

### Biographical Sketch

Dr. Stoller joined the Metals and Ceramics (now Materials Science and Technology) Division of the Oak Ridge National Laboratory as a research staff member in April 1984. He currently holds the title of Distinguished Research Staff Member, and is a Co-PI of the recently funded (by BES) Energy Frontier Research Center on Energy Dissipation and Defect Evolution at ORNL. Prior to joining ORNL, he earned B.S. and M.S. degrees in nuclear engineering from the University of California, Santa Barbara and the University of Wisconsin, Madison, respectively. In 1987, he received his Ph.D. in chemical engineering from the UCSB. During his time at UCSB he was awarded a U.S. DOE Magnetic Fusion Energy Fellowship. Between his M.S. and Ph.D., he was employed as a staff engineer in the Advanced Reactor Systems Department at General Electric in Sunnyvale, California. During his tenure at ORNL, he has spent time as a visiting scientist at the Japan Atomic Energy Research Institute (now JAEA) in Tokai (1997), the UK Harwell Laboratory (1994), and the University of California, Santa Barbara (1990-91). Since 2000 he has been an adjunct professor of nuclear engineering at the University of Michigan, Ann Arbor.

He is the author or co-author of more than 150 peer-reviewed publications, book chapters, and technical reports on the effects of radiation on materials, with a focus on the fusion reactor environment. From January 2012 through December 2015, he served as an Editor of the Journal of Nuclear Materials. He has been the organizer or co-organizer of numerous international symposia and workshops. These include serving as Vice-Chairman of the 14th (1988) and Chairman of the 15th (1990) ASTM International Symposia on the Effects of Radiation on Materials. He was a co-editor of the Fifth (1991), Ninth (1999) and 11th (2003) International Conferences on Fusion Reactor Materials, Chairman of the Publication Committee for ICFRM-12 (2005), and General Chairman of ICFRM-15 in 2011, and served on the Technical Program Committee for the ICFRM-16 (2013) and ICFRM-17th (2015). In 2002 he served as General Chairman of the American Nuclear Society Topical Meeting on the Technology of Fusion Energy. He was a co-organizer in 2010 of an international workshop sponsored by the Centre Européen de Calcul Atomique et Moléculaire on *Materials Modeling in Nuclear Energy Environments: State of the Art and Beyond*.

He served as a Panelist for the U.S. DOE Office of Basic Energy Sciences Workshops on *Basic Research Needs for Advanced Nuclear Energy Systems* in 2006 and the Basic Energy Sciences Workshop on *Basic Research Needs for Materials under Extreme Environments* in 2007. He was a co-Organizer of the *Workshop on Advanced Computational Materials Science: Application to Fusion and Generation IV Fission Reactors*, sponsored by U.S. Department of Energy Office of Science and Office of Nuclear Energy, Science, and Technology, 2004. In 1998/1999 he served as Chairman of the U.S. DOE Office of Fusion Energy Sciences Program Planning Committee for Theory and Modeling.

He has been recognized as a Fellow of the American Nuclear Society, ASM International and ASTM International. He was a member of the Board of Directors of ASTM International from 2004-2012, having served as Chairman of the Board in 2010. He served as the Chairman of ASTM Committee E10 on Nuclear Technology and Applications from 2002-2007, and is currently Chairman of Subcommittee E10.08 on Radiation Damage Simulation. He served from 1993 to 2003 as a member and Chairman of the ASTM Standing Committee on Publications. He was a member of the Executive Committee of the American Nuclear Society's Fusion Energy Division from 2001 to 2009, and served as Division Chairman in 2007-2008.

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**Employment History**

April 1984 - present: OAK RIDGE NATIONAL LABORATORY, Oak Ridge, TN

Distinguished research staff member, Nuclear Materials Science and Technology Group in the Materials Science and Technology Division. Currently a Co-principle Investigator for U.S. DOE Office of Basic Energy Sciences Energy Frontier Research Center for Energy Dissipation and Defect Evolution, and Task Leader for materials modeling work supported by the U.S. DOE Office of Fusion Energy Sciences and Office of Nuclear Energy. Principle Investigator for multi-year irradiation and modeling program for Atomic Energy of Canada, Ltd.

Primary active research interests include: molecular dynamics simulation of primary radiation damage formation, high-temperature radiation effects in structural materials, the influence of transmutant helium on microstructural evolution in irradiated materials, and radiation effects on the electrical and structural properties of ceramic materials. Previous work for the U.S. NRC includes theoretical modeling of light water reactor (LWR) pressure vessel embrittlement, LWR surveillance data analysis, and coordinating related experimental activities. Continuing role as coordinator of an experimental program encompassing neutron and charged-particle irradiation experiments, post-irradiation mechanical testing and microstructural characterization by transmission electron microscopy and atom probe field ion microscopy.

Since 2000, consultant to Rolls-Royce and Associates on evaluation of issues related to reactor pressure vessel embrittlement.

Formal supervisory experience includes five post-doctoral fellows, four Ph.D. and one M.S. graduate student.

February - June 2004: U.S. DEPARTMENT OF ENERGY, Germantown, MD

Assignment with Division of Materials Sciences and Engineering, Office of Basic Energy Sciences.

February - June 2001: U.S. DEPARTMENT OF ENERGY, Germantown, MD

Assignment with Division of Materials Sciences and Engineering, Office of Basic Energy Sciences.

December 2000-2003: UNIVERSITY OF MICHIGAN, Ann Arbor, MI

Adjunct Professor in Nuclear Engineering and Radiological Sciences.

November - December 1997: JAPANESE ATOMIC ENERGY RESEARCH INSTITUTE, Tokai, JAPAN

Invited foreign research appointment with Materials Science and Engineering Department. Consulted with Dr. A. Hishinuma on his efforts to develop more modeling capability in the department.

June - August 1994: HARWELL LABORATORY: AEA TECHNOLOGY, Harwell, UNITED KINGDOM

Visiting scientist with Materials Performance Department. Worked with Drs. W. J. Phythian and A. J. E. Foreman to complete extensive comparison of primary radiation damage formation in copper and iron.

September 1990-August 1991: UNIVERSITY OF CALIFORNIA, Santa Barbara, CA

During sabbatical from ORNL, visiting researcher in the Department of Chemical and Nuclear Engineering. Worked with Profs. G. R. Odette and G. E. Lucas to develop an irradiation plan and material matrix for a 3-year, DOE-funded experiment investigating low-temperature embrittlement of ferritic steels.

July 1980 - March 1984: UNIVERSITY OF CALIFORNIA, Santa Barbara, CA

Employed as a research associate (July-December 1980) and graduate student (January 1981-March 1984) in the Department of Chemical and Nuclear Engineering. Initiated research which later became Ph.D. thesis topic. Specific theoretical models were developed to investigate various aspects of the problem of

radiation damage to austenitic stainless steels from fast neutrons. Relevant TEM examination of irradiated materials supported model development. Exploitation of simple models provided the insight that permitted formulation of a more comprehensive theory.

September 1979 - June 1980: GENERAL ELECTRIC CO., Sunnyvale, CA

Employed by the Advanced Reactor Systems Department as an associate engineer in the Fuel Pin and Assembly Design Group. This work involved theoretical modeling of fast reactor fuel performance and model development for the "LIFE" fuel pin performance code. Principal areas of investigation were fuel pin thermal performance and fission gas release

### **Education**

- Ph.D., Chemical Engineering, June 1987, University of California, Santa Barbara  
Dissertation Title: Microstructural Evolution in Fast-Neutron-Irradiated Austenitic Stainless Steels
- M.S., Nuclear Engineering, August 1979, University of Wisconsin, Madison
- B.S., Nuclear Engineering, June 1978, University of California, Santa Barbara

### **Publications**

Since 2012, Editor of Journal of Nuclear Materials

Author or co-author of more than 140 publications and reports on the effects of radiation on materials, with a focus on the fusion reactor environment.

### **Symposia and Workshops**

International Conference on Fusion Reactor Materials (ICFRM): 2015, 2013 Technical Program Committee, ICFRM-16 and 17; 2011, General Chairman of ICFRM-15; 2005-2011, International Advisory Committee; 2005, Chairman of Publication Committee for ICFRM-12; co-editor of proceedings for ICFRM-5 (1991), ICFRM-9 (1999), ICFRM-11 (2003), and ICFRM-12 (2005).

ASTM International Symposium on the Effects of Radiation on Materials: 1990, General Chairman, Fifteenth Symposium, Editor, ASTM STP 1125 (1992); 1988, Vice-Chairman, Fourteenth Symposium, Co-Editor, ASTM STP 1046 (1990).

Materials Research Society: 2008, Co-chairman of Symposium on Materials for Future Fusion and Fission Technologies, Co-editor, Volume 1125 of MRS Symposium Proceedings Series.

International Energy Agency: 2008, Chairman and organizer, International Workshop on Fusion Materials Modeling

Fourth International Conference on Multiscale Materials Modeling: 2008, Co-organizer, Symposium on Multiscale Modeling of Radiation Effects in Materials; Co-organizer of Symposium on Elasticity to Atomistics: Predictive Modeling of Defect Behavior, Guest Editor of Special Issue of Philosophical Magazine 90, No.7-8 (2010).

Centre Européen de Calcul Atomique et Moléculaire (Switzerland): 2010, Co-organizer of International Workshop on Materials Modeling in Nuclear Energy Environments: State of the Art and Beyond.

U. S. Department of Energy: 2007, Panelist for Office of Basic Energy Sciences Workshop on Basic Research Needs for Materials under Extreme Environments; 2006, Panelist for Office of Basic Energy Sciences Workshop on Basic Research Needs for Advanced Nuclear Energy Systems; 2004: Coorganizer for International Workshop on Advanced Computational Materials Science: Application to Fusion and Generation IV Fission Reactors; 1998-1999, Chairman of *Ad hoc* Program Planning Committee for Theory and Modeling, Office of Fusion Energy Sciences.

International Group on Radiation Damage Mechanisms, Technical Area Coordinator for Environmental and

Metallurgical Variables, 2009-current

Invited member of International Task Force on Redefinition of Basic Damage Parameters for Materials Under Irradiation, Nuclear Energy Agency of the Organization for Economic Cooperation Development, 2011-current.

Invited member, International Atomic Energy Agency, Coordinated Research Project: Primary Radiation Damage: from nuclear reaction to point defects, 2013-2017.

### **Professional Societies**

ASTM International

- Board of Directors, 2004-2012, Board Chairman (2010), Vice-Chairman (2008-2009), Chairman of Finance and Audit Committee (2007)
- Standing Committee on Publications, Chairman (2002-2003), Vice-Chairman, 1998-2003, member 1993-2003
- Committee E10 on Nuclear Technology and Applications: Chairman (2002-2007), Vice-Chairman (1994-2001), Secretary (1992-1993)
- Chairman, Committee E10-08 on Radiation Damage Simulation (since 1988)
- Chairman, Fifteenth International Symposium on the Effects of Radiation on Materials, June, 1990, Editor, ASTM STP 1125 (1992).
- Vice-Chairman, Fourteenth International Symposium on the Effects of Radiation on Materials, June, 1988. Co-Editor, ASTM STP 1046 (1990).

American Nuclear Society

- Executive Committee, Fusion Energy Division, 2001-2009, Chairman (2008), Vice-chairman (2007)
- General Chairman, 15th Topical Meeting on the Technology of Fusion Energy, November 2002.

### **Other Academic and Professional Committee Service**

ORNL

- ORNL SP2 Access Committee, 1994-1998.
- Steering Committee for ORNL Computer Users, 1988-1990
- Chairman, Unix Subcommittee for ORNL Computer Users, 1988-1990
- ORNL Computer User Advisory Committee, 1985-1987

University of California, Santa Barbara

- College of Engineering Dean Search Committee, 1983
- Campus Radiation Safety Committee, 1981-1983

### **Honors and Awards**

- Fellow of American Nuclear Society, 2009
- Outstanding Achievement Award, ANS Materials Science and Technology Division, 2009
- ORNL Outstanding Mentor Award, 2008
- Fellow of ASM International, 2007
- Outstanding Achievement Award, ANS Fusion Energy Division, 2004
- Fellow of ASTM International, ASTM Award of Merit, 1995
- Microscopy Society of America, Best Poster in Physical Sciences, 53rd Annual Meeting, 1995
- ASTM Award of Appreciation, 1988, 1990
- Significant Implication for DOE-Related Technologies Award, Metallurgy and Ceramics Category,

U.S. DOE Materials Sciences Research Competition, 1990.

- Fellow, U.S. DOE Magnetic Fusion Energy Fellowship Program, 1982-1984
- Member, Tau Beta Pi, National Engineering Honor Society, 1977

**Military and Other Employment**

June 1977 - September 1977: SOUTHERN CALIFORNIA EDISON, Rosemead, CA

Summer employment in the Nuclear Licensing Group as a licensing engineer for San Onofre Nuclear Generating Station, Unit 1.

October 1972 - August 1974: TRI-CITY FURNITURE MART, Yucca Valley, CA

Aided in start-up of new business, responsibilities included sales and purchasing.

January 1970 - August 1972: UNITED STATES MARINE CORPS, San Diego and 29 Palms, CA

Electronics technician, DOD Secret Clearance, Honorable Discharge at the rank of Corporal (E4).