BIOGRAPHICAL DATA
AMAR S. BHALLA

Contact Information
187 Materials Research Laboratory Building, Penn State University, University Park, PA 16802
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PRESENT POSITION
Senior Scientist, Professor of Materials and Professor of Electrical Engineering, Materials Research Institute, The Pennsylvania State University, University Park, PA 16802

ACADEMIC BACKGROUND
B.S., Phys., Chem., Maths; Rajasthan University, India
M.S., Physics, Rajasthan University, India
Ph.D., Solid State Science, The Pennsylvania State University, USA

PREVIOUS POSITIONS
Senior Scientist & Professor of Materials and Professor of Electrical Engineering, Material Research Institute, The Pennsylvania State University (1995-present)
Senior Scientist & Professor of Solid State Science and Professor of Electrical Engineering, Material Research Laboratory, The Pennsylvania State University (1986-95);
Off-site Program Director, Ceramics, Metal & Electronic Materials, Division of Materials Research, National Science Foundation, Washington, DC (1995-96);
Program Director, Ceramics, Metal & Electronic Materials, Division of Materials Research, National Science Foundation, Washington, DC (1993-95);
Visiting Professor of the Frontier of Chemistry Chair Endowed by Mitsui-Toatsu Co., at the Research Center for Advanced Science and Technology, University of Tokyo, Japan (1990-91);
Senior Scientist and Professor of Solid State Science, Material Research Laboratory, The Pennsylvania State University (1986-95);
Senior Research Associate and Associate Professor of Solid State Science, Materials Research Laboratory, The Pennsylvania State University (7/81-12/86);
Research Associate, Materials Research Laboratory, The Pennsylvania State University (8/75-6/81);
Associate, National Academy of Sciences and National Research Council USA at NASA, Marshall Space Flight Center, Huntsville, AL. (1973-1975);
Post Doctoral Fellow, Materials Research Laboratory, The Pennsylvania State University (1971-1973);
Visiting Scientist, University of Turku, Finland and National Physical Laboratory, Delhi India (3/71-12/71);
National Physical Laboratory, India (1965-1967);
Lecturer in Physics, University of Rajasthan, India (1964-1965).

AWARDS AND FELLOWSHIPS
General Chairman, The Ninth IEEE International Symposium on the Applications of Ferroelectrics (1994);
Fellow, Optical Society of America (1990);
Fellow, American Ceramic Society (1990);
Edward C. Henry Award from the Electronics Division of the American Ceramic Society for the best paper of last ten years (1993);
Fellowship of National Academy of Sciences, USA (1973-1975);
Fellowship, Council of Scientific and Industrial Research, Govt. of India (1965-1966);
National Talent Scholarship, Govt. of India and Merit Scholarship, University of Rajasthan, India (1961-1963);
Merit Scholarship of State Department of Education, Rajasthan, India (1956-1961

SCHOLARLY ACTIVITIES AND ACADEMIC RECOGNITION
Fellows Committee, The American Ceramic Society, 2004-present
Trustee, The American Ceramic Society (1998- 2002)
Member, Steering Committee, Electronics Division of Am. Cer. Soc., 1984-present.
Member, Advisory Committee, Electronics Division of Am. Cer. Soc., 1984-present.

Organizing Committee Member, International Meeting on Ferroelectrics, 1981.
Program Committee Member, International Meeting on Applications of Ferroelectrics, 1986; and ISAF, 1990.
Guest Editor, Special Issues of Ferroelectrics, 1988, 1989
Guest Editor, Bulletin of Am. Cer. Soc., 1987, 1988.
Contributor to the "Landolt-Bornstein Series" on 'Elastic, Piezoelectric, Pyroelectric, Electro-Optic Constants of Crystals,' Publishers, Springer-Verlag, (a) Vol. 18, 1984; and (b) Vol. 29, 1990.
Chairman, "Sensors and Actuators" Subcommittee, Amer. Cer. Soc., 1988.
Chairman, "Indo:US:Japan Workshop on Electronic Materials," Puna, India, Jan. 13-17, 1989.
Secretary, Electronics Division, Amer. Ceram. Soc., 1989-1990.
Organizer, "Symposium on Optics and Nonlinear Optics," First Int'l. Ceramic Science and Tech. Cong. of the Amer. Cer. Soc., Anaheim, CA, 1989.
National Advisory Committee Member, IEEE Ferroelectrics, 1989-.
Vice Chair, Electronics Div., Amer. Ceram. Soc., 1990-1991.
Program Chair, Electronics Div., Amer. Ceram. Soc., 1990-1991.
Program Committee, Int'l. "Transducer 91" (San Francisco, CA).
Organizing Committee Member, "US:USSR Seminars on Ferroelectrics" Series; 1989 -
Symposia Organizer at "The 2nd International Ceramic Science and Technology Congress", Orlando Fl. on i) "Applications of Glasses in Electronics", ii) "Superconductors", and iii) Composite Materials".
Organizer of the Symposia i) Superconductors, ii) Ferroelectric Films, at the 93rd Annual Meeting of American Ceramic Society, Cincinnati, 1991.
Editorial Board of International Journal of Ferroelectrics.
US participant to the Seminar Series, US:Japan, US:China, US:USSR, US:Korea, US:India (1980-).
Chairman-Elect, Electronics Division, American Ceramic Society, 1991-1992.
Chairman, Electronic Division, American Ceramic Society, 1992-93.
Chairman, "Indo:US Workshop on Useful Materials," Delhi, India, 1992.
Organizing Committee Member, VIII International Meeting on Ferroelectrics, Gaithersburg, Maryland, 1993.
General Chairman, "International Symposium on Application of Ferroelectrics," - ISAF IX 1994 (at Penn State).
Organizer, "International Symposium on Smart and Adaptive Systems and Materials," First PAC Rim Countries Meeting, Hawaii, 1993.
International Advisory Board, Asian Ferroelectric Society, 1994- .
Ad Com Member of IEEE Ferroelectric Committee, 1992-1995.
Chairman, "Indo:US Seminars on Co-Operative Research," March 1996, India.
International Academic Committee Member, Shanghai Institute of Ceramics, Chinese Academy of Sciences, 1995- .
Organizing Chair of "Electronic Composites," International School on Electronics Materials, Canada, 1997.
Symposia Organizer (i) Novel approaches in Processing of HTSC and (ii) Dielectric Materials at the 99th Meeting of the American Ceramics Society, Cincinnati, OH, 1997.
Member, Advisory Committee, International Congress on Ceramics, Italy, 1996.
Member, International Advisory Board, Asian Ferroelectric Society Meeting, AFM1 (1995) Xian, China; AFM2 (1998), Singapore.

MEMBERSHIP IN SOCIETIES

Fellow: Optical Society of America;
Fellow: American Ceramic Society;
Member: Materials Research Society; IEEE; TMS.

RESEARCH INTERESTS

Preparation and characterization of piezoelectric, pyroelectric, and ferroic crystals, ceramics, composites, glass ceramics, and bio-materials; nano-composites, nano structure science and fabrication; optical and electro-optic properties of materials; thin solid films; optical ceramics; single crystal fibers; photorefractive materials, pyro-optics, smart sensors, materials for electronics applications, high Tc superconductors, substrates and microwave dielectrics.

PUBLICATIONS AND PRESENTATIONS

Over 500 publications in the refereed journals, books, and special publications.
Over 300 presentations (including invited, keynote lectures, etc.)

PAPERS HIGHLIGHTED FOR THE TITLE PAGE OF THE JOURNALS
J. Appl. Phys., 1971 (Publ. #3); Materials Letter, 1984 (Publ. #82); Materials Letter, 1989 (Publ. #168); Materials Lett. 1991 (Publ. #244); Materials Lett. **12**(5), 1992 (Publ. #249)

PATENTS:
"Pyroelectric Crystals with High Figure of Merit." U.S. Patent #4,648,991 (3/1987); "Ceramic Electrode Materials and Electrical Devices Formed Therewith," Patent SSM&P, #6929, RCT Project #070-1491 (1987); "Pyro-Optic Detector and Imager," Patent #89-918/215-892570 (2/1989); "MO-CuO Oxides as Flux for Low Firing of Lead Zirconate Tinanate and Modified PZT Compositions for Cofiring with Electrodes," Disc # 91-1066

CHAPTERS IN BOOKS:
A. Halliyal, A.S. Bhalla, R.E. Newnham, and L.E. Cross. "New Glass-Ceramics for Piezoelectric and Pyroelectric Devices," in "Glasses and Glass Ceramics," ed. M.H. Lewis, Published by Chapman and Hall, NY (1989).
A.S. Bhalla. "Piezoelectric SbSI:Polymer Composites" in "Ferroelectricity and Related Phenomenon - Piezoelectricity Vol. IV," ed., G.W. Taylor, J.J. Gangnepan, T.R. Meeker, T. Nakamura, L.A. Shuvalov (Gordon and Breach publication) (1985).
A.S. Bhalla, R. Roy, and L.E. Cross. "Chemistry-Tc Relations in Oxide Superconductors," in Chemistry of Oxide Superconductors by International Union of Pure and Applied Chemistry (IUPAC), Blackwell Scientific Publications, (1988).
A.S. Bhalla and S.T. Liu. "Pyroelectric Coefficients," in 'Landolt-Bornstein,' Vol. 18 (Springer-Verlag, 1983)- Elastic, Piezoelectric, Pyroelectric, Piezo-Optic, Electro-Optic Constants and Nonlinear Dielectric Susceptibilities of Crystals, Editors, K.H. Hellewege and A.M. Hellewege (1984).
A.S. Bhalla and S.T. Liu. "Pyroelectric Coefficients," in Landolt-Bornstein, Vol. 29, Elastic, Piezoelectric, Pyroelectric, Piezo-Optic, Electro-Optic Constants and Non-Linear Dielectric Susceptibilities of Crystals, (1993), editors, K.H. Hellewege and A.M. Hellewege, Springer-Verlag (1993).
A.S. Bhalla, "Pyroelectric Materials" in Uncooled Infra-Red Detectors, Publisher Academic Press (1996).
A.S. Bhalla and L.E. Cross, "Pyrooptic IR Sensors" in Uncooled Infra-Red Detectors, Publisher Academic Press (1996).

NATIONAL AND INTERNATIONAL WORKSHOPS AND COURSES GIVEN:
About 10 workshops and courses given at places such as NASA, Government labs, other reputed organizations and universities (~20 hours lectures for each workshop).

NUMBER OF MS AND PH.D. ADVISED: >30

CONSULTATION WORK:
Govt. Labs, NASA, United Nations Development Programs (UNDP), GTE, GE, Rockwell, IBM, J.T. Bakers Chemicals, Ultran, Teltron, B.M.High Tech. Sensors, Kodak, Inc., Murata, Co., Philip Morris and several universities in developing their materials science programs.

BOOKS, EDITOR, GUEST EDITOR:
A.S. Bhalla and S.T. Liu. "Pyroelectric Coefficients," in 'Landolt-Bornstein,' Vol. 18 (Springer-Verlag, 1983)- Elastic, Piezoelectric, Pyroelectric, Piezo-Optic, Electro-Optic Constants and Nonlinear Dielectric Susceptibilities of Crystals, Editors, K.H. Hellewege and A.M. Hellewege (1984).
A.S. Bhalla, F.A. Ainger, R.C. Pohanka, and K. Uchino. "Ferroelectric Materials and Their Applications to Sensors," Special Issue Published on the Occasion of the 65th Birthday of Professor L.E. Cross, Ferroelectrics, 87 (1988).
A.S. Bhalla and E.C. Subbarao. "Indo:United States Workshop on Electronic Ceramics and Materials," Ferroelectrics, 102 (1990).
A.S. Bhalla and S.T. Liu. "Pyroelectric Coefficients," in Landolt-Bornstein, Vol. 29, Elastic, Piezoelectric, Pyroelectric, Piezo-Optic, Electro-Optic Constants and Non-Linear Dielectric Susceptibilities of Crystals, (1993), editors, K.H. Hellewege and A.M. Hellewege, Springer-Verlag (1993).
A. S. Bhalla, E. M. Vogel, K. M. Nair, "Ceramic Transactions vol. 14; Electrooptics and Nonlinear Optic Materials," American Ceramic Society, Westerville, Ohio (1990).
A. S. Bhalla, Guest Editor, Bulletin American Ceramic Society, Special Electronics Issue, 1987, 1988.
A. S. Bhalla and S. B. Lang, Special Pyroelectricity Issue, Ferroelectrics 118 (1991).

K. M. Nair, Balachandran, Chiang and A. S. Bhalla, "Ceramic Transactions vol.18; Superconductivity and Ceramic Superconductors II", American Ceramic Society, Westerville, Ohio (1991).

A. S. Bhalla, T. R. Gururaja, G. Haertling, D. M. Smyth, R. W. West and R. H. Tencrell, "Introduction to Special Section on Ferroelectrics," an Special Issue of IEEE Transaction on Ultrasonics, Ferroelectrics and Frequency Control, vol.38 (1991).

A. S. Bhalla and K. M. Nair, "Ceramic Transactions vol.25: Ferroelectric Thin Films," American Ceramic Society Publication, Westerville, Ohio (1992).

A. S. Bhalla, K. M. Nair, I. Lloyd, H. Yanagida and D.A. Payne, "Ceramic Transactions vol. 43; Ferroic Materials: Design, Preparation, and Characteristics," American Ceramic Society, Westerville, Ohio (1994).

EDITORIAL ACTIVITIES (INTERNATIONAL JOURNALS):

Editor, *J. Ferroelectrics Review* (1998-);
Associate Editor, *Ferroelectrics Letters* (1988-);
Associate Editor, *Ferroelectrics – Communications* (1995 -);
Editor, *J. of Materials Research* (1995-98);
Associated Editor and Regular Contributor to the *Landolt-Bornstein Series*;
Editorial Board: *J. Ferroelectrics, J. Chem. Vapor Deposition, J. Intelligent Material Syst. & Structures,* and *International J. of Inorganic Materials.*
Guest Editor, Special Issues of a) *Ferroelectrics*, 1988, 1989 and b) *Bull. Am. Cer. Soc.*, 1987, 1988.