RESUME

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Career Summary

1960	S.B. (Physics) MIT.
1960-62	Engineering Officer in the U.S. Navy.
1962-1967	Ph.D. (Physics) Stanford University.
1967-1970	Research Associate, Applied Physics Department, Stanford University, Stanford, California.
1970-1975	Research Staff Member, IBM Research Laboratory, San Jose, California.
1975-1979	Manager, Electronic Phenomena Group, IBM Research Laboratory, San Jose, California.
1979-1985	Manager, Condensed Matter Physics Group, IBM Research Laboratory, San Jose, California.
1985-1989	Research Staff Member, IBM T. J. Watson Research Center, Yorktown Heights, New York.
1989-2007	Professor of Physics and Director, Center for Superconductivity Research, University of Maryland, College Park, Maryland.
2007-	Alford L. Ward Professor of Physics, University of Maryland, College Park, Maryland.

Honors

IBM Outstanding Contribution Award, August 1975.

Professor Associe´, University of Grenoble, France, 1978-1979.

Elected Fellow of the American Physical Society, 1980.

Elected to Executive Committee of APS Division of Condensed Matter Physics, 1992-1995.

Thomson-ISI 200 Most Highly-cited Physicists, 1981-2001.

Major Professional Activities

Fellow of APS, Member of AAAS, MRS.

APS Visiting Physicist Program, 1978.

Organizing Committee for International Conference on Quasi 1D Conductors, Dubrovnik, Yugoslavia, September 1978.

Organizing Committee for International Conference on Low Dimensional Conductors and Superconductors, Les Arcs, France, December 1982.

Organizing Committee for LT 16 International Conference, Los Angeles, California, August 1981.

Program Committee for International Conference on Magnetism, San Francisco, California, August 1985.

Program Committee for International Conference on Materials and Mechanisms of Superconductivity, Ames, Iowa, May 1985.

Chairman of Committee for APS International Prize for New Materials 1986, Member of Committee for 1985 Prize.

Program Committee for International Conference on High-Temperature Superconductors, Interlaken, Switzerland, February 1988.

Program Committee for Conference on Theoretical Foundations of High-T_c Superconductivity, Aspen, Colorado, January 1988.

Users Committee for F. Bitter National Magnet Laboratory, Massachusetts Institute of Technology, Boston, Massachusetts, 1988-1991.

Participant, NSF/ONR Workshop on Research Opportunities in Superconductivity, Copper Mountain, Colorado, August 1983 and August 1991.

Co-chairman Gordon Conference on Superconductivity, Ventura, California, January 1993.

Member of Executive Committee of DCMP Division of APS, 1992-1995.

Program Committee for International Conference on Molecular and Oxide Superconductors, Eugene, Oregon, July 1993.

Co-chairman Gordon Conference on Superconductivity, Oxnard, California, January 1994.

Co-chairman Gordon Conference on Superconductivity, Les Diablerets, Switzerland, September 1995.

Program Committee for 6th International Conference on Materials and Mechanisms of Superconductivity, Houston, Texas, February 2000.

Member of the APS Apker Award Committee for year 2000, 2001, 2002, 2003.

Program Committee for 7th International Conference on Materials and Mechanisms of Superconductivity, Rio de Janeiro, Brazil, May 2003.

National High Magnetic Field Laboratory NSF Site Review Committee, Tallahassee, Florida, December 4-6, 2005.

Program Committee for 8th International Conference on Materials and Mechanisms of Superconductivity, Dresden, Germany, July 2006.

Member of External Advisory Committee for Canadian Institute for Advanced Research (CIFAR) program on Quantum Materials, 2003-2007.

Chairman, External Advisory Committee for CIFAR program on Quantum Materials, 2008-

Publications

1. Observation of a Spin-Wave Sideband in the Optical Spectrum of MnF_2 , with D. D. Sell et al., Phys. Rev. Lett. **15**, 656 (1965).

2. Optical Linewidth and Line-Shape Studies of Energy Transfer Mechanisms between Rare-Earth Impurity Ions, with W.M. Yen, W. C. Scott, and D. L. Huber, Phys. Rev. **140**, 1188 (1965).

3. Optical Linewidth Studies of Energy-Transfer Mechanisms Between Impurity Ions, with W. M. Yen, W. C. Scott, D. L. Huber, *Proc. of Conf. on Physic of Quantum Electronics*, San Juan, Puerto Rico (June 1965) edited by P. L. Kelley, B. Lax, P. E. Tannewald, McGraw Hill (1966).

4. Effect of Ultraviolet Pumping on Ruby Laser Output, with J. L. Emmett and A. L. Schawlow, Appl. Opt. **5**, 350 (1966).

5. Magnetic Effects in the Optical Spectrum of MnF_2 , with D. D. Sell et al., J. Appl. Phys. **37**, 1229 (1967).

6. Exciton-Magnon Effects in the Optical Spectrum of MnF_2 with D. D. Sell, R. M. White, *Proc. of Conf. on Optical Properties of Ions in Crystals*, Baltimore, Maryland (September 1966), edited by H. M. Crosswhite, H. W. Moos, J. Wiley (1967).

7. Optical Exciton-Magnon Absorption of MnF_2 , with D. D. Sell and R. M. White, Phys. Rev. **158**, 489 (1967).

8. Impurity-Induced Optical Fluorescence in MnF_2 , with D. D. Sell and G. F. Imbusch, Phys. Rev. **171**, 600 (1968).

9. Heat Capacity Measurement on Small Samples at Low Temperatures, with R. Bachman et al., Rev. Sci. Inst. **43**, 205 (1972).

10. Heat Capacity of Superconducting Aluminum Films, with C. N. King and R. Zubeck, Phys. Rev. B **6**, 3297 (1972).

11. Specific heat of One-Dimensional $K_2Pt(CN)_4Cl_{0.03}n \cdot H_2O$, with W. A. Little, Phys. Rev. Lett. **29**, 718 (1972).

12. Temperature Dependence of the Near-infrared Optical Properties of TTF-TCNQ, with P. M. Grant, G. C. Wrighton, and G. Castro, Phys. Rev. Lett. **31**, 1311 (1973).

13. Pressure Dependence of the Metal-Insulator Transition in TTF-TCNQ, with C. W. Chu, J. M. E. Harper, and T. H. Geballe, Phys. Rev. Lett. **31**, 1491 (1973).

14. Heat Capacity Measurements of Small Samples - Granular Al Films, with C. N. King, R. B. *Zubeck, Low Temperature Physics* - LT 13, Vol. 4, p. 626, edited by K. D. Timmerhaus, W. J. O'Sullivan, and E. F. Hammel, Plenum Press (New York, 1974).

15. Specific Heat, Optical and Transport Properties of Hexagonal Tungsten Bronzes, with C. N. King, J. A. Benda, T. H. Geballe, Low Temperature Physics - **LT 13**, Vol. 3, p. 411, edited by K. D. Timmerhaus, W. J. O'Sullivan, and E. F. Hammel, Plenum Press (New York, 1974).

16. Optical Reflectivity of TTF-TCNQ, with P. M. Grant, G. Castro, Symposium on Superconductivity and Lattice Instabilities, Gatlinburg, Tennessee, September 1973, Solid State Comm. **14**, 100 (1974).

17. Low-Temperature Specific Heat of Polysulfur Nitride, $(SN)_x$ with P. M. Grant and G. B. Street, Phys. Rev. Lett. **34**, 89 (1975).

18. Superconductivity in Polysulfur Nitride, $(SN)_x$ with G. B. Street and L. J. Suter, Phys. Rev. Lett. **34**, 577 (1975).

19. Optical Properties of $(SN)_x$, with G. B. Street and P. M. Grant, Phys. Rev. Lett. **35**, 1743 (1975).

20. Pressure Dependence of Superconductivity and Normal Conductivity in $(SN)_x$, with W. D. Gill et al., Phys. Rev. Lett. **35**, 1732 (1975).

21. The Preparation and Characterization of Crystals of the Superconducting Polymer, $(SN)_x$, with G. B. Street et al., Mat. Res. Bull, **10**, 877 (1975).

22. Thermopower of an Isostructural Series of Organic Conductors, with P. M. Chaikin, S. Etemad, and E. Engler, Phys. Rev. B **13**, 1627 (1976).

23. The Upper Critical Field of Superconducting $(SN)_x$, with L. J. Azevedo et al., Solid State Comm. **19**, 197 (1976).

24. Comparison of the Physical Properties of $(SN)_x$ to Related Organic Polymers and TTF-TCNQ, with P. M. Grant et al., Mol. Cryst. Liq. Cryst. **32**, 171 (1976).

25. Two Band Transport and Disorder Effects in a Series of Organic Alloys: $(TTF_{1-x}\ TSeF_x)$-TCNQ, with P. M. Chaikin et al., Solid State Commun. **19**, 1201 (1976).

26. The Structure, Conductivity, and Thermopower of HMTTF-TCNQ, with J. J. Mayerle et al., Solid State Commun. **20**, 943 (1976).

27. Specific Heat of Polysulfur Nitride $(SN)_x$, with J. M. E. Harper, P. M. Grant, and G. B. Street, Phys. Rev. B **15**, 539 (1977).

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32. Superconducting Properties of $(SN)_x$, with W. D. Gill et al., *Proc. of Conf. on Organic Conductors*, Lecture Notes in Physics #65 (Springer-Verlag 1977).

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35. The Upper Critical Field of Superconducting Polysulfur Nitride, $(SN)_x$, with L. J. Azevedo et al., *Anisotropy Effects in Superconductors*, edited by H. Weber (Plenum Press 1977).

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37. Electron Tunneling in $(SN)_x$ and Conducting Organic Salts, with P. M. Chaikin and P. K. Hansma, Phys. Rev. B **17**, 179 (1978).

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39. Superconducting Properties of Brominated $(SN)_x$, with J. F. Kwak and W. W. Fuller, J. de Phys. **C6**, 1401 (1978).

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50. One-Dimensional Spin Diffusion in Polyacetylene, $(CH)_x$, with M. Nechthschein, F. Devreux, and T. C. Clarke, Phys. Rev. Lett. **44**, 356 (1980).

51. Thermopower and Transport Properties of AsF_5 Doped Polyactetylene, with J. F. Kwak et al., Synthetic Metals **1**, 213 (1980).

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53. Magnetic Resonance Studies of Soliton Diffusion in $(CH)_x$, with D. Devreau, K. Holczer, and M. Nechtschein, *Physics in One Dimension*, edited by J. Bernasconi and T. Schnieder, Springer Berlin (1980), p. 194.

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61. Effect of Radiation Damage on Transport in $(TMTSF)_2PF_6$, with M. Y. Choi et al., Phys. Rev. B. **25**, 6208 (1982).

62. Critical Field Anisotropy in $(TMTSF)_2ClO_4$, with M. Y. Choi, et al., Solid State Comm. **41**, 225 (1982).

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70. Pressure Dependence of Superconductivity in $Tl_2Mo_6Se_6$, with S. Z. Huang et al., Solid State Comm. **5**, 749 (1983).

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J. de Physique Colloq. **C3**, 791 (1983).

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79. Competition between Superconductivity and Localization in Ultrathin a-MoGe Films, with J. M. Graybeal and M. R. Beasley, *Proceeding of LT 17*, edited by U. Eckern et al., North Holland (1984), p. 731.

80. Conducting Organic Materials, with G. B. Street, Science **226**, 651 (1984).

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82. A Highly One-Dimensional Molecular Metal: Nickel Phthalocyanine Iodide, with J. Martinsen et al., Phys. Rev. B **30**, 6269 (1984).

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84. Narrow Pressure Domain for Superconductivity in $(TMTSF)_2ClO_4$, with S. P. Parkin and J. Voiron, Mol, Cryst. Liq. Cryst. **119**, 33 (1985).

85. Magneto Thermopower of $(TMTSF)_2PF_6$, with M. Y. Choi et al., Phys. Rev. B **31**, 3576 (1985).

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94. Quantum Oscillations in $(TMTSF)_2ReO_4$, with S. S. Parkin and H. Schwenk, Physica **143**, 388 (1986).

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Invited Talks at International Conferences

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36. "Transport Properties of $Nd_{2-x}Ce_xCuO_4$ Single Crystals," Workshop on HTSC Materials, University of Houston, Texas, February 1992.

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39. "Thermal, Magnetic, and Electronic Properties of Manganese Oxides", APS March Meeting, St. Louis, Missouri, March 1996.

40. "Current Research Issues for the Electron-doped Cuprates", NATO Summer School on Gap Symmetry and Fluctuations in High-T_c Superconductors, Cargese, Corsica, September 1997 (given by P. Fournier).

41. "Superconducting and Normal State Properties of Electron-doped Cuprates", APS March Meeting, Los Angeles, CA, March 1998 (given by P. Fournier).

42. "Specific Heat, Tunneling, and Oxygen Isotope Studies of the Charge-Order Transition in the Manganites", JRCAT Workshop on Complex Phenomena of Correlated Electrons in Oxides, Big Island, Hawaii, May 1999.

43. "Organic Metals", 6th International Conference on Materials and Mechanisms of Superconductivity, (M2S-HTSC-VI), Houston, Texas, Feb 2000 – Part of a symposium in Honor of T. H. Geballe.

44. "Status of Electron-doped High-T_c Superconductors", ITP Workshop on High-T_c Superconductors, UCSB, Santa Barbara, CA August 2000.

45. "Transport Properties of n-doped Cuprates", Aspen Winter Conference on High-T_c Superconductivity, Aspen, CO, January 2001.

46. "Tunneling and Specific heat Measurements of n-doped Cuprates", Gordon Conference on Superconductivity, Oxford, UK, September 2001.

47. "Tunneling and Specific Heat of n-doped Cuprates below 20K", International Conference on Physics and Chemistry of Molecular and Oxide Superconductors, Hsinchu, Taiwan, August 2002.

48. "Anomalous Properties of n-doped Cuprates in the Normal and Superconducting States, Workshop on CMR Manganites and Related Oxides, Telluride, CO, July 2002.

49. "Nernst Effect in the n-doped High-T_c Superconductors $Pr_{2-x}Ce_xCuO_4$", Gordon Conference on Superconductivity, Ventura, CA, January 12-17, 2003.

50. "Probing the Normal State of the n-doped Cuprates", 10^{th} International Workshop on Oxide Electronics, Augsburg, Germany, September 11-13, 2003.

51. "Electron-doped Cuprates", CIAR Quantum Materials Workshop, L'Esterel, Quebec, Canada, October 16-19, 2003.

52. "Oxide-based Diluted Magnetic Semiconductors" Magnetic and Superconducting Materials Workshop, Barcelona, Spain, October 23-25, 2003 (given by S. Ogale).

53. "Electron-doped Cuprates: "Doping dependence of the Low T Normal State and the Pairing Symmetry", International Workshop on Novel Quantum Phenomena in Transition Metal Oxides, Sendai, Japan, November 5-8, 2003.

54. "The Doping Dependence of the Ground State in the Electron-doped Cuprates", APS March Meeting, Montreal, Canada, March 20-26, 2004.

55. "Evidence for a Quantum Phase Transition in $Pr_{2-x}Ce_xCuO_4$ from Hall and Resistivity Measurements", NATO Workshop on Unconventional Superconductivity, Miami, Florida, January 2004 (given by Y. Dagan).

56. "Quantum Critical Point in Electron-doped Superconductors", Gordon Research Conference on Superconductivity, Oxford, England, September 19-24, 2004.

57. "Some Properties of Electron-doped Cuprates", Aspen Winter Conference on High-T_c Superconductivity, Aspen, CO, January 13, 2005.

58. "Novel Properties of Electron-doped Cuprates", SPIE Conference on Strongly Correlated Materials, San Diego, CA, August 3, 2005.

59. "Evidence of Quantum Criticality in Electron-doped Cuprates", (given by A. Zimmers) LT24-24^{th} International Conference on Low Temperature Physics, Orlando, FL, August 16, 2005.

60. "Evidence for Quantum Criticality in the n-doped Cuprates", 12^{th} International Workshop on Oxide Electronics", Cape Cod, MA, October 3, 2005.

61. "Evidence for Quantum Criticality in Electron-doped Cuprates", APS March Meeting, Baltimore, MD, March 14, 2006 (given by Y. Dagan).

62. “Evolution of Superconductivity in Electron-doped Cuprates”, APS March Meeting, Baltimore, MD, March 14, 2006 (given by G. Blumberg).

63. “Status and Future Opportunities for n-type Cuprates”, DOE Workshop on Basic Research Needs for Superconductivity, Washington DC, May 8-11, 2006.

64. “Quantum Criticality in the n-doped Cuprates”, CIAR Quantum Materials Workshop, Montreal, Canada, May 11-14, 2006.

65. “Novel Normal State Properties of n-doped Cuprates”, International Conference on Low-energy Excitations in high-T_c Superconductors, Stuttgart, Germany, July 5-7, 2006.

66. “High Field Transport in Electron-doped Cuprates”, M^2-HTSC VIII International Conference, Dresden, Germany, July 7-14, 2006.

67. “Quantum Criticality and High-field Properties of Electron-doped Curpates”, Workshop on Novel States of Unstable and Stable Quantum Matter, Trieste, Italy, August 14-25, 2006.

68. “Quantum Criticality and High-field Properties of Electron-doped Cuprates”, International Workshop on Electronic States and Disorder Effects in Cuprate Superconductors, Beijing, China, November 9-11, 2006.

69. “The Neglected Electron-doped Cuprates–What Do They Tell Us About the Physics of High-T_c Superconductivity?”, Workshop on Superconductivity and Magnetism in Novel Materials, Ramat Gan, Israel, May 6-10, 2007.

70. “Transport Evidence of Quantum Criticality in Electron-doped Cuprates”, Int. Sym. on Superconductivity ISS 2007, Tsukuba, Japan, Nov. 5-7, 2007.