

# UNIVERSITY OF MARYLAND

Department of Physics  
College Park, Maryland

## CURRICULUM VITAE

S. M. Bhagat  
Professor

### I. Education:

I. Sc. Panjab University 1948  
B. A. Jammu & Kashmir Univ. 1950  
M. Sc. University of Delhi 1953  
Ph.D. University of Delhi 1956

### II. Experience in Higher Education:

1954-57 University of Delhi Lecturer  
1960-62 Carnegie Inst. of Tech. Research Associate  
1962-67 University of Maryland Assistant Professor  
1968-69 Indian Institute of Tech.  
Kanpur, India Visiting Professor  
1967-73 University of Maryland Associate Professor  
1973 University of Maryland Professor  
1975-76 University of Uppsala,  
Uppsala, Sweden Visiting Professor

### III. Experience Other than Higher Education:

1957-60 Research Physicist : Clarendon Lab., Oxford, England  
Fall 85 Phys. Interview Program: Interviewed prospective grad students  
in 11 South Asian countries,  
Fall 87 TOKTEN Visitor: Visited six laboratories and institutes in India  
Fall 89 Visitor, Acad. of Sci.: Visited Peking University, China  
Nanking University,  
Shanghai Univ. of Sci. and Technology  
Fall 89 Visiting Professor: Inst. of Mining & Metallurgy, Krakow, Poland  
Inst. of Physics, Warsaw, Poland

Fall 92 Visiting Professor: T.I.F.R., Bombay, India  
Spring 93 Visiting Professor: School of Physics, Univ. of Hyderabad, India  
Spring 93 Visiting Professor: I.I.T., Kharagpur, India

IV. Publications

See attached

V. Professional Activities:

Life member, Oxford Union Society  
American Physical Society  
President, Greater Washington Solid State Physics Colloquium  
Fellow, Washington Academy of Science

VI. Honors and Awards:

J and K University Gold Medal, 1950  
Overseas Scholar Grant, 1957-60

VII. Contracts Past 10 years

Maryland Procurement with R. Glover  
MDA-904-80-C-0480  
1/4/80 - 2/14/83  
\$341,711

Maryland Procurement with R. Glover  
MDA-904-83-C-0466  
2/24/83 - 12/30/85  
\$857,348

Naval Research Laboratory  
N00014-84-K-2010  
9/30/84 - 11/30/85  
\$27,080

Maryland Procurement with R. Glover, D. Drew, and E. Williams  
MDA-904-85-C-6092  
10/1/85 - 9/30/90  
\$2 Meg.

Maryland Procurement with R. Glover and D. Drew  
10/1/91 - 9/30/94  
\$2.4 Meg.

MIPS  
2/88 - 4/89  
\$40,000

MD Procurement (with D. Drew) 94-Present  
~300K/yr

Navy (with R. Ramesh)  
\$236,800

## **Publications**

### Papers Published

1. **Vapor Pressure of Liquid He<sup>3</sup> and Liquid Helium II**, S. M. Bhagat and P. K. Katti, Sci. and Cult. (India) 19, 461 (1954).
2. **Vapor Pressure of He<sup>3</sup>-He<sup>4</sup> Mixtures**, S. M. Bhagat and P. K. Katti, Sci. and Cult. (India) 20, 43 (1954); Prog. Theor. Phys. (Japan) 12, 380 (1954).
3. **Statistical Thermodynamics of Mixtures of Bose-Einstein and Fermi-Dirac "Liquids"**, S. M. Bhagat and P. K. Katti, Proc. Nat. Ins. Sci. (India) 21A, 21 (1955).
4. **Variation of Configurational Energy of Binary Solutions**, S. M. Bhagat and P. K. Katti, J. Chem. Phys. 22, 1951 (1954).
5. **Effect of Van Der Waals Corrections on the Lambda-Temperature of He<sup>3</sup>-He<sup>4</sup> Solutions**, S. M. Bhagat, Proc. Nat. Ins. Sci. (India) 21A, 165 (1955).
6. **Further Considerations Regarding He<sup>3</sup>-He<sup>4</sup> Mixtures**, S. M. Bhagat, Proc. Nat. Ins. Sci. (India) 22A, 273 (1956).
7. **Specific Heat and Entropy of Liquid Helium II**, S. M. Bhagat, Proc. Phys. Soc. (London) 69B, 1117 (1956).
8. **Rotation of Liquid Helium II**, S. M. Bhagat and P. K. Pathria, Phys. Rev. 106, 3 (1957).
9. **Hydrodynamic Resistance in Liquid Helium II and Determination of the Normal C Concentration**, S. M. Bhagat and P. K. Pathria, Phys. Rev. 106, 199 (1957).
10. **Eddy Viscosity in Liquid Helium II**, S. M. Bhagat, Proc. Phys. Soc. (London) 75, 303 (1960).
11. **Isothermal Flow of Liquid Helium II in Wide Capillaries**, S. M. Bhagat and K. Mendelssohn, Cryogenics Journal 2, 134 (1961).
12. **Thermomechanical Pressure Measurements in Liquid Helium II**, S. M. Bhagat, Cryogenics J. 2, 139 (1961).
13. **Growth of Mutual Friction in Liquid Helium II**, S. M. Bhagat, P. R. Critchlow and K. Mendelssohn, Cryogenics J. 5, 166 (1964).
14. **Ferromagnetic Resonance in Iron and Nickel**, S. M. Bhagat, L. L. Hirst and J. R. Anderson, J. Appl. Phys. 37, 194 (1965).
15. **Ferromagnetic Resonance in Nickel at Low Temperatures**, S. M. Bhagat and L. L. Hirst, Phys. Rev. 151, 401 (1966).
16. **Ferromagnetic Resonance in Pure Iron at Low Temperatures**, S. M. Bhagat, J. R. Anderson and L. L. Hirst, Phys. Rev. Letters 16, 1009 (1966).

17. **Thermal Conduction in Bismuth at Liquid Helium Temperatures**, S. M. Bhagat and D. D. Manchon Jr., Phys. Letters 24A, 147 (1967).
18. **Influence of the Anomalous Skin Effect on the Ferromagnetic Resonance Line-Width in Iron**, S. M. Bhagat, Phys. Rev. 155, 510 (1967).
19. **Ferromagnetic Resonance in Pure Iron at High Temperatures**, S. M. Bhagat and H. O. Stevens Jr., J. of Appl. Phys. 39, 1067 (1968).
20. **New Technique for Measurement of the Temperature Dependence of the Saturation Magnetization-Nickel**, S. M. Bhagat and C. W. Lucas Jr., Review of Sci. Inst. 39, 255 (1968)
21. **Heat Transport in Bi at Liquid Helium Temperatures**, S. M. Bhagat and D. Manchon, Phys. Rev. 164, 966 (1968).
22. **Investigations of Relaxation Processes in Yig with Propagating Magnetostatic Spin Waves**, S. M. Bhagat and E. Burke, J. of Appl. Phys. 40, 1189 (1969).
23. **Critical Heat Flux in Liquid Helium II in the Neighborhood of the h-Transition**, S. M. Bhagat and B. M. Winer, Phys. Lett. 27A, 537 (1968).
24. **Ferromagnetic Resonance in Nickel at High Temperatures**, S. M. Bhagat and E. P. Chicklis, Phys. Rev. 178, 178 (1969).
25. **Ferromagnetic Resonance in Ni-Cu Alloys**, S. M. Bhagat and J. N. Lloyd, Solid State Comm. 8, 2029 (1970).
26. **Low Temperature Resistivity of Bi and its Alloys**, S. M. Bhagat, V. Chopra and R. K. Ray, Physica Status Solidi 4, 205 (1971).
27. **HeII-HeI Transition in the Presence of a Heat Current**, S. M. Bhagat and R. A. Lasken, Phys. Rev. A3, 340 (1971).
28. **The Velocity of Second Sound in a Heat Current**, S. M. Bhagat and R. S. Davis, Phys. Lett. 34A, 233 (1971).
29. **HeII-HeI Transition in a Heat Current: Model Calculations**, S. M. Bhagat and R. A. Lasken, Phys. Rev. 4A, 264 (1971).
30. **Ferromagnetic Resonance in Single Crystal Nickel Disks: Angular Dependence of Linewidth**, S. M. Bhagat, J. R. Anderson and F. L. Cheng, Physica Status Solidi 45B, 357 (1971).
31. **Influence of a D.C. Heat Flux on the Velocity of Second Sound Near Th**, S. M. Bhagat and R. S. Davis, J. Low Temp. Phys. 7, 157 (1972).
32. **Depression of Th by a Heat Current**, S. M. Bhagat and R. A. Lasken, Phys. Rev. A3, 22979 (1972).
33. **F.M.R. in Iron at High Temperatures**, S. M. Bhagat and M. Rothstein, Solid State Comm., Vol. 11, 1535, (1972).
34. **Effects of Deposition Conditions on the Properties of Amorphous Silicon**, S. M. Bhagat, S. K. Bahl and R. Glosser, Solid State Comm. 13, 1159 (1973).

35. **SWR in Yig**, S. M. Bhagat, Vittoria, Lassoff, and Guenzer, *Physics Status Solidi* 20(a), 731 (1973).
36. **Temperature Variation of Ferromagnetic Relaxation in the 3-d Transition Metals**, S. M. Bhagat and P. Lubitz, *Phys. Rev.* B10, 179 (1974).
37. **Resonance Methods - Magnetic Materials, Chapter in Vol. VI pt. 2 of Techniques in Metals Research**, S. M. Bhagat and John Wiley (New York), (1973).
38. **Effect of Exchange Field on the Damping of Spin-Wave Resonance Modes**, S. M. Bhagat, P. Lubitz, G. C. Bailey and C. Vittoria, *Phys. Rev.* B11, 3585 (1975).
39. **Properties of Amorphous Silicon Films -Dependence on Deposition Conditions**, S. M. Bhagat and S. K. Bahl, *Journ. Non. Cryst. Solids* 17, 409 (1975).
40. **Temperature Dependence of Thin Film Ferromagnetic Resonance Linewidths**, S. M. Bhagat, Ponce and Lubitz, *Sol. State Comm.* 18, 521 (1976).
41. **Magnetic Resonance in a-TbFe<sub>2</sub> and a-GdFe<sub>2</sub>**, S. M. Bhagat and D. K. Paul, *Phys. Rev. Lett.* 35, 1459 (1975).
42. **Time Variation of the Thickness and Electrical Resistivity of Ultra Thin Films of a-Si**, S. M. Bhagat and S. K. Bahl, *Journ. Non-Crys. Solids* 21, 279 (1976).
43. **Hall Effect in Amorphous Magnetic Materials -Metglas 2826 and 2826B**, S. M. Bhagat, K. V. Rao, R. Malmhall, and G. Backstrom, *SoI. State Comm.* 19, 193 (1976).
44. **Anamolous Magnetization of Metglas 2826A**, S. M. Bhagat, E. Figueroa, L. Lundgen, and O. Beckman, *Solid State Comm.* 20, 961 (1976).
45. **FMR in Amorphous Systems -Dependence of the Relaxation Parameter on Temperature (Magnetization)**, S. M. Bhagat, S. Haraldson and O. Beckman, *Jour. Phys. Chem. Solids* 38, 593 (1977).
46. **Measurements of the Electrical Resistivity of Amorphous Ferromagnets**, S. M. Bhagat, O. Rapp and Johannesson, *Sol. State Comm.* 21, 83 (1977).
47. **Hall Resistivity of a Magnetic Amorphous Alloy -Effects of Thermal Cycling and Annealing**, S. M. Bhagat, R. Malmhall, G. Backstrom and K. V. Rao, *Jour. Non-Crys. Solids* 28, 159 (1978).
48. **Spin Resonances in Amorphous Alloy Films**, S. M. Bhagat, J. N. Lloyd and N. Heiman, *J. Appl. Phys.* 49(3), 1683 (1978).
49. **Frequency and Temperature Dependence of Spin Resonances in Cubic FeGe**, S. M. Bhagat, S. Haraldson and L. Pettersson, *Journ. Mag. Res.* 32, 115 (1978).
50. **Temperature Dependence of the Magnetization in Amorphous Alloys**, S. M. Bhagat, M. L. Spano and K. V. Rao, *J. Appl. Phys.* 50, 1580 (1979).
51. **Evidence for a Surface Ferromagnetic Layer in Amorphous YFe<sub>2</sub>**, S. M. Bhagat, J. N. Lloyd, A. R. Knudson and C. R. Gossett, *J. Appl. Phys.* 50, 1614,(1979).

52. **Metglas 2826B -Transport, Magnetic and Thermal Properties**, S. M. Bhagat, R. Malmhall, G. Backstrom, K. V. Rao, M. Meichle and M. B. Salamon, J. of Appl. Phys. 49, 1727 (1978).
53. **Hall Resistivity of a Two-Phase Magnetic Material - Crystallized Metglas 2826**, S. M. Bhagat, R. Malmhall, G. Backstrom and K. V. Rao, J. of Phys. F9, 317 (1979).
54. **Spin Resonances in Amorphous Y-Fe Alloys**, S. M. Bhagat, J. N. Lloyd and D. K. Paul, J. of Magnetism and Magnetic Materials 10, 65 (1979).
55. **Transport Properties of Amorphous Ferromagnetic-Hall and Ohmic Resistivities**, S. M. Bhagat, R. Malmhall, K. V. Rao and G. Backstrom, Phys. Stat. Solidi 53a, 641 (1979).
56. **Magnetization of Amorphous Alloys -Deviations from Spin Wave Theory at Low Temperatures**, S. M. Bhagat, M. L. Spano, H. S. Chen, and K. V. Rao, Solid State Comm. 33, 303 (1980).
57. **Magnetic Phase Diagram of (FEXNi-X)75P16B6A13 Alloys**, S. M. Bhagat, J. A. Geohegan and H. S. Chen, Sol. State Comm. 36, 1 (1980).
58. **Magnetic and Transport Properties of Transition-Metal Based Glassy Rubbibs**, S. M. Bhagat, K. V. Rao, R. Malmhall, G. Backstrom and H.S. Chen, IEEE Trans. on Magnetics, Mag. 16, 896 (1980).
60. **Unified Description of the Effect of Spin Freezing on ESR Linewidth**, S. M. Bhagat, M. L. Spano and J. N. Lloyd, Sol. State Comm. 38, 261 (1981).
61. **Ferromagnetic vs. Spin Glass Behavior in Amorphous Fe-Ni Based Alloys**, S. M. Bhagat, J. A. Geohegan, M. L. Spano and H. S. Chen, J. Appl. Phys. 52, 1741 (1981)
62. **Ferromagnetic Surface Layer in Amorphous YFe Thin Films**, S. M. Bhagat and J. N. Lloyd, J. Appl. Phys. 52, 1838 (1981).
63. **Ferromagnetic Resonance on Amorphous Alloys**, M. L. Spano and S. M. Bhagat, Jour. Mag. and Mag. Mat. 24, 143 (1981).
64. **Magnetic Phases of Amorphous Transition Metal-Metalloid Alloys**, J.A. Geohegan and S. M. Bhagat, Jour. Mag. and Mag. Mat. 25, 17 (1981).
65. **An Electron Spin Resonance Study of Fe<sub>y</sub>Ni<sub>80-y</sub>P<sub>14</sub>B<sub>6</sub> Alloys in the Re-Entrant Regime**, M. A. Manheimer, S. M. Bhagat, L.M. Kistler and K. V. Rao, Jour. Appl. Phys. 53, 2220 (1982).
66. **Low Temperature Electrical Resistance of Disorder Metals**, O. Rapp, S. M. Bhagat and H. Gudurundsson, Sol. St. Comm. 42, 741 (1982).
67. **Spin Glass Behavior and Non-Ergodicity in Amorphous Iron-Boron Alloys**, D. J. Webb, S. M. Bhagat, K. Moorjani, T. O. Poehler and F. G. Satkiewicz, Sol. St. Comm. 43, 239 (1982).
68. **Collapse of Ferromagnetism in Amorphous Fe<sub>0</sub> 65 Mn 35)75 P16 B6 A3**, M. A. Manheimer, S. M. Bhagat and H. S. Chen, Phys. Rev. B26, 456 (1982).
69. **Magnetic Phases of Amorphous Fe<sub>y</sub> Ni<sub>80-y</sub> P14 B6 Alloys**, L. M. Kistler and S. M. Bhagat, J. Phys. C15, L929 (1982).

70. **On the use of Ferromagnetic Resonance to Determine the Ferromagnetic-Spin Glass Transition Line-Temperature Dependence of Linewidths**, S. M. Bhagat, Sol. St. Comm. 43, 813 (1982).
71. **Disappearance of Ferromagnetism in Amorphous  $\text{Fe}_{1-x}\text{Mn}_x$ )<sub>1.5</sub>  $\text{P}_{16}\text{B}_6\text{AC}_3$  Ribbons**, M. A. Manheimer, S. M. Bhagat and H. S. Chen, J. Appl. Phys. 53, 7737 (1982).
72. **Electron Paramagnetic Resonance Linewidths in Diluted Magnetic Semi-conductors:  $\text{Cd}_{1-x}\text{Mn}_x\text{Te}$** , D. J. Webb, S. M. Bhagat and J. K. Furdyna, J. Appl. Phys. 55, 2310 (1984).
73. **Magnetic Resonance in Amorphous  $\text{Fe}_x\text{B}_{100-x}$  Sputtered Films**, D. J. Webb, S. M. Bhagat, K. Moorjani, T. O. Poehler and F. G. Satkiewicz, Proc. I.E.E.E. Mag. 19, 1892 (1983).
74. **Study of Magnetic Regimes in a- $\text{Fe}_x\text{B}_{100-x}$  by dc Magnetization Measurements**, D. J. Webb, S. M. Bhagat, K. Moorjani, F. G. Satkiewicz, T. O. Poehler and M. A. Manheimer, J. Non-Cryst. Solids 61, 1377 (1984).
75. **Low Field Magnetization Studies on  $(\text{Fe}_x\text{Ni}_{1-x})_{75}\text{P}_{16}\text{B}_6\text{A}_3$  Ribbons**, P. Mazumdar, S. M. Bhagat, M. A. Manheimer and H. S. Chen, J. Appl. Phys. 55, 1685 (1984).
76. **Magnetic Resonance in Amorphous  $\text{Fe}_x\text{Ni}_{80-x}\text{P}_{14}\text{B}_6$  II. Spin Glass Alloys**, D. J. Webb and S. M. Bhagat, J. Mag. & Mag. Mat. 42, 1121 (1984).
77. **Magnetic Resonance in Amorphous  $\text{Fe}_x\text{Ni}_{80-x}\text{P}_{14}\text{B}_6$  I. Ferromagnetic and Reentrant Alloys**, D. J. Webb and S. M. Bhagat, J. Mag. & Mag. Mat. 42, 109 (1984).
78. **Reentrant Magnetism-A Low Field Study**, M. A. Manheimer, S. M. Bhagat and H. S. Chen, J. of Mag. & Mag. Mat. 38 (1983).
79. **Re-Entrant Magnetism**, S. M. Bhagat, Physics News (Bombay) 14, 63 (1983).
80. **Magnetism in Amorphous Fe-B Alloys**, D. J. Webb, S. M. Bhagat, K. Moorjani, T. O. Poehler and F. G. Satkiewicz, Jour. Mag. and Mag. Mat. 44, 158 (1984).
81. **Dynamic Random Fields in Diluted Magnetic Semiconductors**, H. A. Sayad and S. M. Bhagat, Phys. Rev. B31, 591 (1985).
82. **Two Level Systems and FMR Near the FM-SG Transition**, M. A. Manheimer, S. M. Bhagat and D.J. Webb, Jour. Appl. Phys. 57 3476, (1985).
83. **Macroscopic Dynamic Effects in an Amorphous Ferromagnet**, L. Yan, S. M. Bhagat, P. Mazumdar, K. Moorjani and T. Kistenmacher, Jour. Appl. Phys. 57, 3730, (1985).
84. **Influence of Topology Near the MCP of a- $(\text{Fe}_x\text{Ni}_{100-x})_{0.75}\text{P}_{16}\text{B}_6\text{A}_3$** , P. Mazumdar, S. M. Bhagat and M. A. Manheimer, Jour. Appl. Phys. 57, 3479 (1985).
85. **Dynamics of a Concentrated Spin Glass a- $\text{FeB}_2$** , K. Moorjani, T. O. Poehler, F. G. Satkiewicz, M. A. Manheimer, D. J. Webb and S. M. Bhagat, Jour. Appl. Phys. 57, 3444 (1985).
86. **Frequency Dependence of FMR in Amorphous Magnets: Ferromagnetic and Reentrant Alloys**, S. M. Bhagat, D. J. Webb and M. A. Manheimer, Jour. Mag. and Mag. Mat. 53, 209 (1985).
87. **Resonant Frequency Dependence of Spin Relaxation in Concentrated Metallic Spin Glasses**, M. J. Park, S. M. Bhagat, M. A. Manheimer, K. Moorjani, Phys. Rev. B33, 2070 (1986).

88. **Simultaneous Excitation of Magnetostatic and Exchange Modes in Thin Circular Yig Films**, J. Barak, S. M. Bhagat and C. Vittoria, Jour. Appl. Phys. 59, 2521 (1986).
89. **Frequency Dependence of Magnetic Resonance in Concentrated Metallic Spin Glasses**, M. J. Park, S. M. Bhagat, M. A. Manheimer, K. Moorjani, Jour. Mag. and Mag. Mat. 59, 287 (1986).
90. **Onset of Ferromagnetism at the Multicritical Point of Amorphous Alloys**, P. Mazumdar and S. M. Bhagat, Jour. Mag. & Mag. Mat. 54-57, 271 (1986).
91. **ESR in Concentrated Spin Glasses Frequency/Temperature Dependence**, M. J. Park, S. M. Bhagat, M. A. Manheimer and K. Moorjani, Jour. Mag. & Mag. Mat. 54-57, 109 (1986).
92. **Spin Relaxation in Random Magnets**, K. Moorjani, S. M. Bhagat, and M. A. Manheimer, IEEE Trans. Mag. MAG-22, 550 (1986).
93. **Magnetic Resonance in Random Spin Systems**, S. M. Bhagat and H. A. Sayad, Jour. Mag. & Mag. Mat. 61, 151 (1986).
94. **Amorphous Mag. Alloys Near Critical Concentration**, P. Mazumdar and S. M. Bhagat, Jour. Mag. & Mag. Mat. 66, 263 (1987).
95. **Magnetic Response Near the Critical Concentration for Ferromagnetism**, P. Mazumdar and S. M. Bhagat, Jour. Appl. Phys. 61, 3633 (1987).
96. **Magnetism in the Amorphous  $Mn_xB_{100-x}$  System**, S.B. Liao, S. M. Bhagat, M.J. Park, M. A. Manheimer and K. Moorjani, Jour. Appl. Phys. 61, 3636 (1987).
97. **Determination of Coordination Number by Magnetic Resonance in Reentrant Magnets**, M. A. Manheimer, S.B. Liao, S. M. Bhagat and K. Moorjani, Sol. St. Comm. 63, 21 (1987).
98. **Anomalous Freq. Dependence of Spin Relaxation in the Conc. Spin Glass  $Fe_{16}Ni_{84}G_{25}$** , S. B. Liao, S. M. Bhagat, M. A. Manheimer and M. J. Park, Sol. St. Comm. 63, 119 (1987).
99. **Elementary Excitations in Reentrant Magnets and Conc. Spin Glasses**, S. B. Liao and S. M. Bhagat, Sol. St. Comm. 64, 1005 (1987).
100. **Energy Gap in Conc. Spin Glasses**, S.B. Liao, S. M. Bhagat, M. A. Manheimer and K. Moorjani, Jour. Appl. Phys. 63, 4354 (1988).
101. **"Zero" Frequency Spin Relaxation in Reentrant Magnets**, E.M. Jackson, S. M. Bhagat, S. B. Liao and M. A. Manheimer, Jour. Appl. Phys. 63, 4089 (1988).
102. **Spin Dynamics in Randomized Spin Systems**, S. M. Bhagat, M. A. Manheimer and K. Moorjani, Proc. of Int'l. Conf. of Metallic and Semiconducting Glasses, Trans. Tech. Publications, p. 641 (1987).
103. **Initial Susceptibility and Microwave Absorption in Powder Samples of  $Y_1Ba_2Cu_3O_{6.9}$** , E. M. Jackson, S. B. Liao, J. Silvis, A. H. Swihart, S. M. Bhagat and R. E. Glover III, Physica C 152, 125 (1988).
104. **Field Induced Magnetization and Energy Gap in Concentrated Spin Glasses**, P. L. Paulose, V. Nagarajan, S. M. Bhagat and R. Ujjayaraghavan, Sol. St. Comm. 67, 685 (1988).

105. **HTSC Studies at University of Maryland**, S. M. Bhagat, in Rev. of Sol. State Sci. 2, 239 (1988).
106. **Grain Size Dependence of Microwave Abs. in 1-2-3**, A. Gould, E. Jackson, K. Renouard, R. Crittendan, S. Bhagat, N. Spencer, L. Dolhert and R. Wormsbecher, Physica C 156, 555 (1988).
107. **Far Infrared Absorption in Bulk  $Y_1Ba_2Cu_3O_{7-x}$  Superconductor**, M.-W. Lee, T. Pham, H. D. Drew, and S. M. Bhagat, R. E. Glover III, Moseley, A. Stewart and Lisse, Sol. St. Comm. 65, 1135 (1988).
108. **AC Susceptibility of High  $T_c$  Sintered Cylinder**, S. D. Murphy, K. Renouard, R. Crittenden and S. M. Bhagat, Sol. St. Comm. 69, 367 (1989).
109. **Kink Point Method and Bi Based HTSC**, G. Shaw, R. Crittenden, Y. Moon and S. M. Bhagat, Jour. Mag. & Mag. Mat. 78, L13 (1989).
110. **FMR**, S. M. Bhagat, Mat. Handbook, Ast. M. Vol. 10, p. 267 (1986).
111. **Study of Microwave Power Absorption in Y-Ba-Cu based HTSC and Allied Compounds**, E. M. Jackson, G. J. Shaw, R. E. Crittenden, Z. Y. Li, A. M. Stewart, S. M. Bhagat and R. E. Glover III, Supercond. Sci. & Tech. 2, 29 (1989).
112. **Frequency Dependence of Magnetic Hysteresis in the Field Induced Microwave Absorption in HTSC at  $T \ll T_c$** , S. D. Tyagi, A. Gould, G. Shaw, S. M. Bhagat and M. A. Manheimer, Phys. Lett. A 136, 499 (1989).
113. **Field Induced Parameters of Reentrant Magnets and Concentrated Spin Glasses**, S. M. Bhagat, Jour. Mag. and Mag. Mat. 80, 229 (1989).
114. **Solution Phase Preparation and Characterization of BiPbSbCaSrCuO**, N. D. Spencer, S. D. Murphy, G. Shaw, A. Gould, E. M. Jackson and S. M. Bhagat, Jap. Jour. of Appl. Phys. 28, L1564 (1989).
115. **Low Field Magnetic Measurements on HTSC**, G. Shaw, S. D. Murphy, Z. Y. Li, A. M. Stewart and S. M. Bhagat, IEEE Trans. on Magnetics 25, 3512 (1989).
116. **Grain Size Dependence of Low Field Microwave Absorption in 1-2-3 Powders**, A. Gould, S. D. Tyagi, S. M. Bhagat and M. A. Manheimer, IEEE Trans. on Magnetics 25, 3224 (1989).
117. **Low Field Investigations of Single Crystal Bi 2212 - Magnetization**, G. Shaw, S. D. Murphy and S. M. Bhagat, Physica C 162-164, 341 (1989).
118. **Field Induced Microwave Absorption Bi 2212**, S. D. Tyagi, A. Gould and S. M. Bhagat, Physica C 162-164, 1569 (1989).
119. **Field Induced Microwave Absorption in High  $T_c$  Powders**, A. Gould, S. M. Bhagat, M. A. Manheimer and S. D. Tyagi, Jour. Appl. Phys. 67, 5020 (1990).
120. **Field Induced Magnetization of Amorphous  $Fe_xRu_{80-x}B_{20}$** , - E. M. Jackson, S. M. Bhagat, M. A. Manheimer, P. L. Paulose and N. Nagarajan, Jour. Appl. Phys. 67, 5238 (1990).
121. **High Temperature Superconducting Powders - Absence of Long Time Decay**, G. Shaw, S. M. Bhagat, N. D. Spencer, J. Crow and S. D. Tyagi, Physica C 169, 257 (1990).

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Contributed Papers (International Meetings)

1. **Vorticity in Superflow**, S. M. Bhagat and K. Mendelssohn, Proc. Kammerlingh Onnes Conf. on Low Temperature Physics, Leiden (Holland), p. S147 (1958).
2. **Eddy Viscosity in Liquid Helium II**, S. M. Bhagat and K. Mendelssohn, proc. of VIIth Int'l. Conf. of Low Temperature Physics, Toronto (Canada), p. 566 (1960).
3. **Ferromagnetic Resonance in Iron at High Temperatures**, S. M. Bhagat, Int'l. Conf. on Magnetism, Boston (1967).
4. **Ferromagnetic Resonance in Ni Near the Curie Temperature**, S. M. Bhagat, Int'l. Conf. on Magnetism, Grenoble (France), 1970.
5. **Critical Heat Currents in Liquid Helium II Near T<sub>l</sub>**, S. M. Bhagat, 12th Int'l. Conf. on Low Temperature Physics, Kyoto (Japan), 1970.
6. **Thermal conduction in Mercury at Liquid Helium Temperatures**, S. M. Bhagat and A. Serlemitsos, 8th Conf. on Thermal Conductivity, Ames (Iowa), Sept. 1968.
7. **Thermal Conduction in Bi at Liquid Helium Temperatures-Effects At Intermediate Fields**, S. M. Bhagat and B. Winer, 7th Int'l. Conf. on Thermal Conductivity, NBS. (Gaithersburg, Md.), Nov. 1967.
8. **HeII-HeI Transition in a Heat Current, LT 13 Int'l. Low Temperature Conf.**, S. M. Bhagat, Boulder, Colorado, 1972, Vol. 1, p. 328.
9. **FMR in hcp Co at Low Temperatures**, S. M. Bhagat and P. Lubitz, AIP Proc. No. 10, Part I, 125 (1972).
10. **FMR in hcp Co**, S. M. Bhagat and P. Lubitz, Int'l. Conf. on Magnetism, (1973), Moscow, Vol. V, p. 119.
11. **FMR in a-TbFe<sub>2</sub> a-GdFe<sub>2</sub> and a-YFe<sub>2</sub>**, S. M. Bhagat and D. K. Paul, AIP Proc. No. 29, 176 (1975).
12. **Temperature and Pressure Variation of Hall Effects**, S. M. Bhagat, K. V. Rao, R. Malmhall and G. Backstrom, Int'l. Conf. on Magnetism, Amsterdam, August 1976, Physics 86-88B, 796 (1977).
13. **Critical Behavior of an Amorphous Ferromagnet -Effects of Thermal Cycling and Annealing**, S. M. Bhagat, K. V. Rao, R. Malmhall and G. Backstrom, 13th IUPAP Conf. on Statistical Physics, Haifa, Israel, August 1977.
14. **Frequency and Temperature Dependence of Spin Resonances in Cubic FeGe**, S. M. Bhagat, Haraldson and Patterson, Vth Int'l. Magn. Res. Symposium, Barff, Canada, June 1977.
15. **ESR in Concentrated Spin Glasses**, S. M. Bhagat, Frequency/Temperature Dependence ICM85, San Francisco, Aug. 1985, Paper #4Pj11.
16. **Low Field Magnetic Response in Alloys Near Conc. Critical for Ferromagnetism**, P. Mazumdar, S. M. Bhagat, ICM85, San Francisco, August, 1985, Paper #2Pk/3.

17. **HTSC in Micron Size Powders**, G. Shaw, A. Gould, S. M. Bhagat, S. D. Tyagi, and M. A. Manheimer, Beijing HTSC Conf., September 1989.

#### Contributed Papers (A.P.S.)

We typically present 5 to 6 papers per year at APS Meetings.

#### Ph. D.'s awarded under my supervision

L. Hirst	(1965)	M. L. Spano	(1980)
D. Manchon	(1967)	J. A. Geohegan	(1981)
A. Serleimitsos	(1969)	D. J. Webb	(1983)
B. Winer	(1970)	H. A. Sayad	(1985)
R. Lasken	(1973)	P. Mazumdar	(1986)
R. Davis	(1973)	E. M. Jackson	(1990)
M. Rothstein	(1974)	G. J. Shaw	(1990)
E. Burke	(1975)	M. X. Huang	(1993)
P. Lubitz	(1975)	J. Ramachandran	(1995)
B. Romenesko	(1977)	S. Lofland	(1995)

#### Invited Papers

1. **Isothermal Flow in Liquid Helium II, First International Conference on Quantum Liquids**, Oxford (England), March 1960.
2. **Ferromagnetic Relaxation in Metals -Phenomenology, Symposium on Solid State Physics**, Dept. of Atomic Energy, Govt. of India, December 1968.
3. **Ferromagnetic Resonance, Solid State Symposium**, Indian Inst. of Technology, Kanpur (India), March 1969.
4. **Resonance Phenomena in Metals, Czechoslovakian Academy of Science**, Prague (Czechoslovakia), June 1969.
5. **Magnetic and Transport Properties of Transition Metal Based Glassy Ribbons**, IEEE Trans. on Magnetism, Sept. 1980.
6. **Spin Dynamics in Concentrated Spin Glasses**, Conf. on Transport and Relaxation Processes in Random Materials, Oct. 1985.
7. **Spin Relaxation in Random Magnets**, Inter. Mag. '86, April 1986.
8. **Spin Dynamics in Randomized Systems**, Dec. 1986, MSG 86, Hyderabad, India.
9. **Spin Dynamics in Randomized Systems**, APS, March 1987.
10. **Microwaves and HTSE**, Winter School on Superconductivity, T.I.F.R. Bombay, 1989.
11. **Microwaves and HTSE**, Winter School on Superconductivity, T.I.F.R. Bombay, 1989.
12. **Microwave Magnetoabsorption**, Ampere Workshop, Poland, April 1994.

## Colloquia and Special Lectures

1. **F.M.R. in Amorphous Materials**, NSWC, White Oak, Md., June 1975.
2. **"Amorphous Silicon" Colloquium**, Univ. of Uppsala, Sweden, Oct. 1976.
3. Course of Ten Special Lectures (2 per week) on **ESR in Magnetic Metals**, Uppsala University, Uppsala, Sweden, Nov.-Dec. 1975.
4. **Spin Resonances in a-TbFe<sub>2</sub> and a-GdFe<sub>2</sub>**, Ind. Inst. of Tech., Delhi, India, Dec. 1976.
5. **Spin Resonances in Amorphous Materials**, Ind. Inst. of Tech., Kanpur, India, Jan. 1976.
6. **Amorphous Metglasses**, Colloquium at Sandvik Research, Sweden, March 1976.
7. Course of Eight Special Lectures (2 per week) on **Amorphous Materials- Metals and Semi-Conductors**, April-May 1976, Royal Inst. of Tech., Stockholm, Sweden.
8. **Amorphous Si**, Munich Tech. Univ., Munich, Germany, July 1976.
9. **Metglas -Electrical and Magnetic Properties**, Univ. of Frankfurt, Frankfurt, July 1976.
10. **Electrical and Magnetic Properties of Metallic Glasses**, NRL, Washington D.C. Sept. 1976.
11. **Amorphous Magnetism**, University of Maryland, Oct. 1976.
12. **Amorphous Magnetic Materials**, Laboratory for Physics Sciences, College Park, Md., Nov. 1976.
13. **Magnetic Glasses**, Catholic University of America, Washington D.C., April 1977.
14. **Surface Ferromagnetism in Yfe**, Johns Hopkins Univ., Apr. 1978.
15. **Amorphous Magnetism**, UMBC, Oct. 1979.
16. **Amorphous Magnetic Materials**, Univ. of Cincinnati, Feb. 1980.
17. **Rare-Earth Based Amorphous Ferromagnets**, 3M Company, May 1981.
18. **Spin Resonance in Metallic Glasses**, Univ. of Minnesota, May 1981.
19. **Reentrant Magnetism Colloquium**, Univ. of Maryland, Dec. 1982.
20. **FMR in Amorphous Materials Seminar**, Univ. of Maryland, May 1984.
21. **Spin Glasses**, Mahidol University, Bangkok, Thailand, Dec. 1985.
22. **Reentrant Magnetism**, Kansas, April 1986.
23. **REEM - Statics**, TIFR, Bombay, Dec. 1986.
24. **REEM - Dynamics**, TIFR, Bombay, Dec. 1986.

25. **New Directions in REEM**, University of Poona, Dec. 1986.
26. **Diluted Magnets**, IIT, Kanpur, Jan. 1987.
27. **Resonance in Spin Glasses**, University of Maryland, March 1986.
28. **High  $T_c$  Superconductivity**, University of Maryland, September 1987.
29. **High  $T_c$  Superconductivity**, Mat. Res. Soc.; Baltimore, October 6, 1987.
30. **High  $T_c$  Oxide Powders**, University of Pennsylvania; Philadelphia, October 30, 1987.
31. **High  $T_c$** , N.P.L., New Delhi, November 1987.
32. **High  $T_c$** , University of Delhi, November 1987.
33. **Spin Glasses**, 6th Int'l. Sem. on Phys. of Mat., Delhi, November 1987.
34. **High  $T_c$** , 6th Int'l. Sem. on Phys. of Mat., Delhi, November 1987.
35. **Spin glasses - Statics**, Ind. Assoc. for Cult. of Sci., Calcutta, December 1987.
36. **Spin glasses - Dynamics**, Ind. Assoc. for Cult. of Sci., Calcutta, December 1987.
37. **High  $T_c$** , Ind. Assoc. for Cult. of Sci., Calcutta, December 1987.
38. **Superconductors**, Calcutta University, December 1987.
39. **Spin glasses - Statics**, I.I.T., Madras, December 1987.
40. **Spin glasses - Dynamics**, I.I.T., Madras, December 1987.
41. **High  $T_c$  Superconductors**, I.I.T., Madras, December 1987.
42. **Spin glasses**, I.I.Sc., Bangalore, December 18, 1987.
43. **High  $T_c$** , I.I.Sc., Bangalore, December 17, 1987.
44. **High  $T_c$** , TATA Inst. of Fund. Res., Bombay, December 22, 1987./
45. **Spin glasses**, TATA Inst. of Fund Res., Bombay, December 24, 1987.
46. **High  $T_c$** , I.I.T., Bombay, December 23, 1987.
47. **High  $T_c$  Superconductors**, Univ. of Oklahoma, March 1988.
48. **High  $T_c$  Superconductors**, Univ. of Maryland, September 1988.
49. **Spin glasses and reentrants**, Dept. of Physics, Peking Univ., September 6, 1989.
50. **HTSC**, Inst. of Computer Physics, Beijing, China, September 1989.
51. **Spin glasses**, Nanjung Univ., September 1989.

52. **HTSC**, Nanjing Univ., September 1989.
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