

Summary CV (Academic)

DAVID B. WILLIAMS

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EDUCATION

Sc.D. Faculty of Physics and Chemistry, Cambridge University, U.K., 2001
Ph.D. Metallurgy and Materials Science, Cambridge University, U.K., 1974
M.A. Materials Science, Cambridge University, U.K., 1974
B.A. Materials Science, First Class Honours, Cambridge University, U.K., 1970

PROFESSIONAL EXPERIENCE

2006 (fall) Consulting Professorship, Harbin Institute of Technology, Harbin, China
2005 (summer) Chaikin Research Fellow, University of New South Wales, Sydney, Australia
2000-present Vice Provost for Research, Lehigh University
1999 (summer) NATO fellowship, ONERA, Chatillon, Paris, France
1994 (summer) Visiting Scientist, Max Planck Institut für Metallforschung, Stuttgart, Germany
1993 (summer) Visiting Scientist, Center for Materials Science, Los Alamos National Laboratory, Los Alamos, NM
1992-2000 Chair, Department of Materials Science and Engineering, Lehigh University
1989 (6 months) Visiting Professor, Chalmers University of Technology, Goteborg, Sweden
1986 (3 months) Visiting Scientist, Electron Microscope Unit, Sydney University, Australia
1983-present Professor, Lehigh University
1983 (6 months) Visiting Professor, University of New South Wales, Sydney, Australia
1980-1998 Director, Electron Optical Laboratory, Lehigh University
1979-1983 Associate Professor, Lehigh University
1976-1979 Assistant Professor, Lehigh University
1974-1976 Science Research Council Fellow, Cambridge University, U.K.

RESEARCH & TEACHING INTERESTS

Analytical/transmission and scanning electron microscopy (X-ray microanalysis, electron energy-loss spectrometry and convergent-beam electron diffraction); applications to interfacial segregation and bonding changes, texture and phase-diagram determination in metals and alloys for aerospace and power-generation; structure determination in glasses.

PUBLICATIONS, PRESENTATIONS, CONFERENCES

Author/co-author of 3 textbooks and multiple book chapters
Co-editor of 2 textbooks, 6 conference proceedings
Author/co-author of 220 refereed journal and book publications
Author/co-author of 210 abstract/conference publications
Presented 265 invited talks at universities, industrial labs and conferences in 26 countries

PRINCIPAL HONORS & AWARDS

Fellow of the Royal Microscopical Society (U.K.), 1977
Burton Medal of the Electron Microscopy Society of America, 1984
Fellow of the Institute of Metals (U.K.), 1985-1996
Fellow of American Society for Materials International, 1988
Heinrich Award, of the Microbeam Analysis Society, 1988
President of Microbeam Analysis Society, 1991-1992
Harold Chambers Senior Professorship, 1991- present
President of International Union of Microbeam Analysis Societies, 1994-2000
Founder's Day Commencement Speaker, Lehigh University, 1996
Fellow of the Minerals, Metals and Materials Society, 1996 (max. 100 scientists/engineers).
Presidential Science Award of the Microbeam Analysis Society, 1997
Doctor of Science (Sc.D.) Cambridge University, 2001
American Welding Society, Warren F. Savage Memorial Award (best paper published in the Welding Journal), 2004.

PROFESSIONAL SOCIETY ACTIVITIES

Fellow, **ASM International**; member since 1976; Chair, Structures Committee of the Materials Science Division, 1986/87; Symposium Organizer, World Materials Congress 1988; Bradley Stoughton Award - Lehigh Valley Chapter, 1995, Chair, Committee for Engineering Materials Achievement Award, 1998, Advisory Technical Awareness Committee, 1997-2000
Fellow, **Institute of Materials (F.I.M.) (U.K.)**; member 1976-1996; Registered as Chartered Engineer (C.Eng.) of the Council of Engineering Institutions (U.K.)
Fellow, **The Minerals, Metals and Materials Society (TMS)** of AIME; member since 1979; numerous symposia organized, Fellow's Committee 1997-2000, 2003-2006, Chair 2000, 2006
Member, **Microscopy Society of America** (formerly Electron Microscopy Society of America) since 1977; Program Committee, 1980-1982, Physical Sciences Director, 1997-1999, numerous invited talks, chaired symposia
Member, **Microbeam Analysis Society** since 1977; numerous invited talks, symposia organized and chaired, Director, 1986-1989, President 1991-1992, International Representative, 1994-2000
President, **International Union of Microbeam Analysis Societies (IUMAS)**, 1994-2000
Member, **Materials Research Society** since 1982; symposium organizer, fall 1985, spring 1996; short course organizer, Spring 1986, 1987, Fall 1986-1989
Fellow, **Royal Microscopical Society (U.K.)** 1977-present
Life Member, **European Microbeam Analysis Society** 1992-present
Member, **Australian Microbeam Analysis Group** 1994-present
Member, **Australian Society for Electron Microscopy** 1994-present
University Materials Council (chairs of all MS&E Depts. in US and Canada), 1992-2000; Policy Committee, 1993, 1997; representative to Federation of Materials Societies, 1995-2000; Vice Chair, 1998-1999, Chair, 1999-2000

OTHER PROFESSIONAL ACTIVITIES

Key Reader, Metallurgical Transactions A, 1980-1988.
Editorial Board of Journal of Microscopy, 1984-2005.

Editorial Board of Journal of Electron Microscopy Technique, 1984-1991.
Steering Committee of Argonne National Laboratory Electron Microscopy Center, 1984-1987.
Co-Chair Microbeam Analysis Society, AEM Workshop, Lehigh, 1984
Co-Chair Microbeam Analysis Society, AEM Workshop, Kona, HI, 1987
Associate Editor of Journal of Microscopy, 1986-1989.
Co-Chair of Technical Program for XIIth, International Congress for Electron Microscopy, Seattle, WA, August 1990.
Editor of Journal of Microscopy, 1989-1995.
President of Microbeam Analysis Society, USA, 1991-1992.
International Scientific Advisory Board for XIII International Congress for Electron Microscopy, Paris, 1994.
NSF DMR, Instrumentation Review Panel, April 19, 1993.
Organizing Committee, Microscopy of Composite Materials (MCM) II, Oxford University, April 1994.
Organizing Committee and Keynote Speaker, International Conference on Aluminum Alloys IV, September 1994.
Organizing Committee, MCM III, Oxford University, April 1996.
Physical Sciences Director, Microscopy Society of America, 1997-2000.
Oak Ridge National Laboratory – External Review Committee for Electron Microscope Facilities, May 1998.
Brookhaven National Laboratory – External Review Committee for Electron Microscope Facilities, May 1999.
Co-Chair IUMAS II, Kona, HI, July 2000.
Organizing Committee, Atomic-Level Characterization (ALC) '01, Kyoto, Japan, October 2001.
Organizing Committee, European Microbeam Analysis Society Meeting, Sczcyk, Poland, May 2002.
NSF Science and Technology Centers (STC) Proposal Review Panel, 2001.
Editor, Acta Materialia, 2001-present.
Argonne National Laboratory, Electron Microscope Center, External DOE Review Committee, May 2003.
International Advisory Committee, ALC '03, Kauai, HI, October 2003.
NSF Science & Technology Center site-visit team (leader), University of Washington, June 2004.
DOE review board: Frederick Seitz Material Research Lab., University of Illinois Urbana-Champaign, May 2005.
International Advisory Committee, XII International Conference on The Electron Microscopy of Solids, Kazimierz Dolny, Poland, July 2005.
International Advisory Committee, ALC '05, Kona, HI, December 2005.

LEADERSHIP

Academic Administration (Excluding VPR)

- While Chair of MS&E, 8 new faculty members were hired and 6 were tenured (3 junior and 3 senior professors). All four junior hires won NSF NYI or Career Awards and one a Presidential Early Career Award in Science and Engineering. The 4 senior faculty

members were attracted from Columbia, Illinois (Urbana-Champaign), RPI and Stevens, including a former MRS President and President of the Microscopy Society of America

- Director of the Electron Microscopy Laboratory for ~18 years; raised external funding for 9 instruments (replacement value >\$8M) including ~\$1.2M from industrial consortium
- Principal Lehigh committees: Co-Chair, Presidential Search Committee, Dean of Engineering Search Committee, Provost's Council, Dean's Council, Department Chairs' Committee, University Priorities and Progress Committee, University Research Council

Personal Research

For the scientist or engineer, one measure of research quality is the funding of peer-reviewed grants from multiple federal agencies; my personal record is:

- Continuous funding from NSF Division of Materials Research as PI, 1977-2007, including grants with colleagues at the Enrico Fermi Institute, University of Chicago and Department of Physics, Arizona State University
- DOE funding from 1977-1992 (with M. R. Notis) and 1995-2000 (with H. Jain)
- NASA funding from 1977-1994 (with J. I. Goldstein)
- PI/Co-PI for 9 major instrumentation awards from NSF (5), DOE (2) and ONR (2)
- Participated in multi-disciplinary research proposals with faculty from Lehigh's Colleges of Arts and Science and Education

In collaboration with Lehigh faculty and other academic colleagues I have:

- Created the US's largest, and one of the world's finest, research laboratory for electron microscopy (EM) of materials
- Pioneered many aspects of the application of EM to materials problems
- Organized numerous national and international materials and EM conferences

Teaching

At Lehigh, I have taught or participated in 18 different undergraduate and graduate courses and developed some novel teaching programs. Primary educational accomplishment comprise:

- Co-authored the leading undergraduate and graduate textbook in transmission electron microscopy (TEM) of materials (> 11,000 copies, used in > 50 US universities and many more worldwide)
- Advised or co-advised 22 MS and 22 PhD students and 15 Post Docs.
- Introduction of Lehigh's first accelerated 5-year BS/MS program (1992); developed into the university-wide Presidential Scholarship program (with Dick Hertzberg)
- Creation of first intra-college minor in the Rossin College (1995) (with Ken Tarby)
- Development of first remote-electron microscopy teaching laboratories over the Internet, with Oak Ridge National Laboratory (1996)
- Built a dedicated undergraduate EM facility, emphasizing hands-on teaching of both scanning and transmission electron microscopy (with Joe Goldstein and Charles Lyman)
- Development of an accelerated 5-year combined BS/MEd degree program between the Rossin College and the College of Education (with Ray Bell)

More details available in full CV.