, Optical and Magnetic Properties, Y. Cao, P. Smith and A.J. Heeger, *Conjugated Polymeric Materials: Opportunities in Electronics, Optoelectronics and Molecular Electronics*, Series E: Appl. Sci. **182** (NATO ASI Series), Ed., J.L. Brédas and R.R. Chance, Kluwer Academic Publishers, (1990).
407. Pyroelectric and Piezoelectric Effects in Single Crystals of  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ , D. Mihailovic and A.J. Heeger, Solid State Commun. **75** (4) 319 (1990).

408. Picosecond Photoinduced Absorption and Polarization Memory in Polythiophene Derivatives, D. McBranch, A. Hays, M. Sinclair, D. Moses, and A.J. Heeger, Physical Rev. B **42** (5) 3011 (1990).
409. Subnanosecond Transient Photoconductivity in Poly(3-hexylthiophene), G. Yu, S.D. Phillips, H. Tomozawa, and A.J. Heeger, Physical Rev. B **42** (5) 3004 (1990).
410. High Performance Fibers of Conducting Polymers, A. Andreatta, S. Tokito, P. Smith, and A.J. Heeger, Mol. Cryst. Liq. Cryst. **189** 169 (1990).
411. Percolation of Conducting Polymers on a Gel, Y.Y. Suzuki, A.J. Heeger, and P. Pincus, Macromol. **23** 4730 (1990).
412. Application of the Polaron-Transport Theory to  $\beta(?)$  in  $\text{Th}_2\text{Ba}_2\text{Ca}_{1-x}\text{Gd}_x\text{Cu}_2\text{O}_8$ ,  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ , and  $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ , D. Mihailovic, C.M. Foster, K. Voss, and A.J. Heeger, Physical Rev. B **42** (13) 7989 (1990).
413. Infrared Reflection of Epitaxial  $\text{Th}_2\text{Ba}_2\text{CaCu}_2\text{O}_8$  Thin Films in the Normal and Superconducting States, C.M. Foster, K.F. Voss, T.W. Hagler, D. Mihailovic, A.J. Heeger, M.M. Eddy, W.L. Olsen, and E.J. Smith, Solid State Commun. **76** (5) 651 (1990).
414. Photoexcited Polarons in High Temperature Superconducting Oxides: Structural Distortion and Low Frequency Polarizability, C.M. Foster, A.J. Heeger, Y. H. Kim, G. Stucky, and N. Herron, Reviews of Solid State Science **4** (2 & 3) 601 (1990).
415. Charged Solitons in Pernigraniline, Y. Cao and A.J. Heeger, Synth. Met. **39** 205 (1990).
416. Substitution Effects on Bipolarons in Alkoxy Derivatives of Poly(1,4-phenylene-vinylene), K.F. Voss, C.M. Foster, L. Smilowitz, D. Mihailovic, S. Askari, G. Srdanov, Z. Ni, S. Shi, A.J. Heeger, and F. Wudl, Physical Rev. B **43** (6) 5109 (1991).
417. Picosecond Nondegenerate Waveguide Modulation in a Conjugated Polymer, D. McBranch, A. Hays, and A.J. Heeger, Optics Commun. **81** (1,2) 27 (1991).
418. Highly Conductive and Stiff Fibers of Poly(2,5-dimethoxy-p-phenylenevinylene) Prepared from Soluble Precursor Polymer, S. Tokito, P. Smith, and A.J. Heeger, Polymer **32** (3) (1991).
419. Visible Light Emission from Semiconducting Polymer Diodes, D. Braun and A.J. Heeger, Appl. Phys. Lett. **58** (18) 1982 (1991).
420. Mechanical and Electrical Properties of Polyacetylene Films Oriented by Tensile Drawing, Y. Cao, P. Smith, and A.J. Heeger, Polymer **32** (7) 1210 (1991).
421. Structural Evolution in Iodine-Doped Poly(3-alkylthiophenes), M.J. Winokur, P. Wamsley, J. Moulton, P. Smith, and A.J. Heeger, Macromol. **24** 3812 (1991).
422. Conjugated Polymers: On the Parallel Between the Electrical Conduction Mechanism and the Nonlinear Optical Response, J.L. Brédas, F. Meyers, and A.J. Heeger, J. Messier et al., (eds.) Organic Molecules for Nonlinear Optics and Photonics 23-25 Kluwer Academic Publishers (1991).

423. Highly Ordered Conjugated Polymers in Polyethylene: Orientation by Mesoepitaxy, T.W. Hagler, K. Pakbaz, J. Moulton, F. Wudl, P. Smith, and A.J. Heeger, Polymer Commun. **32** (11) 339 (1991).
424. Polaron Conductivity in the Narrow-Band Hubbard Model, Y.Y. Suzuki, P. Pincus and A.J. Heeger, Physical Rev. B **44** (13) 7127 (1991).
425. Solution Processing of Conducting Polymers: Opportunities for Science and Technology, Conjugated Polymers 141 J.L. Brédas and R. Silbey, eds., Kluwer Academic Publishers, the Netherlands.
426. Enhanced Order and Electronic Delocalization in Conjugated Polymers Oriented by Gel Processing in Polyethylene, T.W. Hagler, K. Pakbaz, K.F. Voss, and A.J. Heeger, Physical Rev. B **44** (16) 8652 (1991).
427. Improved Efficiency in Semiconducting Polymer Light-Emitting Diodes, D. Braun, A.J. Heeger, and H. Kroemer, J. Elect. Mat. **20** (11),945 (1991).
428. Transient Photoinduced Conductivity in Single Crystals of  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ : "Photodoping" to the Metallic State, G. Yu, C.H. Lee, and A.J. Heeger, Physical Rev. Lett. **67** (18) 2581 (1991).
429. Photo-excitation of Single Crystals of  $\text{La}_2\text{CuO}_4$  Near the Metal-Insulator Transition, G. Yu, C.H. Lee, A.J. Heeger, S.-W. Cheong, and Z. Fisk, Physica C **190** 563 (1992).
430. Phase Separation of Photogenerated Carriers and Photoinduced Superconductivity in High  $T_c$  Materials, G. Yu, C.H. Lee, A.J. Heeger, N. Herron, M. McCarron, Lin Cong, G.C. Spalding, C.A. Nordman, and A.M. Goldman, Physical Rev. B **45** (9) 4964 (1992).
431. The Role of Soliton-Antisoliton configurations with  $A_g$  Symmetry in the Nonlinear Optical Response of Polyacetylene, T.W. Hagler and A.J. Heeger, Chem. Phys. Lett. **189** (4,5) 333 (1992).
432. Stage-1 Phases of Alkali-Metal-Doped Conducting Polymers, D. Chen, M.J. Winokur, Y. Cao, A.J. Heeger, and F.E. Karasz, Physical Rev. B **45** (5) 2035 (1992).
433. Disorder and Staging in Iodine-doped Polyacetylene, M.J. Winokur, J. Maron, Y. Cao, and A.J. Heeger, Physical Rev. B **45** (17) 9656 (1992-I).
434. IR Reflection Studies of Thin  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$  Films Parallel and Perpendicular to the CuO Planes, K.F. Voss, K.H. Lee, A.J. Heeger, J.Z. Sun, and K.H. Young, Physica C **192** 131 (1992).
435. Counter-ion induced Processibility of Conducting Polyaniline and of Conducting Polyblends of Polyaniline in Bulk Polymers, Y. Cao, P. Smith, and A.J. Heeger, Synth. Met. **48** 91 (1992).
436. Photoinduced Absorption from Triplet Excitations in Poly(2-methoxy, 5-(2'-ethyl-hexyloxy)-*p*-phenylene vinylene) Oriented by Gel-Processing in Polyethylene, L. Smilowitz and A.J. Heeger, Synth. Met. **48** 193 (1992).

437. Electroluminescence and Electrical Transport in poly(3-octylthiophene) Diodes, D. Braun, G. Gustafsson, D. McBranch, and A.J. Heeger, J. Appl. Phys. **72** (2) 564 (1992).
438. Flexible Light-Emitting Diodes Made from Soluble Conducting Polymers, G. Gustafsson, Y. Cao, G.M. Treacy, F. Klavetter, N. Colaneri, and A.J. Heeger, Nature **357** 477 (1992).
439. Solution-cast Films of Polyaniline: Optical-quality Transparent Electrodes, Y. Cao, G.M. Treacy, P. Smith, and A.J. Heeger, Appl. Phys. Lett. **60** (22) 2711 (1992).
440. Doped  $\beta$ -carotene Films: Spinless Charge Storage Stabilized by Structural Relaxation, E. Ehrenfreund, D. Moses, and A.J. Heeger, Chem. Phys. Lett. **196** (1,2) 84 (1992).
441. X-ray Structural Study of trans-polyacetylene at High Pressure, J. Ma, J.E. Fischer, Y. Cao, and A.J. Heeger, Solid State Commun. **83** (6) 395 (1992).]
442. Electroluminescence from Light-Emitting Diodes Fabricated from Conducting Polymers, D. Braun and A.J. Heeger, Thin Solid Films **216** 96 (1992).
443. Frequency Dependence of Third-Harmonic Generation in *cis*- and *trans*-Polyacetylene: Importance of the Degenerate Ground State to Nonlinear Optical Response, C. Halvorson, D. Moses, T.W. Hagler, Y. Cao, and A.J. Heeger, Synth. Met. **49-50** 49 (1992).
444. Origin of Different Critical Temperatures in Oxide Superconductors: A Comparison of  $(\text{Tl,Cd})_2(\text{Ba,Lu})_2\text{CuO}_6$  with  $(\text{La,Ba})_2\text{CuO}_4$  by Raman and Infrared Absorption Spectroscopy, D. Mihailovic, T. Mertelj, K.F. Voss, A.J. Heeger, and N. Herron, Phy. Rev. B **45** (14) 8016 (1992)
445. Picosecond Waveguide Modulation in Conjugated Polymers, D. McBranch, M. Sinclair, A. Hays, D. Moses, and A.J. Heeger, Synth. Met. **49-50** 147 (1992).
446. Fine Tuning of the Band Gap in Conjugated Polymers via Control of Block Copolymer Sequences, F. Meyers, A.J. Heeger, and J.-L. Brédas, J. Chem. Phys. **97** 2750 (1992).
447. Magnetic Susceptibility of Polyaniline in Solution in Non-Polar Organic Solvents and in Polyblends in Poly(methyl methacrylate), Y. Cao and A.J. Heeger, Synth. Met. **52** 193 (1992).
448. Conjugated Polymers with Degenerate Ground State: The Route to High Performance Third-Order Nonlinear Optical Response, C. Halvorson, T.W. Hagler, D. Moses, Y. Cao, and A.J. Heeger, Chem. Phys. Lett **200** 364 (1992).
449. Photoinduced Electron Transfer from a Conducting Polymer to Buckminsterfullerene, N.S. Sariciftci, L. Smilowitz, A.J. Heeger, and F. Wudl, Science **258** 1474 (1992).
450. Photoconductivity and Optical Conductivity in Lightly Doped  $\text{Nd}_2\text{CuO}_4$ , G. Yu, C.H. Lee, and A.J. Heeger, Physica C **203** 419 (1992).
451. Spectroscopic Studies of a Soluble and Stable Polyacetylene Blend, N.S. Sariciftci, V.M. Kobryanskii, M. Reghu, L. Smilowitz, C. Halvorson, T.W. Hagler, D. Mihailovic, and A.J. Heeger, Synth. Met. **53** 161 (1992).

452. Nanosecond Transient Electroluminescence from Polymer Light-Emitting Diodes, D. Braun, D. Moses, C. Zhang and A.J. Heeger, Appl. Phys. Lett. **61** (26) 3092 (1992).
453. Counterion-induced Processibility of Polyaniline: Transport at the Metal-Insulator Boundary, M. Reghu, Y. Cao, D. Moses, and A.J. Heeger, Physical Rev. B **47** (4) 1758 (1992).
454. Morphology of Conductive, Solution-Processed Blends of Polyaniline and Poly(methyl methacrylate), C.Y. Yang, Y. Cao, Paul Smith, and A.J. Heeger, Synth. Met. **53** 293 (1992).
455. Semiconducting Polymer-Buckminsterfullerene Heterojunctions: Diodes, Photodiodes, and Photovoltaic Cells, N.S. Sariciftci, D. Braun, C. Zhang, V.I. Srdanov, A.J. Heeger, G. Stucky, and F. Wudl, Appl. Phys. Lett. **62** (6) 585 (1993).
456. Absorption Spectroscopy of Nonlinear Excitations in Polyaniline, N.S. Sariciftci, L. Smilowitz, Y. Cao, and A.J. Heeger, J. Chem. Phys. **98** (4) 2664 (1993).
457. Time-Resolved Photoluminescence from Poly[2-methoxy, 5-(2'-ethyl-hexyloxy)-*p*-phenylene-vinylene]: Solutions, Gels, Films and Blends, L. Smilowitz, A. Hays, A.J. Heeger, G. Wang, and J. E. Bowers, J. Chem. Phys. **98** (8) 6504 (1993).
458. Temperature Dependence of the Electrical Conductivity of Potassium-Doped Polyacetylene as a Function of Pressure and Magnetic Field, K. Väkiparta, Reghu M., M.R. Andersson, Y. Cao, D. Moses, and A.J. Heeger, Physical Rev. B **47** (15) 9977 (1993).
459. Yellow Electroluminescent Diodes Utilizing Poly(2,5-bis(cholestanoy)-1,4-phenylene vinylene), C. Zhang, S. Höger, K. Pakbaz, F. Wudl, and A.J. Heeger, J. of Electronic Materials **22** (4) 413 (1993).
460. Light-emitting Diodes from Partially Conjugated Poly(*p*-phenylene Vinylene), C. Zhang, D. Braun, and A.J. Heeger, J. Appl. Phys. **73** (10) 5177 (1993).
461. Photoexcitation Spectroscopy of Conducting-Polymer-C<sub>60</sub> Composites: Photoinduced Electron Transfer, L. Smilowitz, N.S. Sariciftci, R. Wu, C. Gettinger, A.J. Heeger, and F. Wudl, Physical Rev. B **47** (20) 13835 (1993).
462. Persistent Photoconductivity in Poly(*p*-Phenylenevinylene): Spectral Response and Slow Relaxation, C.H. Lee, G. Yu, and A.J. Heeger, Physical Rev. B **47** (23) 15543 (1993).
463. Soluble Conjugated Polymers with Degenerate Ground State Derivatives of Poly(1,6-heptadiyne), K. Pakbaz, R. Wu, F. Wudl, and A.J. Heeger, J. Chem. Phys. **99** (1) 590 (1993).
464. Conjugated Polymers: The Interconnection of Chemical and Electronic Structure, A.J. Heeger, Proceedings of the Nobel Symposium, ICSM '91, Oxford University Press.
465. Electronic Structure of Conjugated Regular Copolymers: Fine Tuning of Band Gap Value, F. Meyers, A.J. Heeger, and J.-L. Brédas, Synth. Met. **55-57** 4308 (1993).
466. Solitons in Doped  $\beta$ -Carotene Films: Optical Absorption and ESR Studies, E. Ehrenfreund, D. Moses, K. Lee, A.J. Heeger, J. Cornil, and J.-L. Brédas, Synth. Met. **55-57** 4707 (1993).

467. Improved Efficiency in Polymer Light-Emitting Diodes Using Air-Stable Electrodes, S. Aratani, C. Zhang, K. Pakbaz, S. Höger, F. Wudl, and A.J. Heeger, J. Elec. Mater. **22** (7) 745 (1993).
468. Transient Electroluminescence from Polymer Light Emitting Diodes, D. Braun, D. Moses, C. Zhang, and A.J. Heeger, Synth. Met. **55-57** 4145 (1993).
469. Third Order Nonlinear Optical Susceptibility of Polyaniline, C. Halvorson, Y. Cao, D. Moses, and A.J. Heeger, Synth. Met. **55-57** 3941 (1993).
470. Semiconducting Polymers (as donors) and Buckminsterfullerene (as acceptor): Photoinduced Electron Transfer and Heterojunction Devices, N.S. Sariciftci, L. Smilowitz, A.J. Heeger, and F. Wudl, Synth. Met. **59** 333 (1993).
471. Third Harmonic Generation Spectra of Degenerate Ground State Derivatives of Poly(1,6-heptadiyne), C. Halvorson, R. Wu, D. Moses, F. Wudl, and A.J. Heeger, Chem. Phys. Lett. **212** (1,2) 85 (1993).
472. Photoconductivity in Insulating  $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$ : From Mott-Hubbard Insulator to Fermi Glass via Oxygen Doping, G. Yu, C. H. Lee, D. Mihailovic, and A.J. Heeger, Physical Rev. B. **48** (10) 7546 (1993).
473. High-Tc Superconductors: Disordered Metals with Pairing Via Polarizability from Localized States Near the Mobility Edge, A.J. Heeger and G. Yu, Physical Rev. B **48** (9) 6492 (1993).
474. Transient and Steady-State Photoconductivity of a Solid  $\text{C}_{60}$  Film, C.H. Lee, G. Yu, D. Moses, V.I. Srdanov, X. Wei, and Z.V. Vardeny, Physical Rev. B **48** (11) 8506 (1993).
475. Ultrafast Photoinduced Electron Transfer in Conducting Polymer-Buckminsterfullerene Composites, B. Kraabel, C.H. Lee, D. Moses, N.S. Sariciftci, and A.J. Heeger, Chem. Phys. Lett. **213** (3,4) 389 (1993).
476. Photoinduced Charge Carriers in Insulating Cuprates: Fermi Glass Insulator, Metal-Insulator Transition and Superconductivity, G.Yu and A.J. Heeger, Int. J. Mod. Phys. B. **7** (22) 3751 (1993).
477. Quantum Lattice Fluctuations and the Linear and Nonlinear Optical Susceptibility of Degenerate Ground State Conjugated Polymers, T.W. Hagler and A.J. Heeger, Prog.Theo. Phys. Suppl. No. **113**, 65 (1993).
478. Sensitization of the Photoconductivity of Conducting Polymers by  $\text{C}_{60}$ : Photoinduced Electron Transfer, C.H. Lee, G. Yu, D. Moses, K. Pakbaz, C. Zhang, N.S. Sariciftci, A.J. Heeger, and F. Wudl, Physical Rev. B **48** (20) 15425 (1993).
479. Superlocalization of the Electronic Wave Functions in Conductive Polymer Blends at Concentrations near the Percolation Threshold, M. Reghu, C.O. Yoon, D. Moses, A.J. Heeger, and Y. Cao, Macromol. **26** 7245 (1993).
480. Blue Electroluminescent Diodes Utilizing Blends of Poly(p-phenylphenylene vinylene) in Poly(9-vinylcarbazole), C. Zhang, H. von Seggern, K. Pakbaz, H.-W. Schmidt, and A.J. Heeger, Synth. Met. **62** 35 (1994).

481. Two-Photon Absorption Spectrum of Oriented Trans-Polyacetylene, C. Halvorson and A.J. Heeger, Chem. Phys. Lett. **216** (3,4,5,6) 488 (1994).
482. Picosecond Transient Photoconductivity in Poly(p-phenylenevinylene), C. H. Lee, G.Yu, D. Moses, and A. J. Heeger, Physical Rev. B **49** (4) 2396 (1994).
483. Direct Evidence of Photoinduced Electron Transfer in Conducting Polymer-C<sub>60</sub> Composites by Infrared Photoexcitation Spectroscopy, K. Lee, R. Janssen, N.S. Sariciftci, and A.J. Heeger, Physical Rev. B **49** (8) 5781 (1994).
484. Reflectance of Polyaniline Protonated with Camphor Sulfonic Acid: Disordered Metal on the Metal-Insulator Boundary, K. Lee, A.J. Heeger, Y. Cao, Physical Rev. B **48** (20) 14 884 (1993).
485. Counterion-Induced Processibility of Polyaniline: Thermoelectric Power, C.O. Yoon, M. Reghu, D. Moses, A.J. Heeger, and Y. Cao, Physical Rev B **48** (19) 14 080 (1993).
486. Symmetry Specific Electron-Phonon Coupling for Electronic States Near the Fermi Energy of Metallic Polyaniline: Resonant Raman Scattering, N.S. Sariciftci, A.J. Heeger, V. Krasevec, P. Venturini, D. Mihailovic, Y. Cao, J. Libert, and J.-L. Brédas, Synth. Met. **62** 107 (1994).
487. Soliton-Antisoliton Configurations and the Linear and Nonlinear Optical Response of Degenerate Ground State Conjugated Polymers, T.W. Hgler and A.J. Heeger, Physical Rev. B **49** (11) 7313 (1994).
488. Electrical Transport in Conductive Blends of Polyaniline in Poly(methyl methacrylate), C.O. Yoon, M. Reghu, D. Moses A.J. Heeger, and Y. Cao, Synth. Met. **63** 47 (1994).
489. Dual-Function Semiconducting Polymer Devices: Light-Emitting and Photodetecting Diodes, G. Yu, C. Zhang, and A. J. Heeger, Appl. Phys. Lett. **64** (12) 1540 (1994).
490. Electron Diffraction Study of the Structure of Polyaniline- Dodecylbenzenesulfonate, C.Y. Yang, P. Smith, A.J. Heeger, Y. Cao, and J.E. Osterholm, Polymer **35** (6) 1142 (1994).
491. Influence of Donor and Acceptor Substituents on the Electronic Characteristics of poly (paraphenylene vinylene) and poly (paraphenylene), J.-L. Brédas and A.J. Heeger, Chem. Phys. Lett. **217** (5,6) 507 (1994).
492. Paramagnetic Susceptibility of Highly Conducting Polyaniline: Disordered Metal with Weak Electron-Electron Interactions (Fermi Glass), N.S. Sariciftci, A.J. Heeger, and Y. Cao, Physical Rev. B **49** (9) 5988 (1994).
493. Improved Efficiency in Green Polymer Light-Emitting Diodes with Air-Stable Electrodes, C.Zhang, S. Hoger, K. Pakbaz, F. Wudl, and A.J. Heeger, J. of Electronic Mat'ls. **23** (5) 453 (1994).
494. Reversible, Metastable, Ultrafast Photoinduced Electron Transfer From Semiconducting Polymers to Buckminsterfullerene and in the Corresponding Donor/Acceptor Heterojunctions, N.S. Sariciftci, and A.J. Heeger, Int. J. Mod. Phys. B. **8** (3) 237 (1994).

495. Polarized-electroabsorption spectroscopy of a soluble derivative of poly(*p*-phenylenevinylene) oriented by gel processing in polyethylene: Polarization anisotropy, the off-axis dipole moment and excited-state delocalization, T.W. Hagler, K. Pakbaz and A.J. Heeger, Physical Rev. B **49** (16) 10968 (1994).
496. Transport Near the Metal-Insulator Transition: Polypyrrole Doped with PF<sub>6</sub>, C.O. Yoon, R. Menon, D. Moses, and A.J. Heeger, Physical Rev. B **49** (16) 10851 (1994).
497. Photoinduced Absorption of Conjugated Polymer/C<sub>60</sub> Solutions: Evidence of Triple-state Photoexcitations and Triplet-energy Transfer in poly(3-alkylthiophene), R.A.J. Janssen, N.S. Sariciftci, and A.J. Heeger, J. Chem. Phys. **100** (12) 8641 (1994).
498. Pressure and Magnetic Field Dependence of the Low Temperature Resistivity of PF<sub>6</sub>-doped Polypyrrole, M. Reghu, C.O. Yoon, D. Moses, and A.J. Heeger, Synth. Met. **64** 53 (1994).
499. A Photoluminescence Study of Poly(phenylene vinylene) Derivatives: The Effect of Intrinsic Persistence Length, C.L. Gettinger, A.J. Heeger, J.M. Drake, and D.J. Pine, J. Chem. Phys. **101** (2) 1673 (1994).
500. Semiconducting Polymer Diodes: Large Size, Low Cost Photodetectors with Excellent Visible-ultraviolet Sensitivity, G. Yu, K. Pakbaz, and A.J. Heeger, Appl. Phys. Lett. **64** (25) 3422 (1994).
501. Nature of the Primary Photoexcitations in Poly(arylene-vinylenes), K. Pakbaz, C.H. Lee, A.J. Heeger, T.W. Hagler, and D. McBranch, Synth. Met. **64** 295 (1994).
502. Nonlinear Transient Photovoltaic Response in Al/C<sub>60</sub>/Au Devices: Control of Polarity with Optical Bias, C.H. Lee, G. Yu, D. Moses, and A.J. Heeger, Appl. Phys. Lett. **65** (6) 664 (1994).
503. Tuning Through the Critical Regime of the Metal-Insulator Transition in Conducting Polymers by Pressure and Magnetic Field, Reghu M., K. Vakiparta, C.O. Yoon, Y. Cao, D. Moses, A.J. Heeger, Synth. Met. **65** 167 (1994).
504. A 160-Femtosecond Optical Image Processor Based on a Conjugated Polymer, C. Halvorson, A. Hays, B. Kraabel, R. Wu, F. Wudl, and A.J. Heeger, Science **265** 1215 (1994).
505. Optocoupler Made from Semiconducting Polymers, G. Yu, K. Pakbaz, and A.J. Heeger, J. Elect. Mat. **23** (9) 925 (1994).
506. Absence of photoinduced electron transfer from the excitonic electron-hole bound state in polydiacetylene conjugated polymers, N.S. Sariciftci, B. Kraabel, C.H. Lee, K. Pakbaz, A.J. Heeger, and D. J. Sandman, Physical Rev. B **50** (16) 12044 (1994).
507. Transport in Polyaniline Networks Near the Percolation Threshold, Reghu M., C.O. Yoon, C.Y. Yang, D. Moses, P. Smith, and A.J. Heeger, Physical Rev. B **50** (16) 13931 (1994).
508. A New Architecture for Polymer Transistors, Y. Yang and A.J. Heeger, Lett. to Nature **372** 344 (1994).

509. Carrier Injection into Semiconducting Polymers: Fowler-Nordheim Field-Emission Tunneling, A.J. Heeger, I.D. Parker, and Y. Yang, Synth. Met. 67 23 (1994).
510. Enhanced Performance of Polymer Light-Emitting Diodes Using High-Surface Area Polyaniline Network Electrodes, Y. Yang, E. Westerweele, C. Zhang, P. Smith, and A. Heeger, J. Appl. Phys. 77 (2) 694 (1995).
511. Ultrafast Spectroscopic Studies of Photoinduced Electron Transfer from Semiconducting Polymers to C<sub>60</sub>, B. Kraabel, D. McBranch, N.S. Sariciftci, D. Moses, and A.J. Heeger, Physical Rev. B 50 (24) 18543 (1994).
512. Optical Computing by Use of Photorefractive Polymers, C. Halvorson, B. Kraabel, A.J. Heeger, B.L. Volodin, K. Meerholz, S. and N. Peyghambarian, Opt. Lett. 20 (1) 76 (1995).
513. Third Harmonic Generation Spectra of Degenerate Ground State Poly(dipropargyl) Amines, J. McElvain, N. Zhang, C. Halvorson, F. Wudl, and A.J. Heeger Chem. Phys. Lett. 232 149 (1995)
514. X-ray-diffraction Studies of the Three-dimensional Structure within Iodine-intercalated Poly(3-octylthiophene), T.J. Prosa, M.J. Winokur, J. Moulton, R. Smith, and A.J. Heeger, Physical Rev. B. 51 (1) 159 (1995).
515. Infrared Reflectance of Polypyrrole: 'Metal' with a Gap in the Charged Excitation Spectrum, K.Lee, Reghu M., E.L. Yuh, N.S. Sariciftci, and A.J. Heeger, Synth. Met. 68 287 (1995).
516. Charge Transfer in Conducting Polymers. Striving Toward Intrinsic Properties, A.J. Heeger, Discuss. Faraday Soc. 88 (12) 1 (1989).
517. Self-assembled Networks of Conducting Polyaniline: A New Class of Conducting Polymer Blends, A.J. Heeger Trends in Poly. Sci. 3 (2) 39 (1995).
518. NMR Evidence for the Metallic Nature of Highly Conducting Polyaniline, A.C. Kolbert, S. Caldarelli, K. F. Thier, N.S. Sariciftci, Y. Cao, and A.J. Heeger, Physical Rev. B 51 (3) 1541 (1995).
519. Electroluminescence from Blend Films of Poly(3-hexylthiophene) and Poly(*N*-vinylcarbazole), H. Nishino, G.Yu, T.-A. Chen, R.D. Rieke, and A.J. Heeger, Synth. Met. 68 243 (1995).
520. Counter-ion Induced Processibility of Poly-aniline: Conducting Melt Processible Polymer Blends, O.T. Ikkala, J. Laakso. K. Väkiparta. E. Virtanen, H. Ruohonen, H. Järvinen, T. Taka, P. Passiniemi, J.-E. Österholm, Y. Cao, A. Andreatta, P. Smith, and A.J. Heeger, Synth. Met. 69 97 (1995).
521. Transient Photoconductivity of MEH-PPV and Its Sensitization by C<sub>60</sub>, C.H. Lee, G. Yu, D. Moses, N.S. Sariciftci, F. Wudl, and A.J. Heeger, Mol. Cryst. Liq. Cryst. 256 745 (1994).
522. Reflectance Spectra of Polyaniline, K.Lee, Y. Cao, and A.J. Heeger, Synth. Met. 72 25 (1995).

523. Photoinduced Absorption of p-conjugated Polymers in Solution, R.A.J. Janssen, N.S. Sariciftci, K. Pakbaz, J.J. McNamara, S. Schricker, A.J. Heeger, and F. Wudl, Synth. Met. 69 441 (1995).
524. Triplet-state Photoexcitations and Triplet-energy Transfer in Poly(3-alkylthiophene)/C<sub>60</sub> Solutions, R.A.J. Janssen, N.S. Sariciftci, and A.J. Heeger, Synth. Met. 70 1343 (1995).
525. Photoinduced Absorption Spectroscopy of Oligothiophene/C<sub>60</sub> Mixtures in Films and Solutions, R.A.J. Janssen, M.P.T. Christiaans, N.S. Sariciftci, D. Moses, and A.J. Heeger, Synth. Met. 70 1345 (1995).
526. Femtosecond Optical Correlation Using Four-Wave Mixing, C. Halvorson, A. Hays, B. Kraabel, R. Wu, F. Wudl, and A. J. Heeger, Synth. Met. 71 2197 (1995).
527. The Effect of Intrinsic Rigidity on the Optical Properties of PPV Derivatives, C.L. Gettinger and A. J. Heeger, Mol. Cryst. Liq. Cryst. 256 507 (1994).
528. Subpicosecond Photoinduced Electron Transfer in Semiconducting Polymer - C<sub>60</sub> Composites, B. Kraabel, D. McBranch, N.S. Sariciftci, D. Moses, and A.J. Heeger, Mol. Cryst. Liq. Cryst. 256 733 (1994).
529. Two-Photon Absorption and Ultrafast Optical Computing, C. Halvorson and A.J. Heeger, Synth. Met. 71 1649 (1995).
530. Dynamics of Photoexcited Carriers in Poly(p-phenylenevinylene) and its Soluble Derivative, C.H. Lee, G. Yu, D. Moses, and A.J. Heeger, Synth. Met. 69 429 (1995).
531. Blue Emission from Polymer Light-Emitting Diodes Using Non-Conjugated Polymer Blends with Air-Stable Electrodes, C. Zhang, H. von Seggern, B. Kraabel, H.-W. Schmidt, and A.J. Heeger, Synth. Met. 72 185 (1995).
532. Polarized Electroabsorption Spectroscopy of Highly-Ordered Poly(2-methoxy-5-(2'-ethyl-hexyloxy)-p-phenylene), T.W. Hagler, K. Pakbaz, and A.J. Heeger, Physical Rev. B 51 (20) 14199 (1995).
533. Enhanced Electroluminescence from Semiconducting Polymer Blends, G.Yu, J. Hishino, A.J. Heeger, T.-A. Chen, and R.D. Rieke, Synth. Met. 72 249 (1995).
534. Photoinduced Electron Transfer from p-conjugated Polymers onto Buckminsterfullerene, Fullerooids and Methanofullerenes, R.A.J. Janssen, J.C. Hummelen, K. Lee, K. Pakbaz, N.S. Sariciftci, A.J. Heeger, and F. Wudl, J. Chem. Phys. 103 (2) 788 (1995).
535. Solution Characterization of Surfactant Solubilized Polyaniline, C.L. Gettinger, A.J. Heeger, D.J. Pine, and Y. Cao, Synth. Met. 74 81 (1995).
536. Soliton Charge Storage in Doped-Carotene: Consistency of Optical Absorption and ESR Measurements with Calculations of the Molecular and Electronic Structure, J. Cornil, E. Ehrenfreund, D. Moses, A.J. Heeger, and J.-L. Brédas, Materials Science Forum (Trans. Tech. Publications, Switzerland), Vol. 122, p. 41 (1993).

537. Reflectance of Conducting Polypyrrole: Observation of the Metal-Insulator Transition Driven by Disorder, K. Lee, R. Menon, C.O. Yoon, and A.J. Heeger, Physical Rev. B **52** (7) 4779 (1995).
538. Polymer Light-Emitting Electrochemical Cells, Q. Pei, G. Yu, C. Zhang, Y. Yang, and A.J. Heeger, Science **269** 1086 (1995).
539. Charge Separation and Photovoltaic Conversion in Polymer Composites with Internal Donor/Acceptor Heterojunctions, G. Yu and A.J. Heeger, J. Appl. Phys. **78** (7) 4510 (1995).
540. Electrochemistry and Electrogenated Chemiluminescence of Films of the Conjugated Polymer 4-methoxy-(2-ethylhexoxyl)-2,5-polyphenylenevinylene, M.M. Richter, F.-R.F. Fan, F. Klavetter, A.J. Heeger, and A.J. Bard, Chem. Phys. Lett. **226** 115 (1994).
541. Direct Observation of the Intersystem Crossing in Poly(3-octylthiophene), B. Kraabel, D. Moses, and A.J. Heeger, J. Chem Phys. **103** 5102 (1995).
542. Polymer Photovoltaic Cells: Enhanced Efficiencies via a Network of Internal Donor-Acceptor Heterojunctions, G. Yu, J. Gao, J.C. Hummelen, F. Wudl, and A.J. Heeger, Science **270** 1789 (1995).
543. Enhanced Nonlinear Absorption and Optical Limiting in Semiconducting Polymer/Methanofullerene Charge Transfer Films, M. Cha, N.S. Sariciftci, A.J. Heeger, J.C. Hummelen, and F. Wudl, Appl. Phys. Lett. **67** (26) 3850 (1995).
544. Absorption-Detected Magnetic-Resonance Studies of Photoexcitations in Conjugated-polymer/C<sub>60</sub> Composites, X. Wei, Z.V. Vardeny, N.S. Sariciftci, and A.J. Heeger, Physical Rev. B **53** (5) 2187 (1996).
545. Efficient Blue Polymer Light-emitting Diodes from a Series of Soluble Poly(paraphenylene)s, Y. Yang, Q. Pei, and A.J. Heeger, J. Appl. Phys. **79** (2) 934 (1996).
546. Photoinduced Electron Transfer and Long Lived Charge Separation in a Donor-bridge-acceptor Supramolecular 'Diad' Consisting of Ruthenium(II) tris(bipyridine) Functionalized C<sub>60</sub>, N.S. Sariciftci, F. Wudl, A.J. Heeger, M. Prato, M. Maggini, G. Scorrano, J. Bourassa, and P.C. Ford, Chem. Phys. Lett. **247** 510 (1995).
547. Third Harmonic Generation Spectrum of a Degenerate Ground State Conjugated Polymer. Direct Evidence of Simultaneous Two- and Three- Photon Resonance, J. McElvain, M. Cha, H. Yu, N. Zhang, F. Wudl, and A.J. Heeger, Chem. Phys. Lett. **247** 221 (1995).
548. Picosecond Transient Photoconductivity in a Soluble Derivative of Poly(*p*-phenylene vinylene), C.H. Lee, G. Yu, N.S. Sariciftci, A.J. Heeger, and C. Zhang, Synth. Met. **75** 127 (1995).
549. The Plastic Retina" Image Enhancement Using Polymer Grid Triode Arrays, A.J. Heeger, D.J. Heeger, J. Langan, and Y. Yang, Science **270** 1642 (1995).

550. Hopping Transport in Doped Conducting Polymers in the Insulating Regime Near the Metal-Insulator Boundary: Polypyrrole, Polyaniline, and Polyalkylthiophenes, C.O. Yoon, Reghu M., D. Moses, A.J. Heeger, Y. Cao, T.-A. Chen, X. Wu, and R.D. Rieke, Synth. Met. **75** 229 (1995).
551. Subpicosecond Photoinduced Electron Transfer from Conjugated Polymers to Functionalized Fullerenes, B. Kraabel, J.C. Hummelen, D. Vacar, D. Moses, N.S. Sariciftci, A.J. Heeger, and F. Wudl, J. Chem. Phys. **104** (11) 4267 (1996).
552. Photoinduced Electron Transfer Reactions in Mixed Films of p-conjugated Polymers and a Homologous Series of Tetracyano-*p*-Quinodimethane Derivatives, R.A.J. Janssen, M.P.T. Christiaans, C. Hare, N. Martin, N. S. Sariciftci, A. J. Heeger, and F. Wudl, J. Chem. Phys. **103**(20) 8840 (1995).
553. Polymer Light-Emitting Electrochemical Cells: In Situ Formation of a Light-Emitting p-n Junction, Q.Pei, Y.Yang, G.Yu, C.Zhang, and A.J. Heeger, J. Amer. Chem. Society **118** (16) 3922 (1996).
554. The Exciton Binding Energy in Luminescent Conjugated Polymers, J.L. Brédas, J.Cornil, and A.J. Heeger, Adv. Mater. **8** (5) 447 (1996).
555. Electroluminescence from Poly(phenylene vinylene) in a Planar Metal-Polymer-Metal Structure, U. Lemmer, D. Vacar, D. Moses, A.J. Heeger, T. Ohnishi, and T.Noguchi, Appl. Phys. Lett. **68** (21) 3007 (1996).
556. Counter-ion Induced Processibility of Conjugated Polyquinolines, M. van der Sanden, C. Yang, P. Smith, and A.J. Heeger, Synth. Met. **78** 47 (1996).
557. Electronic Transport in the Metallic State of Oriented Poly(p-phenylenevinylene), M. Ahlskog, Reghu M., A.J. Heeger, T. Noguchi and T.Ohnishi, Physical Rev. B **53** (23) 15529 (1996).
558. Thermal Stability of Polyaniline Networks in Conducting Polymer Blends, CY.Yang, Reghu M., A.J. Heeger, Y. Cao, Synth. Met. **79** 27 (1996).
559. Laser Emission from Solutions and Films Containing Semiconducting Polymer and Titanium Dioxide Nanocrystals, F. Hide, B.J. Schwartz, M.A. Díaz-García, A.J. Heeger, Chem. Phys. Lett. **256** 424 (1996).
560. Mechanism of Carrier Generation in Poly (phenylene vinylene): Transient Photoconductivity and Photoluminescence at High Electric Fields, D. Moses, C.H. Lee, A.J. Heeger, T. Ohnishi, and T. Noguchi, Physical Rev.B **54** (7) 4748 (1996).
561. An Analytic Model for the Polymer Grid Triode, J. McElvain and A.J. Heeger, J. Appl. Phys. **80** (8) 4755 (1996).
562. Photoinduced Absorption and Photoinduced Reflectance in Conducting Polymer/Methanofullerene Films: Nonlinear Optical Changes in the Complex Index of Refraction, K. Lee, E.K. Miller, N.S. Sariciftci, J.C. Hummelen, F. Wudl and A.J. Heeger, Physical Rev. B **54** (15) 10525 (1996).

563. Polarized Photoluminescence of Oligothiophenes in Nematic Liquid Crystalline Matrices, N.S. Sariciftci, U. Lemmer, D. Vacar, A.J. Heeger, and R.A.J. Janssen, Adv. Mater. **8**, (8) 651 (1996).
564. Soluble Polypyrrole as the Transparent Anode in Polymer Light Emitting Diodes, J. Gao, A. J. Heeger, J. Y. Lee and C. Y. Kim, Synth. Met. **82** 221 (1996).
565. Semiconducting Polymers as Materials for Device Applications, G.Yu, and A.J. Heeger, Vol. 1 Proceedings of the 23rd ICPS '96, World Scientific, Singapore, 1996.
566. Semiconducting Polymers: A New Class of Solid-State Laser Materials, F.Hide, M.A.Díaz-García, B.J.Schwartz, M.R.Andersson, Q.Pei, and A.J.Heeger, Science **273** 1833 (1996).
567. Imaging the Structure of the p-n Junction in Polymer Light-emitting Electrochemical Cells, D.J. Dick, A.J. Heeger, Y.Yang, and Q.Pei, Adv. Mtrls. **8** (12) 985 (1996).
568. Photoinduced Electron Transfer Between Conjugated Polymers and a Homologous Series of TCNQ Derivatives, A.J. Heeger, F. Wudl, N.S. Sariciftci, R.A.J. Janssen, and N. Martin, J. de Phys. (France) **6** (12) 2151 (1996).
569. Compact, Low Power Polymer-Based Optical Correlator, D. Vacar, A.J. Heeger, B.Volodin, B.Kippelen and N.Peyghambarian, Rev. Sci. Instrum. **68** (2) 119 (1997).
570. Ultrafast Studies of Stimulated Emission and Gain in Solid Films of Conjugated Polymers, B.J. Schwartz, F. Hide, M.R. Andersson, and A.J. Heeger, Chem. Phys. Lett. **265** 327 (1997).
571. Photophysics, Charge Separation and Associated Device Application of Conjugated Polymer/Fullerene Composites, N.S. Sariciftci and A.J. Heeger, Chapter 8, Handbook of Organic Conductive Molecules and Polymers (ed. J.S. Nalwa) John Wiley & Sons, NY, NY. 413, (1997).
572. Metal-Insulator Transition in Oriented Poly(p-phenylenevinylene), M. Ahlskog, Reghu M., A.J. Heeger, T.Noguchi, and T. Ohnishi, Physical Rev. B **55** (11) 6777 (1997).
573. Stimulated Emission and Lasing in Solid Films of Conjugated Polymers: Ultrafast Photophysics and Photon Confinement via Scattering, B. J. Schwartz, F. Hide, M. A. Diaz-Garcia, M. R. Andersson, and A. J. Heeger, Phil. Trans. R. Soc. Lond. Series A., **355** (1725) 775 (1997).
574. Morphology of Composites of Semiconducting Polymers Mixed with C<sub>60</sub>, C.Y.Yang and A.J.Heeger, Synth. Met. **83** 85 (1996).
575. Cyclic Voltammetry Studies of Light-Emitting Electrochemical Cells, Y.Greenwald, F.Hide, J.Gao, F.Wudl, and A.J.Heeger, J. Electrochem.Soc. **144** (4) L70 (1997).
576. Fullerene-Based Polymer Grid Triodes, J.McElvain, M.Keshavarz, H.Wang, F.Wudl, and A.J.Heeger, J. Appl. Phys. **81** (9) 6468 (1997).
577. Luminescent Polymers Promise Novel Lasers, F.Hide, M.A.Díaz-Garcia, and A.J.Heeger, Laser Focus World **33** (5) 151 (1997).

578. The Temperature Dependence of the Conductivity in the Critical Regime of the Metal-Insulator Transition in Conducting Polymers, M.Ahlskog, Reghu M., and A.J.Heeger, J. Phys.: Condens. Matter **9** 4145 (1997).
579. White Light from InGaN/Conjugated Polymer Hybrid Light Emitting Diodes, F.Hide, P.Kozodoy, S.P.DenBaars, and A.J.Heeger, Appl. Phys. Lett. **70** (20) 2664 (1997).
580. Ultrafast Photophysics and Stimulated Emission from Novel Conjugated Polymers and Blends, B.J. Schwartz, F. Hide, M.R. Andersson, and A.J. Heeger, Proceedings of the Ultrafast Phenomena X Conference, Springer Series in Chemical Physics (62) 268, Ed. W. Zinth and J. Fujimoto, Springer-Verlag Publishers, Berlin, (1996).
581. "Plastic" Lasers: Comparison of Gain Narrowing with a Soluble Semiconducting Polymer in Waveguides and Microcavities, M.A.Diaz-Garcia, F.Hide, B.J.Schwartz, M.D.McGehee, M.R.Andersson, and A.J.Heeger, Appl. Phys. Lett. **70** (24) 3191 (1997).
582. Polymer Light Emitting Diodes with Polyethylene Dioxythiophene Polystyrene Sulfonate as the Transparent Anode, Y.Cao, G.Yu, C.Zhang, R.Menon, and A.J.Heeger, Synth.Met. **87** 171 (1997).
583. Conjugated Polymers as Thin Film Solid-State Laser Materials: Photopumped Gain-Narrowing in Waveguides and Lasing in Microcavities, F.Hide, M.A.Diaz-García, B.J.Schwartz, and A.J.Heeger, ONR Review, **49** (2) 12 (1997).
584. Nanostructured Polymer Blends: Novel Materials with Enhanced Optical and Electronic Properties, C.Y.Yang, F.Hide, A.J.Heeger, and Y.Cao, Synth. Met. **84** 895 (1997).
585. Charge Transfer Range for Photoexcitations in Conjugated Polymer/Fullerene Bilayers and Blends, D.Vacar, E.S.Maniloff, D.W.McBranch, and A.J.Heeger, Physical Rev. B **56** (8) 4573 (1997).
586. Effects of Intermolecular Interactions on the Lowest Excited State in Luminescent Conjugated Polymers and Oligomers, J.Cornil, A.J.Heeger, and J.L. Bredas, Chem. Phys. Lett. **272** 463 (1997).
587. Efficient, Fast Response Light-emitting Electrochemical Cells: Electroluminescent and Solid Electrolyte Polymers with Interpenetrating Network Morphology, Y.Cao, G.Yu, A.J.Heeger, and C.Y.Yang, Appl.Phys.Lett. **68** (23) 3218 (1996).
588. New Developments in the Photonic Applications of Conjugated Polymers, F.Hide, M.A.Diaz-Garcia, B.J. Schwartz, and A.J. Heeger, Acc. Chem. Res. **30** (10) 430 (1997).
589. Near IR Photoluminescence in Mixed Films of Conjugated Polymers and Fullerenes, K.Hasharoni, M.Keshavarz A.Sastre R.González, C.Bellavia-Lund, Y.Greenwald, T.Swager, F.Wudl, and A.J.Heeger, J.Chem.Phys. **107** (7) 2308 (1997).
590. Planar Light-emitting Devices Fabricated with Luminescent Electrochemical Polyblends, G. Yu, Q. Pei, and A.J. Heeger, J. Appl. Phys. **70** (8) 934 (1997).

591. Electronic Transport in Doped Poly(3,4-ethylenedioxythiophene) Near the Metal-insulator Transition, A.Aleshin, R.Kiebooms, Reghu M., and A.J.Heeger, Synth. Met. **90** 61 (1997).
592. Ultrafast Holography Using Charge-transfer Polymers, E.S.Maniloff, D.Vacar, D.W. McBranch, H-L. Wang, B.R. Mattes, J. Gao, and A.J. Heeger, Optics Comm. **141** 243 (1997).
593. Polymer Light-Emitting Electrochemical Cells with Frozen p-i-n Junctions, J.Gao, G.Yu, and A.J.Heeger, Appl. Phys. Lett. **71** (10) 1293 (1997).
594. The Electrochemistry of Poly(3-octylthiophene) Based Light-emitting Electrochemical Cells, Y.Greenwald, F.Hide, and A.J.Heeger, J.Electrochem.Soc. **144** (9) L241 (1997).
595. Recent Progress in Conducting Polymers: Opportunities for Science and Opportunities for Technology, A.J. Heeger, P. Smith, A. Fizazi, J. Mounton, K. Pakbaz, and S. Rughooputh, Synth. Met. **41** (3) 1027 (1991).
596. Metallic Conductivity at Low Temperatures in Poly(3,4-ethylenedioxythiophene) Doped with PF<sub>6</sub>, A.Aleshin, R.Kiebooms, Reghu M., F.Wudl, and A.J.Heeger, Physical Rev.B **56** (7) 3659 (1997).
597. Metal-Insulator Transition in Doped Conducting Polymers, Reghu M., C.O. Yoon, D. Moses, and A.J. Heeger, T.A.Skotheim, et al., (eds), Handbook of Conducting Polymers, 2nd Edition, 27-84, Marcel Dekker, Inc., Publ. (1998).
598. Photoinduced Changes in the Complex Index of Refraction in Conjugated Polymer/Fullerene Blends, E.K.Miller, K.Lee, K.Hasharoni, J.C.Hummelen, F.Wudl, and A.J.Heeger, J. Chem. Phys. **108** (4) 1390 (1998).
599. Light-emitting Electrochemical Cells with Crown Ether as Solid Electrolyte, Y.Cao, Q.Pe, M.R.Andersson, G.Yu, and A.J.Heeger, J.Electrochem. Soc. **144** (12) L317 (1997).
600. Semiconducting Polymers as Materials for Photonic Devices, A.J. Heeger, and M.A. Diaz-Garcia, Curr. Opinion. Solid St. & Mtrls Sci. **3** (1) 16 (1998).
601. Conjugated Polymers as Solid-State Laser Materials, F. Hide, B.J. Schwartz, M.A. Diaz-Garcia, and A. J. Heeger, Synth. Met. **91** 35 (1997).
602. Nature of the Primary photo-excitations in Poly(arylene-vinylenes): Bound Neutral Excitons or Charged Polaron Pairs, A.J. Heeger; N.S. Sariciftci (ed), Primary Photoexcitations in Conjugated Polymers, 20-50, World Scientific Publ. Co. (1998).
603. Temperature-independent Photoconductivity in Thin Films of Semiconducting Polymers: Photocarrier Sweep-out Prior to Deep Trapping, D. Moses, J. Wang, G. Yu, and A.J. Heeger, Physical Rev.Lett. **80** (12) 2685 (1998).
604. Semiconducting Polymer Distributed Feedback Lasers, M.D.McGehee, M.A.Diaz-Garcia, F.Hide, E.K.Miller, B.J.Schwartz, D.Moses, and A.J.Heeger, Appl. Phys. Lett. **72** (13) 1536 (1998).

605. Microstructure of Thin Films of Photoluminescent Semiconducting Polymers, C.Y. Yang, F. Hide, M.A. Díaz-García, A.J. Heeger, and Y. Cao, Polymer **39** (11) 2299 (1998).
606. Polymer Light-Emitting Electrochemical Cells with Frozen p-i-n Junction at Room Temperature, G. Yu, Y. Cao, M. Andersson, J. Gao, and A.J. Heeger, Adv. Mater. **10** (5) 385 (1998).
607. AC Impedance of Polymer Light-emitting Electrochemical Cells and Light-emitting Diodes: A Comparative Study, Y. Li, J. Gao, G. Yu, Y. Cao, and A.J. Heeger, Chem. Phys. Lett. **287** 83 (1998).
608. Nature of the Metallic State in Conducting Polypyrrole, K. Lee, E. K. Miller, A. N. Aleshin, Reghu M., A.J. Heeger, J.-H. Kim, C.-O. Yoon, and H. Lee, Adv. Mater **10** (6) 456 (1998).
609. Efficient Blue Light-emitting Diodes from a Soluble Poly (*para*-phenylene): Internal Field Emission Measurement of the Energy Gap in Semiconducting Polymers, Y. Yang, Q. Pei, and A.J. Heeger, Synth. Met. **78** (3) 263 (1996).
610. Measurement of the Energy Gap in Semiconducting Polymers Using the Light-emitting Electrochemical Cell, G. Yu, Y. Yang, Y. Cao, Q. Pei, C. Zhang, and A.J. Heeger, Chem. Phys. Lett. **259** (3-4) 465 (1996).
611. Transport Properties of Poly(3,4-ethylenedioxythiophene)/Poly(styrenesulfonate), A.N. Aleshin, S.R. Williams, and A.J. Heeger, Synth. Met. **94** (2) 173 (1998).
612. Polymer Light-Emitting Electrochemical Cells: A Theoretical Study of Junction Formation under Steady-State Conditions, J.A. Manzanares, H. Reiss, and A.J. Heeger, J. Phys. Chem. B. **102** (22) 4327 (1998).
613. Spatial Frequency Filtering Using Non-Delineated Thin Films, J. McElvain, J.D. Langan, and A.J. Heeger, Proceedings of the IEEE International Conference on Image Processing, Vol. III, 380 (1997).
614. The Optoelectronic Properties of Fullerene - Conjugated Polymer - Conventional Polymers Guest-Host Systems, C.J. Brabec, N.S. Sariciftci, W. Graupner, G. Leising, F. Wudl, A.J. Heeger, Proceedings of the XIth International Winterschool on Electronic Properties of Novel Materials, Molecular Nanostructures, World Scientific Co. Pte. Ltd., (1997).
615. Interaction Range for Photoexcitations in Luminescent Conjugated Polymers, D. Vacar, A. Dogariu, and A.J. Heeger, Adv. Mater. **10** (9) 669 (1998).
616. Polymer p-i-n Junction Photovoltaic Cells, J. Gao, G. Yu, and A.J. Heeger, Adv. Mater. **10** (9) 692 (1998).
617. Efficient, Low Operating Voltage Polymer Light-Emitting Diodes with Aluminum as the Cathode Material, Y. Cao, G. Yu, and A.J. Heeger, Adv. Mater. **10** (12) 917 (1998).
618. Linear and Nonlinear Optical Spectra of Polyaxomethines Fabricated by Chemical Vapor Deposition, J. McElvain, S. Tatsuura, F. Wudl, and A.J. Heeger, Synth. Met. **95** (2) 101 (1998).

619. Ultrafast Gain and Excited State Absorption in Luminescent Polymers: Pump Wavelength Invariance, D.Vacar, A.Dogariu, and A.J.Heeger, Chem. Phys. Lett. **290** 58 (1998).
620. Complex Admittance Measurements of Polymer-Light-emitting Electrochemical Cells: Ionic and Electronic Contributions, G.Yu, Y.Cao, C.Zhang, Y-F. Li, J.Gao and A.J. Heeger, Appl. Phys. Lett. **73** (1) 111 (1998).
621. Light Emission from Semiconducting Polymers: Light-Emitting Diodes, Light-emitting Electrochemical Cells, Lasers, and White Light for the Future, A.J.Heeger, Sol. State Comm. **107** (11) 673 (1998).
622. Amplified Spontaneous Emission from Photopumped Films of a Conjugated Polymer, M.D. McGehee, R. Gupta, S. Veenstra, E. K. Miller, M.A. Diaz-Garcia, and A. J. Heeger, Physical Rev. B. **58** (11) 7035 (1998).
623. Gallium Nitride/Conjugated Polymer Hybrid Light Emitting Diodes: Performance and Lifetime, C. Zhang, and A.J. Heeger, J. Appl. Phys. **84** (3) 1579 (1998).
624. Picosecond Time-Resolved Spectroscopy of the Excited State in a Soluble Derivative of Poly(phenylene vinylene): Origin of the Bimolecular Decay, A.Dogariu, D.Vacar, and A.J.Heeger, Physical Rev. B **58** (16) 10218 (1998).
625. A New Blue Light-Emitting Polymer Containing Substituted Thiophene and an Arylene-1,3,4-oxadiazole Moiety, W.Huang, H.Meng, W-L.Yu, J.Gao, and A.J.Heeger, Adv.Mater. **10** (8) 593(1998).
626. Ultrafast Nonlinear Optical Properties of Charge-transfer Polymers: Transient Holography and Transient Absorption Studies, D.W.McBranch, E.S.Maniloff, D.Vacar, and A.J.Heeger, J.Nonlin. Optical Physics & Materials **7** (3) 313 (1998).
627. Polymer-polymer Rectifying Heterojunction Based on Poly(3,4-dicyanothiophene) and MEH-PPV, Y.Greenwald, M.Fourmigué, X.Xu, G.Srdanov, C. Koss, F.Wudl, and A.J.Heeger, J. Poly. Sci. **36**, 3115 (1998).
628. Large-Area, Full-Color Image Sensors Made with Semiconducting Polymers, G. Yu, J. Wang, J. McElvain, A.J. Heeger, Adv. Mater. **10** (17) 1431 (1998).
629. AC Impedance of Frozen Junction Polymer Light-emitting Electrochemical Cells, Y.Li, J.Gao, D.Wang, G.Yu, Y.Cao, and A.J.Heeger, Syn.Met. **97** 191 (1998)..
630. Low Threshold Amplified Spontaneous Emission in Blends of Conjugated Polymers, R.Gupta, M.Stevenson, A.Dogariu, H.Wang, M.D.McGehee, J.Y.Park, V.Srdanov, and A.J.Heeger, Appl. Phys. Lett. **73** (24) 3492 (1998).
631. Direct Observation of Junction Formation in Polymer Light-Emitting Electrochemical Cells, J.Gao, A.J. Heeger, I.H. Campbell, and D.L. Smith, Physical Rev. B. Rapid Comm. **59** (4) R2482 (1999).
632. Improved Quantum Efficiency for Electroluminescence in Semiconducting Polymers, Y. Cao, I.D. Parker, G. Yu, C. Zhang, and A.J. Heeger, Letters to Nature **397** 414 (1999).

- 633 Time-Resolved Förster Energy Transfer in Polymer Blends, A. Dogariu, R. Gupta, and A.J. Heeger, Syn.Met. 100 95 (1999).
- 634 Polarized Ultraviolet Absorption of Highly Oriented Poly (2-methoxy, 5-(2'-ethyl)-hexyloxy) paraphenylene vinylene, E.K. Miller, D. Yoshida, C.Y. Yang, and A.J. Heeger, Physical Rev. B., 59 (7) 4661 (1999).
- 635 Electrochemical Properties of Luminescent Polymers and Polymer Light-emitting Electrochemical Cells, Y.F. Li., Y. Cao, J. Gao, D. Wang, G. Yu, and A.J. Heeger, Syn. Met. 99 243 (1999).
- 636 Reflectance of Conducting Poly(3,4-ethylenedioxythiophene), Y. Chang, K. Lee, R. Kiebooms, A. Aleshin and A.J. Heeger, Syn.Met. 105 203 (1999).
- 637 Polarized Ultraviolet Absorption by an Oriented Derivative of Poly(*para*-phenylene), E.K. Miller, G.S. Maskel, C.Y. Yang, and A.J. Heeger, Physical Rev. B. 60 (11) 8028 (1999).
- 638 Excited State Spectral and Dynamics Studies of MEH-PPV, A. Dogariu, D. Vacar, A.J. Heeger, Syn. Met. 101 202 (1999).
- 639 Efficient, Low Operating Voltage Polymer Light-Emitting Diodes with Aluminum as the Cathode Material, Syn. Met. 102 881 (1999).
- 640 Amplified Spontaneous Emission from an MEH-PPV film in Cylindrical Geometry, J.Y. Park, V.I. Srdanov, A.J. Heeger, C.H. Lee, and Y.W. Park, Syn. Met. 106 35 (1999).
- 641 Blue Polymer Light-Emitting Diodes from Poly(9,9-dihexylfluorene-alt-co-2, 5-didecyloxy-para-phenylene), W.Yu, Y. Cao, J. Pei, W. Huang, A.J. Heeger, App. Phys. Letts. 75 (21) 3270 (1999).
- 642 Conjugated Copolymers of 2-Methoxy-5-2'-ethyl-hexyloxy-1,4-phenylenevinylene and 2,5-Dicyano-1,4-phenylenevinylene as Materials for Polymer Light Emitting Diodes, W.-L. Yu, Y. Xiao, J. Pei, Z. Chen, W. Huang, and A.J. Heeger, Syn. Met. 106 (3) 165 (1999).
- 643 New Efficiency Blue Light Emitting Polymer for Light Emitting Diodes, W.-L. Yu, J.Pei, Y. Cao, W. Huang and A.J. Heeger, Chem. Comm. 18 1837 (1999).
- 644 Narrow Bandwidth Luminescence from Blends with Energy Transfer from Semiconducting Conjugated Polymers to Europium Complexes, M.D. McGehee, T. Bergstedt, C. Zhang, A.P.Saab, M.B. O'Regan, G.C. Bazan, V.I. Srdanov, and A.J. Heeger, Adv. Materials, 11 (16) 1349 (1999).
- 645 Poly(1,4-bis[2-(4-hexylthiophene)]-2,5-dimethylphenylene): A New Conjugated Electroluminescent Polymer, J. Pei, W.-L. Yu, W. Huang and A.J. Heeger, Syn.Met. 105 43 (1999).
- 646 Polymer Light-Emitting Electrochemical Cells with Frozen Junctions, J. Gao, Y. Li, G. Yu, A.J. Heeger, J. of Applied Physics 86 (8) 4594 (1999).

- 647 Density Wave Charge Dynamics in Conducting Polypyrrole, K. Lee, R. Menon, A.J. Heeger, K.H. Kim, Y.H. Kim, A. Schwartz, M. Dressel, and G. Grüner, Physical Rev. B **61** 3 1635 (2000).
- 648 Carrier Density and Quantum Efficiency Measurements in Conjugated Polymers: Ultrafast Photoinduced IR/V Absorption, D. Moses, A. Dogariu, A.J. Heeger, Thin Solid Films **363** 68 (2000).
- 649 Microstructure of Gel-Processed Blends of Conjugated Polymer and Ultrahigh Molecular Weight Polyethylene, C.Y. Yang, A.J. Heeger, and Y. Cao, Polymer **41** 4113 (2000).
- 650 A Novel Triarylamine-based Conjugated Polymer and Its Unusual Light-Emitting Properties, W.-L. Yu, J. Pei, W. Huang, and A.J. Heeger, Chem. Commun. 681 (2000).
- 651 Ultrafast Photoinduced Charge Generation in Conjugated Polymers, D. Moses, A. Dogariu, and A.J. Heeger, Chem.Phys.Lett. **316** 356 (2000).
- 652 Making Sense of Polymer-Based Biosensors, Commentary, P.S. Heeger and A.J. Heeger, PNAS **96** (22) 12219 (1999).
- 653 Tensile Drawing Induced Symmetry in Poly(p-phenylene vinylene) Films, C.Y. Yang, K. Lee, and A.J. Heeger, J. of Mol. Structure **521** 315 (2000).
- 654 Reflectance Anisotropy Spectroscopy of Oriented Films of Semiconducting Polymers, E.K. Miller, K. Hingerl, C. Brabec, A.J. Heeger and N.S. Sariciftci, J. Chem Phys. **113**, (2) 789 (2000).
- 655 Photophysics of Poly(2,3-diphenyl-5-hexyl-p-phenylene vinylene), A. Dogariu, A.J. Heeger, H. Wang, Phys Rev. B **61** (23) 16183 (2000).
- 656 Ultrafast Detection of Charged Photocarriers in Conjugated Polymers. D. Moses, A. Dogariu, A.J. Heeger, Physical Rev. B **61** (14) 9373 (2000).
- 657 Photoluminescence of Water-Soluble Conjugated Polymers: Origin of Enhanced Quenching by Charge Transfer, D. Wang, J. Wang, D. Moses, G.C. Bazan and A.J. Heeger, Macromolecules **33** (N14) 5153 (2000).
- 658 Ultrathin Layer Alkaline Earth Metals As Stable Electron-Injecting Electrodes For Polymer Light Emitting Diodes. Y. Cao, G. Yu, I.D. Parker, And A.J. Heeger, J. App.Phys. **88** (6) 3618 (2000).
- 659 Spiro-Functionalized Polyfluorene Derivatives as Blue light-emitting Materials. W. Yu, J. Pei, W. Huang, and A.J. Heeger, Adv. Mat. **12** (11) 828 (2000).
- 660 A Novel Series of Efficient Thiophene-Based Light-Emitting Conjugated Polymers and Application in Polymer Light-emitting Diodes, J. Pei, W.-L. Yu, W. Huang, A.J. Heeger, Macromolecules **33** (7) 2462 (2000).
- 661 Polarized Ultraviolet Absorption by a Highly Oriented Dialkyl Derivative of poly(paraphenylene vinylene), E.K. Miller, C.Y. Yang, A.J. Heeger, PhysRev.B **62** (11) 6889 (2000).

- 662 The Synthesis and Characterization of an Efficient Green Electroluminescent Conjugated Polymer: Poly[2,7-bis(4-hexylthienyl)-9,9-dihexylfluorene], J. Pei, W.-L. Yu, W. Huang, A.J. Heeger, Chem.Comm. (17) 1631 (2000).
- 663 Large Area, Full-color, Digital Image Sensors Made with Semiconducting Polymers, G. Yu, G. Srdanov, J. Wang, H. Wang, Y. Cao, A.J. Heeger, Syn.Met. 111 133 (2000).
- 664 Anisotropic Conductivity in Polyaniline and Image Processing Applications, M. Costolo and A.J. Heeger, Syn.Met. 114 (1) 85 (2000).
- 665 Photovoltaic Cells and Photodetectors made with Semiconducting Polymers: Recent Progress, G. Yu, G. Srdanov, H. Wang, Y. Cao and A.J. Heeger, *Photonics West Conference Symposium*, Proc. SPIE Vol. 3939, p. 118 Organic Photonic Materials and Devices II, Eds D.D. Bradley; B. Kippelen; (2000).
- 666 Time-Resolved Förster Energy Transfer in Molecular and Polymeric Guest-Host Systems, A.Dogariu, R. Gupta, A.J. Heeger, H. Wang, H. Murate and Z.H.Kafafi, Proc. SPIE Vol. 3797, p.38-46, "Organic Light-Emitting Materials and Devices III", Ed. Z. H. Kafafi (1999).
- 667 Time-Resolved Photocarrier Generation in Conjugated Polymers, A.Dogariu, D. Moses, A.J. Heeger, Proc. SPIE Vol. 3797, p.417-422, "Organic Light-Emitting Materials and Devices III", Ed. Z. H. Kafafi (1999).
- 668 Semiconducting (Conjugated) Polymers as Materials for Solid-State Lasers, M. D. McGehee, A.J. Heeger, Adv. Mat. 12 (11) 828 (2000)
- 669 Polarized Doping-induced Infrared Absorption in Highly Oriented Conjugated Polymers, E.K. Miller, C.J. Brabec, H. Neugebauer, A.J. Heeger and N.S. Sariciftci, Chem.Phys.Letts. 335(N1-2) 23 ( 2001).
- 670 Photoluminescence Quenching Of Conjugated Macromolecules By Bipyridinium Derivatives In Aqueous Media: Charge Dependence, D.L.Wang, J. Wang, D. Moses, G.C. Bazan, A.J. Heeger, Langmuir 17 (N4) 1262 (2001).
- 671 Mechanism of carrier generation and recombination in conjugated polymers. D. Moses, A. Dogariu, A.J. Heeger, Syn. Met., 116 19 (2001).
- 672 Color Characterization of Large Area Polymer Image Sensors, J. Wang, G. Yu, G. Srdanov, and A.J. Heeger, Organic Electronics 1 33 (2000).
- 673 "Twenty Years of Conducting Polymers: From Fundamental Science to Applications", Chapter 2, pp. 98-205, Advances In Synthetic Metals: Twenty Years of Progress In Science and Technology, eds P. Bernier, S. Lefrant, and G. Bidan, Amsterdam, New York, Elsevier, (1999).
- 674 Photoconductivity in Semiconducting Polymers, A.J. Heeger, and D. Moses, "Conjugated Oligomers, Polymers, and Dendrimers : from Polyacetylene to DNA : Proceedings of the Fourth Francqui Colloquium, 1998", ed. J.-L. Brédas, Francqui Scientific Library, 4, Paris : De Boeck Université, (1999).
- 675 Crystal Structures of Tetrakis(4,4'-(2,2-diphenyl-vinyl)-1,1'-biphenyl)methane: Transmission Electron Microscopy and X-Ray Diffraction, C.Y. Yang, S. Wang, M.R. Robinson, G. C. Bazan and A.J. Heeger, Chem. of Mat. 13 (7) 2342 (2001).

- 676 Dynamic Quenching of 5-(2'-Ethyl-hexyloxy)-*p*-Phenylene Vinylene (MEH-PPV) by Charge Transfer to a C<sub>60</sub> Derivative in Solution, J. Wang, D. Wang, D. Moses and A.J. Heeger, J. of App. Polymer Sci. **82** 2553 (2001).
- 677 Semiconducting and metallic polymers: The fourth generation of polymeric materials, A.J. Heeger, J. Phys. Chem. B **105** (N36) 8475 (2001).
- 678 Ultrafast photogeneration of charged polarons in conjugated polymer, P.B. Miranda, D. Moses, D. Wang, A.J. Heeger, Phys Rev B **6408** (N8) 1201 (2001).
- 679 Disorder-induced metal-insulator transition in conducting polymers, A.J. Heeger, J. of Superconductivity, **14** (N2) 261 (2001)
- 680 Water-soluble conjugated oligomers: Effect of chain length and aggregation on photoluminescence-quenching efficiencies, B.S. Gaylord, S.J. Wang, A.J. Heeger, G.C. Bazan, J. Am Chem Soc. **123** (26) 6417 (2001).
- 681 Electric field induced ionization of the exciton in poly(phenylene vinylene), D. Moses, J. Wang, A.J. Heeger, N. Kirova, S. Brazovski, Syn Met. **119** 503 (2001).
- 682 Photoluminescence quenching of water-soluble conjugated macromolecule by bipyridinium derivatives, D.L. Wang, J. Wang, D. Moses, G.C. Bazan, A.J. Heeger, J.H. Park, Y.W. Park, Syn Met. **119** (N1-3 SI) 578 (2001).
- 683 Static and dynamic photoluminescence (PL) quenching of polymer: Quencher systems in solutions, J. Wang, D. Wang, E.K. Miller, D. Moses, A.J. Heeger, Syn Met. **119** (N1-3 SI) 591 (2001).
- 684 Ultrafast charge photogeneration in conjugated polymers, P.B. Miranda, D. Moses, A.J. Heeger, Syn Met. **119** (N1-3 SI) 619 (2001).
- 685 Density wave-like charge dynamics in conducting polypyrrole, K.H. Lee, R. Menon, A.J. Heeger, Syn Met. **119** (N1-3 SI) 653 (2001).
- 686 Thiophene-based conjugated polymers for light-emitting diodes: Effect of aryl groups on photoluminescence efficiency and redox behavior, J. Pei, W.L. Yu, J. Ni, Y.H. Lai, W. Huang, A.J. Heeger, Macromolecules, **34** (N21) 7241 (2001).
- 687 Semiconducting and metallic polymers: The fourth generation of polymeric materials (Nobel Lecture), A.J. Heeger, Angew. Chem. Int. Ed. **40** (N14) 2591 (2001).
- 688 Semiconducting and metallic polymers: The fourth generation of polymeric materials, A.J. Heeger, Chinese Journal of Polymer Science **19** (N6) (2001).
- 689 Editorial, A.J. Heeger, Syn Met **100** (N1) (1999).
- 690 Singlet exciton binding energy in poly(phenylene vinylene), D. Moses, J. Wang, A.J. Heeger, N. Kirova, S. Brazovski, PNAS **98** (N24) 13496-13500 (2001).
- 691 Semiconducting and metallic polymers: The fourth generation of polymeric materials, A.J. Heeger, Les Prix Nobel (2000).
- 692 Semiconducting and metallic polymers: the fourth generation of polymeric materials, A.J. Heeger, Current Applied Physics **1** 247-267 (2001).

- 693 Small angle neutron scattering (SANS) studies of a conjugated polyelectrolyte in aqueous solution, D. Wang, J. Lal, D. Moses, G.C. Bazan, A.J. Heeger, Chemical Physics Letters **348** 411-415 (2001).
- 694 Semiconducting and metallic polymers: the fourth generation of polymeric materials (Nobel lecture), A.J. Heeger, Rev. Mod. Phys. **73** (N3) 681-718 (2001).
- 695 Conformation of a Conjugated Polyelectrolyte in Aqueous Solution: Small Angle Neutron Scattering, D. Wang, D. Moses, G.C. Bazan, A.J. Heeger, J. Lal, J. Macromol. Sci.—Pure Appl. Chem. **A38** (12) 1175-1189 (2001).
- 696 Semiconducting and metallic polymers: the fourth generation of polymeric materials, A.J. Heeger, Syn Met **125** 23-42 (2002).
- 697 Biosensors from conjugated polyelectrolyte complexes, D. Wang, X. Gong, P.S. Heeger, F. Rininsland, G.C. Bazan, A.J. Heeger, PNAS **99** (N1) 49-53 (2002).
- 698 The role of electron photoemission in the ‘photoconductivity’ of semiconducting polymers, D. Moses, C. Soci, P. Miranda, A.J. Heeger, Chem. Phys. Lett. **350** 531-536 (2001).
- 699 The Plastic-Electronics Revolution, A.J. Heeger, Information Display **18** (N2) 18-20 (2002).
- 700 High-Efficiency Fluorescence Quenching of Conjugated Polymers by Proteins, C. Fan, K.W. Plaxco, A.J. Heeger, J. Am. Chem. Soc. **124** (N20) 5642-5643 (2002).
- 701 High-Efficiency Polymer-Based Electrophosphorescent Devices, X. Gong, M.R. Robinson, J.O. Ostrowski, D. Moses, G.C. Bazan, A.J. Heeger, Adv. Mater. **14** (N8) 581-585 (2002).
- 702 Electrochemical Light Emitting Cells from Semiconducting Polymers, A.J. Heeger, J. Gao, “Encyclopedia of Materials: Science and Technology”, ed. G. Hadziannou, 6 2525-2531 (2001) ISBN 0-08-043152.
- 703 Structural phase transformation in tetrakis (4,4’-(2,2-diphenyl-vinyl)-1,1’-biphenyl)methane, C.Y. Yang, S. Wang, M.R. Robinson, G.C. Bazan, A.J. Heeger, Materials Chemistry and Physics **76** 64-68 (2002).
- 704 Excitation spectrum for ultrafast photogeneration of charged solitons in polyacetylene, P.B. Miranda, D. Moses, Y.W. Park, A.J. Heeger, Physical Review B **66** 125202 (2002).
- 705 Optical investigation of intra and interchain charge dynamics in conducting polymers, K. Lee, A.J. Heeger, Synthetic Metals **128** 279-282 (2002).
- 706 Fast pulsed electroluminescence from polymer light-emitting diodes, J. Wang, R.G. Sun, G. Yu, A.J. Heeger, J. of Applied Physics **91** (N4) 2417-2422 (2002).
- 707 Mechanism of Carrier Photoexcitation in Semiconducting Polymers: The Role of Electron Photoemission in “Photoconductivity” Measurements, D. Moses, P.B. Miranda, C. Soci, A.J. Heeger, Mat. Res. Soc. Symp. Proc **665** 3-16 (2001).
- 708 Spectroscopy and Electrochemistry of the Covalent Pyridine-Cytochrome c Complex and a Pyridine-Induced “Alkaline-like” Conformation, C. Fan, B. Gillespie, G. Wang, A.J. Heeger, K.W. Plaxco, J. Phys. Chem B **106** 11375-11383 (2002).

- 709 Ultrafast studies of the photophysics of semiconducting polymers, D. Moses, P.B. Miranda, A.J. Heeger, Proceedings of the International Summer School of Physics "Enrico Fermi" Course CXLIX, pp. 285-298, eds. V.M. Agranovich, G.C. La Rocca, IOS Press, Amsterdam (2002).
- 710 The Critical Regime of the Metal-Insulator Transition in Conducting Polymers: Experimental Studies, A.J. Heeger Physica Scripta T102 30-35 (2002).
- 711 Red electrophosphorescence from polymer doped with iridium complex, X. Gong, J.C. Ostrowski, G.C. Bazan, D. Moses, A.J. Heeger, Applied Physics Letters **81** (N20) 3711-3713 (2002).
- 712 Temperature dependence of amplified spontaneous emission in conjugated polymers, R. Gupta, J.Y. Park, V.I. Srdanov, A.J. Heeger, Synthetic Metals **132** 105-107 (2002).
- 713 Stabilization of Semiconducting Polymers with Silsesquioxane, S. Xiao, M. Nguyen, X. Gong, Y. Cao, H. Wu, D. Moses, A.J. Heeger, Advanced Functional Materials **13** (N1) 25-29 (2003).
- 714 Electrophosphorescence from a Conjugated Copolymer Doped with Iridium Complex: High Brightness and Improved Operational Stability, X. Gong, J.C. Ostrowski, G.C. Bazan, D. Moses, A.J. Heeger, M.S. Liu, A.K.-Y. Jen, Adv. Mater **15** (N1) 45-49 (2003).
- 715 Photoluminescence Quenching of Water-soluble Conjugated Polymers by Viologen Derivatives: Effect of Hydrophobicity, C. Fan, T. Hirasu, K.W. Plaxco, A.J. Heeger, Langmuir **19** 3554-3556 (2003).
- 716 Beyond superquenching: hyper-efficient energy transfer from conjugated polymers to gold nanoparticles, C. Fan, S. Wang, J.M. Hong, G.C. Bazan, K.W. Plaxco, A.J. Heeger, Proc. Nat. Acad. Sci. **100** (N11) 6297-6301 (2003).
- 717 Single-Component Light-Emitting Electrochemical Cell with Improved Stability, L. Edman, M. Pauchard, B. Liu, G. Bazan, D. Moses, A.J. Heeger, Appl. Phys. Lett. **82** (N22) 3961-3963 (2003).
- 718 Stabilized Blue Emission from Polyfluorene-based Light Emitting Diodes: Elimination of Fluorenone Defects, X. Gong, P.K. Iyer, D. Moses, G.C. Bazan, A.J. Heeger, S.S. Xiao, Adv. Func. Mater. **13** (N4) 325-330 (2003).
- 719 High performance polymer light-emitting diodes fabricated with a polymer hole injection layer, X. Gong, S. Liu, A.K.-Y. Jen, D. Moses, A.J. Heeger, Appl. Phys. Lett. **83** (N1) 0003-6951 (2003).
- 720 Electrochemical interrogation of conformational changes as a reagentless method for the sequence-specific detection of DNA, C. Fan, K.W. Plaxco, A.J. Heeger, Proc. Nat. Acad. Sci. **100** (N16) 9134-9137 (2003).
- 721 Electrophosphorescence from a Polymer Guest-Host System with an Iridium Complex as Guest: Forster Energy Transfer and Charge Trapping, X. Gong, J.C. Ostrowski, D. Moses, G.C. Bazan, A.J. Heeger, Adv. Func. Mater. **13** (N6) 439-444 (2003).
- 722 Increased mobility from regioregular poly(3-hexylthiophene) field-effect transistors, G. Wang, J. Swensen, D. Moses, A.J. Heeger, J. of Applied Physics **93** (N10) 6137-6141 (2003).
- 723 Influence of the anion on the kinetics and stability of a light-emitting electrochemical cell, L. Edman, D. Moses, A.J. Heeger, Synthetic Metals **138** (N3) 441-446 (2003).

- 724 Time-resolved measurements of photoinduced electron transfer from polyfluorene to C60, Q.-H. Xu, D. Moses, A.J. Heeger, Physical Review B **67** (24) 245417 (2003).
- 725 Light amplification in polymer field effect transistor structures, M. Pauchard, J. Swensen, D. Moses, A.J. Heeger, J. of Applied Physics **94** (N5) 3543-3548 (2003).
- 726 Origin of efficient light emission from a phosphorescent polymer/organometallic guest-host system, R.A. Negres, X. Gong, J.C. Ostrowski, G.C. Bazan, D. Moses, A.J. Heeger, Physical Review B **68** (N11) 115209 (2003).
- 727 Crossover to negative dielectric response in the low-frequency spectra of metallic polymers, K. Lee, A.J. Heeger, Physical Review B **68** (N3) 035201 (2003).
- 728 Base-Pair Stacking in Oriented Films of DNA-Surfactant Complex, C. Yang, D. Moses, A.J. Heeger, Adv. Mater. **15** (N16) 1364-1367 (2003).
- 729 Electrochemical Light Emitting Cells from Semiconducting Polymers, A.J. Heeger and J. Gao, in Encyclopedia of Materials: Science and Engineering, Ed. K.H. Jergen Buschow (Elsevier, Amsterdam) p. 2527 (2001).
- 730 Direct observation of a time-delayed intermediate state generated via exciton-exciton annihilation in polyfluorene, Q.-H. Xu, D. Moses, A.J. Heeger, Physical Review B **68** (N17) 174303 (2003).
- 731 High-Performance Polymer-Based Electrophosphorescent Light Emitting Diodes, X. Gong, J.C. Ostrowski, D. Moses, G.C. Bazan, A.J. Heeger, J. of Polym. Sci. Polym. Phys. **41** (N21) 2691-2705 (2003).
- 732 Effects of structural disorder and temperature on the distribution of exciton binding energy in poly(phenylene vinylene) films, D. Moses, R. Schmechel, A.J. Heeger, Synthetic Metals **139** (N3) 807-810 (2003).
- 733 Optical amplification of the cutoff mode in planar asymmetric polymer waveguides, M. Pauchard, M. Vehse, J. Swensen, D. Moses, A.J. Heeger, Appl. Phys. Lett. **83** (N22) 4488-4490 (2003).
- 734 Poly(3-hexylthiophene) Field-effect Transistors with High Dielectric Constant Gate Insulator, G. Wang, D. Moses, A.J. Heeger, J. of Applied Physics **95** (N1) 316-322 (2004).
- 735 DNA detection using water-soluble conjugated polymers and peptide nucleic acid probes, B.S. Gaylor, A.J. Heeger, G.C. Bazan, PNAS **99**, (N17) 10954-10957.
- 736 Delayed emission from recombination of charge separated pairs on polyfluorene chains in dilute solution, Q.-H. Xu, D. Moses, A.J. Heeger, Physical Review B, **69** (11) 113314 (2004).
- 737 Excitation energy transfer from polyfluorene to fluorenone defects, X. Gong, D. Moses, A.J. Heeger, Synthetic Metals **141** (N1-2) 17-20 (2004).
- 738 End-Capping as a Method for Improving Carrier Injection in Electrophosphorescent Light-Emitting Diodes, X. Gong, W. Ma, J.C. Ostrowski, K. Bechgaard, G.C. Bazan, A.J. Heeger, S. Xiao, D. Moses, Adv. Func. Mater. **14** (N4) 393-397 (2004).
- 739 White Electrophosphorescence from Semiconducting Polymer Blends, X. Gong, W. Ma, J.C. Ostrowski, G.C. Bazan, D. Moses, A.J. Heeger, Adv. Mater. **16** (N7) 615-619 (2004).
- 740 Planar polymer light-emitting device with fast kinetics at a low voltage, L. Edman, M. Pauchard, D. Moses, A.J. Heeger, J. of Applied Physics **95** (8) 4357-4361 (2004).

- 741 Toward improved and tunable polymer field-effect transistors, L. Edman, J. Swensen, D. Moses, A.J. Heeger, Appl. Phys. Lett. **84** (19) 3744-3746 (2004).
- 742 White Light Electrophosphorescence from Polyfluorene-based Light Emitting Diodes: Utilization of Fluorenone Defects, X. Gong, D. Moses, A.J. Heeger, J. Phys. Chem. B **108** (25) 8601-8605 (2004).
- 743 “Gene Sensors”: The Detection of Specific Targeted Sequences on DNA, A.J. Heeger, The Third International Symposium on Slow Dynamics in Complex Systems, Institute of Fluid Science, Sendai, Japan, (2004).
- 744 Influence of gate dielectrics on electrical properties of F8T2 polyfluorene thin film transistors, J. Swensen, J. Kanicki, A.J. Heeger, Proc. SPIE Vol. 5217, p. 159-166 Organic Field Effect Transistors II, Ed. C. Dimitrakopoulos (2003).
- 745 Time-Resolved Energy Transfer in DNA Sequence Detection Using Water-Soluble Conjugated Polymers: The Role of Electrostatic and Hydrophobic Interactions, Q.-H. Xu, B.S. Gaylord, S. Wang, G.C. Bazan, D. Moses, A.J. Heeger, PNAS **101**, (N32) 11634-11639 (2004).
- 746 Ultrafast Photogeneration of Charged Polarons on Conjugated Polymer Chains in Dilute Solution, P B. Miranda, D. Moses, A. J. Heeger, Physical Review B, **70** (8) 085212 (2004).
- 747 Water/Methanol-Soluble Conjugated Copolymer as an Electron-Transport Layer in Polymer Light-Emitting Diodes, W. Ma, P.K. Iyer, X. Gong, B. Liu, D. Moses, G.C. Bazan, A.J. Heeger, Adv. Mater. **17** (N3) 274-277 (2005).
- 748 The Fluorescence Resonance Energy Transfer (FRET) Gate: A Time Resolved-Study, A. Xu, S. Wang, D. Korystov, A. Mikhailovsky, G.C. Bazan, D. Moses, A.J. Heeger, PNAS **102**, (N3) 530-535 (2005).
- 749 Biosensors Based on Binding-Modulated Donor-Acceptor Distances, C. Fan, K.W. Plaxco, A.J. Heeger, Science Direct, vol. 23, no. 4, 186-192 (2005).