

Bharat Bhushan

Ohio Eminent Scholar and The Howard D. Winbigler Professor
Director, Nanoprobe Laboratory for Bio- & Nanotechnology and Biomimetics
Affiliated Faculty Member, The John Glenn School of Public Affairs

The Ohio State University, 201 W. 19th Avenue, Columbus, Ohio 43210-1142 USA

614-292-0651 (office), 614-436-4220 (home); *ResearcherID*: A-9684-2013; *ORCID*: 0000-0001-7161-6601

([Goggle Scholar](#) One of 1612 Highly Cited Researchers (h>100) and h-index–110+ (60k+ citations); [Web of Science](#) h-index –85+; [ISI Highly Cited Researcher in Materials Science](#), since 2007 and in [Biology and Biochemistry](#), 2013; ISI Top 5% Cited Authors for Journals in Chemistry, 2011; Top Ten Science Stories of 2015)

Email: bhushan.2@osu.edu Home page: <https://nlbb.engineering.osu.edu/>

RESEARCH INTERESTS

Fundamental studies in the interdisciplinary areas of bio/nanotribology/nanomechanics and nanomaterials characterization in bio/nanotechnology and biomimetics with a focus on scanning probe techniques.

EDUCATION

Doctoris Honoris Causa	University of Kragujevac, Serbia, 2011
Doctor Honoris Causa	Metal-Polymer Research Institute of National Acad. of Sci., Gomel, Belarus, 2000
Doctor of Technical Sciences	Warsaw University of Technology, Warsaw, Poland, 1996
Doctor Technicae	University of Trondheim, Trondheim, Norway, 1990
M.B.A., Management	Rensselaer Polytechnic Institute, Troy, N.Y., 1980
Ph.D., Mechanical Engineering	University of Colorado, Boulder, Colo., 1976
M.S., Mechanics	University of Colorado, Boulder, Colo., 1973
M.S., Mechanical Engineering	Massachusetts Institute of Technology, Cambridge, Mass., 1971
B.E. (Hons.), Mechanical Eng.	Birla Institute of Technology and Science, Pilani, 1970

PROFESSIONAL EXPERIENCE

1991-Present	Ohio Eminent Scholar and The Howard D. Winbigler Professor and Director of Nanoprobe Lab for Bio- & Nanotechnology and Biomimetics, Dept. of Mechanical and Aerospace Eng., and Graduate Res. Faculty Advisor, Dept. of Mater. Sci. and Eng., Affiliated Faculty, Battelle Center for Science & Technology Policy, John College of Public Affairs, Ohio State University
1986-91	Research Staff Member and Manager Head-Disk Interface, IBM Research Division, Almaden Research Center, San Jose, CA
1981-86	Development Engineer/Manager, General Products Division Lab, IBM Corporation, Tucson, AZ
1980-81	Research Scientist, Technology Services Division, SKF Industries Inc., King of Prussia, PA
1976-80	Physical Tribology/Program Manager, R&D Division, Mechanical Technology Inc., Latham, NY

FELLOWSHIPS (selected)

Sept. 13- Aug 14	ASME Science & Technology Policy Fellow, House Committee on Science, Space & Technology, United States Congress, Washington, DC.
Jan.-May 07	Senior Visiting Scientist (Jan.-Feb) & Humboldt Research Prize for Senior Scientists (March-May), Max-Planck Institut fuer Metallforschung, Stuttgart, Germany.
Nov. 06	Invited Professor, Laboratoire de Physique des Solides, Universite Paris Sud XI, Orsay, France
April 05;	Guest Professor in Nanotechnology, Eidgenoessische Technische Hochschule (ETH),
June-July 07	Nanotechnology and Mico/Nanosystems Groups, Zurich, Switzerland.
July 03;	Visiting Professor, Ecole Polytechnique Federale de Lausanne (EPFL), Institut de Physique de la
Sept.-Oct. 06	Matiere Complexe and Sciences et Techniques de l'Ingenieur, Lausanne, Switzerland
Jan.-Feb. 02	Max Planck Foundation Research Award for Outstanding Foreign Scientists, Max-Planck Institut fuer Eisenforschung, Duesseldorf, Germany
Dec. 99	United Nations Senior TOKTEN Expert Award, IIT, Delhi and IIS, Bangalore, India.
May 98- Sept. 99;	Humboldt Research Prize for Senior Scientists, Universitaet Ulm, Abteilung
Jan.-Feb. 01	Experimentelle Physik, Germany
March-April 99	Fulbright Senior Scholar Award and Guest Professor, Technische Universitaet Wien, Institut fuer Feinwerktechnik, Austria
March 99	Franco-American Comm. for Edu. Exchange, Interfoundation Grant, Ecole Centrale de Lyon
Feb. 99	Guest Professor, Departments of Physics & Engineering, University of Cambridge, U.K.
Sept. 98- Feb. 99	Humboldt Research Prize for Senior Scientists, Universitaet Karlsruhe, Institut fuer Werkstoffkunde und Forschungszentrum Karlsruhe, Institut fuer Materialforschung, Germany
July-Aug. 1997	Sony Sabbatical Chair Professor, Sony Corporation Research Center, Fujitsuka, Japan
Jan.-Dec. 1989	Visiting Professor, University of California, Berkeley, CA
June 1989	Visiting Senior Scientist, USSR Academy of Sciences, Moscow, Gomel, Vilnius and Leningrad

May-July 1987 Visiting Senior Scientist, Norwegian Council for Sci. & Indus. Res., Univ of Trondheim, Norway

HONORS AND AWARDS (selected)

- 1980 ASME Henry Hess Award for the best original technical paper
- 1981 ASCE/AIME/ASME/IEEE/WSE Alfred Noble Prize for outstanding technical papers
- 1983 ASME Burt L. Newkirk Award for a notable contribution to the field of tribology
- 1983 University of Colorado George Norlin Award for attaining eminence in his field of endeavor
- 1985 University of Colorado Regents Distinguished Service Award
- 1985 IBM Corp. Invention Achievement Award
- 1986 Pi Tau Sigma & ASME Gustus L. Larson Memorial Award
- 1987 NASA Certificate of Appreciation for investigation of Space Shuttle Challenger Accident
- 1987 IBM Corp. Research Division Award for outstanding achievement
- 1990 IBM Corp. Outstanding Technical Achievement Award
- 1992 ASME Melville Medal, the highest ASME honor for the best current original paper
- 1997 ASME Board of Governors Award for valued services as Founding Chair of ISPS Division
- 1998 ASME Board of Governors Award for valued services as Chair of ISPS Division
- 2000 Pi Tau Sigma & ASME Charles R. Richards Memorial Award to recognize outstanding achievement
- 2004 ASME Robert Henry Thurston Lecture Award for pioneering research in nanotribology and nanomechanics
- 2005 The OSU Research News of the Year - Nature Inspires Nanotech, selected as the coolest science story
- 2014 STLE International Award for outstanding contributions to tribology and/or its related sciences
- 2015 BITS (Pilani) Distinguished Alumni Award to recognize and honor for bringing laurels to their alma mater
- 2015 Institution of Chemical Engineers (UK) Global Award for oil-water separation using durable green coatings
- 2015 Top Ten Science Stories of 2015 - Nanocoated- mesh for Oil-Water Separation.
- 2016 Ohio State University - Scott Faculty Award for excellence in engineering education.
- 2017 Ohio State University - Innovators Award for Translation of Research into New products and Technologies.

TEACHING ACTIVITIES

Developed courses in nanotribology, bio/nanotechnology, and Science and Public Policy, and reorganized mechanical design and materials science courses. Assisted in Creation of an Undergraduate Minor in Science, Engineering, Innovation, and Public Policy between College of Eng. and John Glenn School of Public Affairs.

RESEARCH STUDENT/SCIENTIST SUPERVISION

Completed: 20+ Ph.D. students, 41 M.S. students, 20+ Exchange students and more than 150 Visiting Scientists
Current: 6 Ph.D. students, and 5 senior scientists and visiting professors.

PROFESSIONAL SOCIETIES AND ACTIVITIES

International Academy of Engineering (Russia) (Foreign Member), Byelorussian Academy of Eng. & Tech. (Foreign Member), Academy of Triboengineering of Ukraine (Foreign Member), EU Academy of Sciences (Member); Society of Tribologists of Belarus (Honorary Member), NY Academy of Sciences (Fellow), ASME (Life Member), IEEE (Fellow), STLE (Honorary Member), ASEE, Royal Soc. of Chemistry, Sigma Xi and Tau Beta Pi.

Springer (2004-) *NanoScience and Technology Series*; Co-Editor-in-Chief (2002-), *Microsystem Technologies*, Springer; Editorial Board (2014-), PNAS; Assoc. Editor (1986-90), *J. Tribology*, Trans. ASME; Co-editor (1984-90) *STLE Proc. on Tribology and Mechanics of Magnetic Storage Systems Symposia*; Founding editor of ASME (1991-93) and World Scientific (1994-99) *Adv. in Information Storage Systems Series*; and Editor-in-Chief (1999-01), *J. of Information Storage and Processing Systems*, Birkhauser; Organized the first ASME/STLE Symp. on Tribology and Mechanics of Magnetic Storage Systems in 1984, the ASME Int. Symp. on Adv in Information Storage Systems in 1990, two international NATO Institutes in Europe in 1996/2000. Also serves on the ed. advisory boards of 30+ peer reviewed journals. Founded an ASME Information Storage and Processing Div. in 1993. Chaired several national-level society committees. Gave 400+ invited presentations and 200+ keynote/plenary addresses on six continents.

PUBLICATIONS

Authored 8 scientific books, 90+ handbook chapters, 800+ scientific papers. Also edited more than 50 books and holds more than 25 U.S. and Foreign Patents. Selected technical books:

- Tribology and Mechanics of Magnetic Storage Devices*, Springer, 1st ed., 1990; 2nd ed., 1996.
- Handbook of Tribology: Materials, Coatings and Surface Treatments* (with B. K. Gupta), McGraw-Hill, 1991.
- Handbook of Micro/Nanotribology*, 1st ed., 1995; 2nd ed., 1999; *Modern Tribology Handbook, Vol. 1 & 2*, CRC, 2001.
- Biophysics of Human Hair: Structural, Nanomechanical and Nanotribological Studies*, Springer, 2010.
- Nanotribology and Nanomechanics: An Introduction*, 1st ed., 2005, 4th ed., Springer, 2017.
- Springer Handbook of Nanotechnology*, 1st ed., 2004, 4th ed., Springer, 2017.
- Encyclopedia of Nanotechnology*, 2nd ed., Vol. 1-6, Springer, 2016.
- Biomimetics: Bioinspired Hierarchical-Structured Surfaces for Green Sci. and Technology*, 2nd ed., Springer, 2016.
- Prin. and App. of Tribology*, 1st ed., 1999, 2nd ed., 2013, *Introduction to Tribology*, Wiley, 1st ed., 2002, 2nd ed., 2013.