

Ali Erdemir

Argonne National Laboratory
Energy Systems Division; Building 212, Room D-222
9700 South Cass Avenue
Argonne, Illinois 60439 - USA
E-mail: erdemir@anl.gov

Professional Experience

Very successful and distinguished career of more than 25 years in the fields of surface engineering; tribology; materials science and other related disciplines including friction, wear, and lubrication; super-lubricious nanomaterials and coatings; in particular, design and synthesis of superhard and nearly-frictionless nano-composite coatings; innovative surface engineering and treatment technologies; nanolubrication, and nano/micro tribology.

Research Activities

Materials Science, Surface Engineering and Tribology, Nano-structured and -composite Materials and Coatings, Physical and Chemical Vapor Deposition, Solid and Liquid Lubrication, Nanolubrication, Superlubricity, Surface Science, Diamond and Diamondlike Carbon Films, Engine Lubrication and Tribology. Outstanding contributions to the arts and sciences in these areas have resulted in several breakthrough discoveries and have had a significant positive impact on further understanding of the fundamental friction and wear mechanisms of numerous novel materials, coatings, and lubricants (many of which are patented and reduced to practice).

Education

- Ph.D. in Materials Science and Engineering, 1986, Georgia Institute of Technology, Atlanta, Georgia, United States of America
- Master of Science in Materials Engineering, 1982, Georgia Institute of Technology, Atlanta, Georgia, United States of America
- Bachelor of Science in Metallurgy, 1977, Istanbul Technical University, Istanbul, Turkey

Honors and Awards

- **R&D-100 Award**, (for the development of "Ultra-fast and Large-scale Boriding," R&D Magazine, 2012
- **The University of Chicago Medal of Distinguished Performance at Argonne National Laboratory**, 2011
- **Commencement Speaker**, 2003 and 2011 Graduation Ceremony of the Istanbul Technical University, Istanbul-Turkey
- **Fellow**, American Society of Mechanical Engineers, 2010
- **Fellow**, American Vacuum Society, 2010
- **R&D 100 Award** (for the development of superhard and slick coatings), R&D Magazine, 2009
- **FLC Midwest Technology Transfer Award** (for the Transfer of Near-frictionless Carbon Films to Industry), Federal Laboratory Consortium Midwest Region Excellence in Technology Transfer, 2007
- **R&D 100 Award** (for the development of nano-structured carbide derived carbon films), R&D Magazine, 2003
- **Fellow**, Society of Tribologists and Lubrication Engineers, 2003
- **Al Sonntag Award**, (for the development of environmentally-friendly metalworking lubricants), the Society of Tribologists and Lubrication Engineers, 2002
- **Allan A. Manteuffel Award** (for continued and outstanding contributions to the field of tribology), the Society of Tribologists and Lubrication Engineers, Chicago Section, 2002
- **Fellow**, American Society for Metals (ASM) International, 2001
- **Distinguished Engineering Alumni Award**, Georgia Institute of Technology, 2000

- **Innovative Research Award** (for the discovery of superlow friction diamondlike carbon coatings), Tribology Division of the American Society of Mechanical Engineers- International, 1999
- **Director's Award**, Argonne National Laboratory, 1999
- **Discover Magazine Award** (for the discovery of nearly-frictionless carbon), 1998
- **Pace Setter Award**, Argonne National Laboratory, 1998
- **Edmond E. Bisson Award**, the Society of Tribologists and Lubrication Engineers, 1998
- **Honorary Doctorate Degree**, Anadolu University, Eskisehir, Turkey, 1998
- **R&D 100 Award** (for the development of nearly-frictionless carbon films), R&D Magazine, 1998
- **Al Sonntag Award** (for the discovery of boric acid as a novel solid lubricant), the Society of Tribologists and Lubrication Engineers, 1992
- **R&D 100 Award** (for the discovery of boric acid as a solid lubricant), R&D Magazine, 1991
- **National Research Service Award**, the National Institute of Health, 1986
- **Post-Doctoral Fellowship**, Georgia Institute of Technology, 1986

Professional Activities

- **General Chair**, International Conference on Metallurgical Coatings and Thin Films, San Diego, CA, 2012
- **Section Editor**, Encyclopedia of Tribology, Surface Engineering Section, Springer, 2012
- **Member, Executive Committee**, International Conference on Metallurgical Coatings and Thin Films, Since 2006-2012
- **Program Chair**, International Conference on Metallurgical Coatings and Thin Films, San Diego, CA, 2011
- **Member, Executive Committee**, AVS, Advanced Surface Engineering Division, 2003 to 2011
- **Chairman**, American Vacuum Society (AVS), Advanced Surface Engineering Division, 2010
- **Secretary and Treasurer**, American Society of Mechanical Engineers (ASME-International)-Tribology Division, 2008 to 2010
- **Member, Executive Committee**, ASME, Tribology Division, 2006 to 2010
- **Track Organizer and Chair**, ASME - 10th Biennial Conference on Engineering Systems, Design, and Analysis, Istanbul, Turkey, 2010
- **Track Organizer and Chair**, World Tribology Congress, Kyoto, Japan, 2009
- **Chairman**, Technical Program Committee of the AVS International Symposium-Advanced Surface Engineering Division, 2008 and 2009
- **Guest Editor, Proceedings of the International Conference on Metallurgical Coatings and Thin Films**, San Diego, CA, 2006-2008
- **Member, Fellows Committee**, STLE, 2008 to present
- **Chairman, Technical Exposition Committee**, ASME-Tribology Division, 2006-2008
- **Chairman, Executive Committee**, ASME-STLE International Joint Tribology Conference, 2007
- **Track Organizer and Chairman**, 2007 ASME-International Mechanical Engineering Congress & Exposition, Seattle, WA., November 11-15, 2007
- **Member, Technical Program Committee of the AVS International Symposium-Advances Surface Engineering Division**, 2005-2007
- **Chairman**, Awards and Honors Committee, ASME-Tribology Division, 2006
- **Trustee and Member**, Executive Committee, STLE-Chicago Section, 2003 to 2006
- **Member, Board of Director**, Society of Tribologists and Lubrication Engineers (STLE), 2005 to present
- **Program Chair**, World Tribology Congress, Washington D.C., 2005
- **Member, Research Committee on Tribology**, ASME-Tribology Division, May 1995-2005

- **Chairman and Coordinator**, Technical Committees and Industry Councils of STLE, 2003-2005
- **Member, Awards and Honors Committee**, ASME-Tribology Division, 2002-2005
- **Symposium Chair, Tribological Coatings/Surface Modifications, International Conference on Metallurgical Coatings and Thin Films**, San Diego, CA, 1996-2004
- **Member, Executive Committee, American Society for Metals-International, Surface Engineering Division**, 1999-2004
- **Chairman**, 2001 STLE 57th Annual Meeting Program Committee, Orlando, May 20-24, 2001
- **Associate Editor**, Tribology Transactions, 1994-1999
- **Program Co-Chair**, 2nd Joint American-Eastern Europe Conference on New Materials and Technologies in Tribology, Minsk, Belarus, September 1-6, 1997
- **Chairman**, Solid Lubricants Technical Committee, STLE, 1995-1996
- **Member**, Editorial Board of "Vacuum" – Elsevier
- **Member**, Editorial Board of "Tribology - Materials, Surfaces and Interfaces" – Maney
- **Member**, Editorial Board of "Lubrication Science" – Wiley

In addition to these activities, served as a member of the organizing committees and international advisory boards of more than 80 national and/or international conferences and organized and/or chaired more than 100 technical symposia, sessions, and panels.

Affiliations

- American Society of Mechanical Engineers-International (ASME-Int.), since 1993 (Fellow, 2010)
- Society of Tribologists and Lubrication Engineers (STLE), since 1989 (Fellow, 2003)
- American Society for Metals-International, since 1982 (Fellow, 2001)
- American Vacuum Society, since 1988 (Fellow, 2010)
- Georgia Tech Alumni Association, since 1987
- American Institute of Physics, since 1984

Publications and Patents

- Two Books
- 200+ Refereed articles
- 40+ Conference proceedings
- 130+ Invited, Plenary, and Keynote presentations
- 16 Invited book and handbook chapters
- 15 US Patents