

Résumé

Name: Richard W. Siegel

Birthdate: 21 May 1937

Place of Birth: Cambridge, Massachusetts

Nationality: USA

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Menands, New York 12204 USA
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Materials Science and Engineering Department
Rensselaer Polytechnic Institute
Troy, New York USA
Tel: (518) 951-5461
E-mail: rwsiegel@rpi.edu
and rwsiegel2@gmail.com

Education:

<u>Institution</u>	<u>Degree</u>	<u>Major Field</u>	<u>Year</u>
Williams College Williamstown, Massachusetts	A.B.	physics	1958
University of Illinois Urbana, Illinois	M.S.	physics	1960
University of Illinois Urbana, Illinois	Ph.D.	metallurgy	1965

Professional Experience:

<u>Institution and Location</u>	<u>Position</u>	<u>Period</u>
University of Illinois Urbana, Illinois	Teaching Assistant Department of Physics	2/59 - 6/59
Materials Research Laboratory	Research Assistant	6/59 - 10/64
Cornell University Ithaca, New York	Research Associate Department of Materials Science and Engineering	10/64 - 9/66
State University of New York at Stony Brook	Assistant Professor Associate Professor Adjunct Professor	9/66 - 9/69 9/69 - 9/75 9/75 - 8/76

	Department of Materials Science	
Max-Planck-Institut für Metallforschung, Stuttgart, Germany	Guest Professor Institut für Physik	9/72 - 9/73
Argonne National Laboratory Argonne, Illinois	Research Scientist Group Leader, Metal Physics Materials Science Division Group Leader, Defects in Metals Materials Science and Technology Division Research Program Manager	7/74 - 6/95 7/74 - 10/82 10/82 - 10/86 8/80 - 5/88
Ben-Gurion University of the Negev, Beer-Sheva, Israel	Visiting Professor Materials Engineering Department	12/80 - 1/81
University of Madras, India Department of Nuclear Physics	University Grants Commission Visiting Professor	2/82 & 1/85
Ecole Polytechnique Fédérale de Lausanne, Switzerland	Visiting Professor Institut de Physique Experimentale	5/93 - 6/93
Max-Planck-Institut für Mikrostrukturphysik, Halle, Germany	Alexander von Humboldt Foundation Research Prize Awardee	3/95 - 7/98
RIKEN (The Institute of Physical and Chemical Research), Wako-shi, Japan	RIKEN Eminent Scientist	3/02 – 4/04
Nanophase Technologies Corporation Romeoville, Illinois	Founder and Director Consultant	11/89 - present 11/89 - 8/02
Rensselaer Polytechnic Institute Troy, New York	Robert W. Hunt Professor Department Head Materials Science and Engineering Department Founding Director, Rensselaer Nanotechnology Cente	6/95 - 12/21 6/95 - 5/00 4/01-6/15

Professional Honors and Awards:

- 2017 - Fellow, National Academy of Inventors
- 2015 - College of Fellows, American Institute of Medical and Biological Engineering
- 2010 - MRS Fellow, Materials Research Society
- 2003 - Deutsche Bank Prize: Pioneer of Nanotechnology – Nanomaterials, Germany
- 2001 - RIKEN Eminent Scientist Award, Japan
- 1996 - D.K.C. MacDonald Lecture, Canada
- 1995 - Robert W. Hunt Professor, Rensselaer Polytechnic Institute

1994 - Alexander von Humboldt Foundation Senior Research Award, Germany
1993 - Honorary Member, The Materials Research Society of Japan
1992 - Honorary Member, Materials Research Society of India
1991 - Federal Laboratory Consortium Award of Excellence in Technology Transfer

Memberships in Professional Societies:

American Physical Society, admitted 12/62
TMS (The Minerals, Metals & Materials Society), admitted to The Metallurgical Society of the AIME 7/69, TMS Senior Member from 5/04
Institute of Physics (UK), admitted 4/73
American Association for the Advancement of Science, admitted 7/76
Materials Research Society, admitted 11/83, elected to Council 10/92, 2010 MRS Fellow
Materials Research Society of India, elected Honorary Member 2/92
Materials Research Society of Japan, elected Honorary Member 9/93
Society for Biomaterials, admitted 5/00
Giant Screen Cinema Association (GSCA), Charter Member 3/06
American Institute of Medical and Biological Engineering, elected Fellow 1/15

Additional Professional Activities:

State University of New York at Stony Brook:

Engineering College: Library Committee, member 9/66 to 9/67 and 9/70 to 9/71; Graduate Executive Committee, member 9/69 to 12/69; Curriculum Committee, member 9/67 to 9/69, elected chairman 9/68 to 9/69, member 9/73 to 6/74; Research Facilities Committee, member 9/71 to 9/73

State University of New York at Stony Brook (continued):

Instructional Resources Center Committee of Faculty Senate: elected member from Engineering 9/67 to 9/71
Ad Hoc Committee on NSF University Science Development Program: 1967 – 1968
Engineering College Commencement, Spring 1973: committee chairman and coordinator
Director of Materials Science Department Graduate Programs: 9/67 to 12/69
Materials Science Graduate Admissions Committee: member 1/68 to 12/69; chairman 1/68 to 9/68

Materials Science Graduate Program Committee: member 9/68 to 12/69; 9/73 to 6/74

Materials Science Colloquium Chairman: 9/66 to 9/67

Materials Science Research Facilities Committee: member 1967; chairman 9/71 to 9/72

Materials Science Undergraduate Program Committee: chairman 9/73 to 6/74

Director of the Electron Microscopy Facility 2/67 to 6/74

Graduate Research Advisor: Materials Science Department: S. M. Chang (MS, 1970), M. K. Chason (MS, 1974), R. J. DiMelfi (MS, 1970), K. C. Jain (MS, 1969; PhD, 1972), C. C. Lee (PhD, 1972), R. P. Sahu (PhD, 1977)

Argonne National Laboratory:

Organizer, Materials Science Division, Distinguished Visiting Scientist Program - Defects and Radiation Damage in Solids (W. Schilling and R. W. Balluffi, lecturers), Summer 1975

Organizer and co-editor of the Proceedings, with N. L. Peterson, International Conference on the Properties of Atomic Defects in Metals, October 18-22, 1976, Argonne National Laboratory, Argonne, Illinois

Materials Science Division Promotion Committee: member 1976-78, 1981-82

Materials Science Division Awards Committee: member 1977-78

Co-authored (3) reports, with E. S. Fisher and Suk Hong Kim, entitled "Progress Report on Study of Cyclic Stress Effects on Transport Properties of Superconducting Composite Materials at 4.2 K", July 1975, October 1975, and January 1976

Authored "Materials for Energy Conversion and Storage", part of an Argonne Center for Educational Affairs Proposal, "Energy Materials Research", to the National Science Foundation - Faculty Research Participation Grants, Summer 1976

Materials Science Division Committee on Electron Microscope Facilities: chairman 1978-85

High-Voltage Electron Microscope (HVEM) - Tandem Accelerator National Facility Steering Committee: member 1979-84

Argonne National Laboratory (continued):

Physics/High Energy Physics Space Consolidation Committee: chairman 1982

Electron Microscopy Center for Materials Research: acting director 1983-84; Director Search Committee, member 1984-85; Steering Committee: 1984-87

Materials Science and Technology Division Theory Committee: chairman 1984

Division of Educational Programs, Program Leaders Search Committee: member 1985

Argonne Fellow Committee: member 1983-94

Rensselaer Polytechnic Institute:

Graduate Research Advisor: Lisa K. Koivisto (MEng 1998, Materials Science and Engineering); Paula J. Crawford (MEng 1999, Materials Science and Engineering); Chek B. Ng (MS 1998, Materials Science and Engineering; co-advisor L. S. Schadler); Thomas J. Webster (PhD Biomedical Engineering 2000; co-advisor R. Bizios); Petra Winberg (MS 2001, Polymer Science and Engineering, Lund Institute of Technology; co-advisors L. S. Schadler and J. I. Hong); John M. Nugent (PhD 2002, Materials Science and Engineering; co-advisor P. M. Ajayan); Ben J. Ash (PhD 2003, Materials Science and Engineering; co-advisor L. S. Schadler); Dongling Ma (PhD 2004, Materials Science and Engineering; co-advisor L. S. Schadler); Praveen Bhimaraj (PhD 2004, Materials Science and Engineering; co-advisor L. S. Schadler); Junrong Zheng (MS 2003, Chemistry); Aaron J. Dular (PhD 2005, Materials Science and Engineering; co-advisor R. Bizios); Jake D. Ballard (PhD 2005, Materials Science and Engineering; co-advisor R. Bizios); Tong Liu (PhD 2005, Materials Science and Engineering; co-advisor R. Ozisik); Paul Nicotera (MEng 2005, Materials Science and Engineering); Ludovico Dell'Acqua-Bellavitis (MS 2003, Materials Science and Engineering; MBA 2004, Lally School of Management and Technology; PhD 2007, Engineering Science); Frank W. Mont (MS 2006, Electrical, Computer and Systems Engineering; co-advisor E. F. Schubert); Ryan T. Schneider (MS 2008, Materials Science and Engineering; co-advisor R. Ozisik); Won Seok Lee (MS 2007, Materials Science and Engineering; co-advisor E. F. Schubert); Garima Vyas (MS 2007, Electrical, Computer and Systems Engineering; co-advisor E. F. Schubert); Joseph H. Nuffer (PhD 2011, Chemical and Biological Engineering; co-advisor J. S. Dordick); David J. Poxson (PhD 2011, Multidisciplinary Science; co-advisor E. F. Schubert); Jennifer E. Gagner (PhD 2012, Materials Science and Engineering; co-advisor J. S. Dordick); Peng Tao (PhD 2012, Materials Science and Engineering; co-advisor L. S. Schadler); Todd B. Abrams (MEng 2012, Materials Science and Engineering); Ying Li (PhD 2014, Materials Science and Engineering; co-advisor L. S. Schadler); Xi Qian (PhD 2014, Materials Science and Engineering; co-advisor J. S. Dordick); Nika Ogievetsky (MEng 2015, Materials Science and Engineering; co-advisor J. S. Dordick); Emily Elizabeth (Patrick J.) Downs (PhD 2017, Materials Science and Engineering; co-advisors L. S. Schadler and J. S. Dordick)

Vice President for Institute Relations Search Committee: member 1995-96

Chemical Engineering Department: Assistant Professor Search Committee, 1996-97;
Department Head Search Committee, chairman 1997

Rensselaer Annual Fund: Faculty/Staff co-chair 1997-98

Provost Search Committee: member 1998-99

Rensselaer Polytechnic Institute (continued):

Internal Strategic Planning Committee for Biotechnology: member 2000;
Biotechnology and Interdisciplinary Studies Building Advisory / Planning Committee: member 2000-03

Biotechnology Constellation Chair Search Committee: member 2000 – 2005

Faculty Compensation Advisory Committee: member 2002 – 2003

Vice President for Research Search Committee: member 2004 – 2005

Intellectual Property Policy Task Force: member 2005 – 2006

Provost Core Recruitment Committee: member 2006 – 2007

PhD Thesis Committees: Kevin E. Mello (PhD 1998, Materials Science and Engineering, S. Murarka, advisor); Jeffrey C. LaCombe (PhD 1999, Materials Science and Engineering, M. E. Glicksman, advisor); Sekyung Chang (PhD 2000, Materials Science and Engineering, R. H. Doremus, advisor); Jinseo Ahn (PhD 2003, Chemistry, J. V. Crivello, advisor); Yung Joon Jung (PhD 2003, Materials Science and Engineering, P. M. Ajayan, advisor); Ru Chen (PhD 2003, Chemistry, B. C. Benicewicz, advisor); Kumin (Charles) Yang (PhD 2006, Materials Science and Engineering, R. Ozisik, advisor); Amit Pratap Singh (PhD 2007, Materials Science and Engineering, G. Ramanath, advisor); Xuesong Li (PhD 2007, Materials Science and Engineering, P. M. Ajayan, advisor); Justin B. Bult (PhD 2007, Materials Science and Engineering, L. S. Schadler and P. M. Ajayan, advisors); Su Zhao (PhD 2007, Materials Science and Engineering, L. S. Schadler, advisor); Youngsuk Son (PhD 2008, Mechanical, Aerospace and Nuclear Engineering, T. Borca-Tasciuc, advisor); Binay K. Singh (PhD 2009, Chemical and Biological Engineering, G. Ramanath, advisor); Douglas Dukes (PhD 2010, Materials Science and Engineering, L. S. Schadler, advisor); Limeng Chen (PhD 2010, Materials Science and Engineering, L. S. Schadler and R. Ozisik, advisors); Lung-Ching Sang (PhD 2010, Chemical and Biological Engineering, M.-O. Coppens advisor); Frank W. Mont (PhD 2011, Electrical, Computer and Systems Engineering, E. F. Schubert, advisor); Won Seok Lee (PhD 2011, Engineering Science, E. F. Schubert, advisor); Rutvik Mehta (PhD 2011, Materials Science and Engineering, G. Ramanath, advisor); Yanliang Zhang (PhD 2011, Mechanical, Aerospace and Nuclear Engineering, T. Borca-Tasciuc, advisor); Jianing Gao (PhD 2012, Materials Science and Engineering, L. S. Schadler, advisor); Zepu Wang (PhD 2012, Materials Science and Engineering, L. S. Schadler, advisor); Yanping Chen (PhD 2013, Materials Science and Engineering, Y. Shi, advisor); Ming Ma (PhD 2013, Materials Science and Engineering, E. F. Schubert, advisor); Shantanu V. Sule (PhD 2013, Chemical and Biological Engineering, P. M. Tessier, advisor); Jiemin Wu (PhD 2016, Chemical and Biological Engineering, P. M. Tessier, advisor)

Founding Director, Rensselaer Nanotechnology Center 2001 – 2015 and NSF Nanoscale Science and Engineering Center for Directed Assembly of Nanostructures 2001 – 2013

Executive Producer, with L. S. Schadler and S. Garde, Molecularium® Project's award-winning educational media: digital-dome show *Molecularium: Riding Snowflakes*, 2002-2005; giant-screen (2-D and 3-D) movie and high-definition video show *Molecules to the MAX!*, 2006-2009; interactive Website *NanoSpace®*, 2010-2012; *Molecules to the MAX!* DVD and Blu-Ray, 2014-2015; and the game app *My Molecularium*, 2016-2017

School of Engineering Outstanding Team Award, with S. Garde and L. S. Schadler, 2007; School of Engineering Outstanding Professor Award 2013

Other:

Short Courses: "Diffusion - Fundamentals and Applications", sponsored by the American Society for Metals, Academy for Metals and Materials, with L. L. Seigle, May 1-3, 1968, Boston, Massachusetts and February 3-5, 1969, Chicago, Illinois

Consultant, Materials Science Division, Argonne National Laboratory, Argonne, Illinois, May – June 1974

ERDA (Materials Sciences Program of Division of Physical Research) Workshop on Defects, Diffusion and Radiation Effects, participant and Chairman - Geothermal Study Group, at Oak Ridge National Laboratory, Oak Ridge, Tennessee, April 1977

Session Chairman, Defects in Metals, at the March Meeting of the American Physical Society, Chicago, Illinois, March 1979

Session Chairman, Defects, at the Fifth International Conference on Positron Annihilation, Lake Yamanaka, Japan, April 1979

Organizer, with N. L. Peterson, and Session Chairman, Symposium on Diffusion in Refractory Materials, Fall Meeting of The Metallurgical Society of AIME and the American Society of Metals, Milwaukee, Wisconsin, September 1979

Invited participant and speaker, Workshop on Techniques for Radiation Damage Analysis, sponsored by the Damage Analysis and Fundamental Studies Committee of the DOE Office of Fusion Energy, Oak Brook, Illinois, March 1979

Member, 1980 Selection Jury for The University of Chicago Awards for Distinguished Performance at Argonne National Laboratory

Participant, Department of Energy, Basic Energy Sciences Program Assessment, Germantown, Maryland, October 1981

Session Chairman, Advances in Techniques, Yamada Conference V on Point Defects and Defect Interactions in Metals, Kyoto, Japan, November 1981

Session Chairman, 2-D Angular Correlation, Second National Symposium on Positron Annihilation, Madras, India, February 1982

Session Chairman, Defects and Diffusion in Metals, March Meeting of the American Physical Society, Los Angeles, California, March 1983

Session Chairman, Point Defects and Clusters, Symposium on Advanced Photon and Particle Techniques for the Characterization of Defects in Solids, Materials Research Society Fall Meeting, Boston, Massachusetts, November 1984

Session Chairman, Seventh International Conference on Positron Annihilation, New Delhi, India, January 1985

Session Chairman, International Conference on Vacancies and Interstitials in Metals and Alloys, Berlin, Germany, September 1986

Organizer and Chairman, with B. M. Klein, International Workshop on Electronic Structure of Defects in Metals and Alloys, Argonne National Laboratory, Argonne, Illinois, June 1986

Other (continued):

International Advisory Committee, International School on Electronic Band Structure and its Applications, Kanpur, India, October-November 1986

Organizer and Chairman, with R. Sinclair and J. R. Weertman, Symposium on Characterization of Defects in Materials, at the Materials Research Society Meeting, Boston, Massachusetts, December 1986

Session Chairman, Defects in Metals, TMS Annual Meeting, Denver, Colorado, February 1987

Organizer and Chairman, with F. E. Fujita, U.S.-Japan Seminar on Electronic Structure and Lattice Defects in Alloys, East-West Center, Honolulu, Hawaii, May 1987

Organizer and Chairman, with L. E. Brus, Department of Energy Council on Materials Science Panel on Research Opportunities on Clusters and Cluster-Assembled Materials, Monterey, California, January 1988

Session Chairman, Symposium on Powder Preparation at the Materials Research Society International Meeting on Advanced Materials, Ikebukuro, Tokyo, Japan, June 1988

Session Chairman, Physical Metallurgy Gordon Conference, New Hampshire, July 1988

Scientific Advisory Committee, International Conference on Diffusion in Metals and Alloys (DIMETA-88), Balatonfüred, Hungary, September 1988

Organizer and Chairman, with B. H. Kear, L. E. McCandlish, and D. E. Polk, Symposium on Multicomponent Ultrafine Microstructures, at the Materials Research Society Meeting, Boston, Mass., November-December 1988

Organizer and Meeting Chairman, with R. F. C. Farrow and A. M. Stacy, Materials Research Society 1989 Spring Meeting, San Diego, California, April 1989

Organizer and Session Chairman, Special Session on 'Cold Fusion' at the Materials Research Society 1989 Spring Meeting, San Diego, California, April 1989

Review Committee, chairman: Department of Mechanics and Materials Science, Rutgers University, May 1989

Advisory Committee, International Symposium on Physics of New Materials, Osaka, Japan, June 1989

Guest Physicist, National Synchrotron Light Source, Brookhaven National Laboratory, Upton, New York, 1986 - 1994

National Materials Advisory Board Committee on Materials with Submicron-Sized Microstructures: member 1986 - 1989

Organizer and Chairman, with D. Gupta and H. Jain, Symposium on Atomic Defects and Migration in Materials, at TMS-ASM Fall Meeting, Indianapolis, Indiana, October 1989

Review panel member, National Science Foundation, Division of Materials Research, Science & Technology Center (STC) proposals, December 1989; STC site visiting committee, April 1990

Other (continued):

Organizer and Chairman, with B. H. Kear, Acta Metallurgica Conference on Materials with Ultrafine Microstructures, Atlantic City, New Jersey, October 1990

Organizer and Chairman, Symposium on Multifunctional Nanophase Composites, at the 43rd Pacific Coast Regional Meeting of the American Ceramic Society, Seattle, Washington, October 1990

Session Chairman, Structure of Nanophase Materials, Symposium on Clusters and Cluster-Assembled Materials, Materials Research Society 1990 Fall Meeting, Boston, Massachusetts, November 1990

Session Chairman, Nanophase Materials, International Conference on Diffusion and Defects in Solids, Moscow to Perm, USSR, July 1991

Review panel member, National Science Foundation, Directorate of Engineering, Emerging Technologies Initiation Program proposals on Ultrafine Particle Engineering, July 1991

International Committee, First International Conference on Nanostructured Materials, Cancun, Mexico, September 1992

Recipient of Federal Laboratory Consortium 1991 Award for Excellence in Technology Transfer

Organizing Committee, First NIST Workshop on Nanostructured Materials, National Institute of Standards and Technology, Gaithersburg, Maryland, May 1992

Panel member, National Workshop on Critical Technologies Research: Opportunities for DOE, Advanced Materials Session, Lawrence Berkeley Laboratory, Berkeley, California, May 1992

Session Chairman, Ultrafine Ceramic Powders, Symposium on Nanophase Materials, European Materials Research Society 1992 Fall Meeting, Strasbourg, France, November 1992

Session Chairman, Nanocomposites: Thin Films and Multilayers, Symposium on Nanophase and Nanocomposite Materials, Materials Research Society 1992 Fall Meeting, Boston, Massachusetts, December 1992

Novel Nanoscale Materials Working Group Leader and Organizer, Department of Energy Workshop on Innovation in Materials Processing and Manufacture: Exploratory Concepts for Energy Applications, Oak Ridge, Tennessee, March 1993

Co-Director, with G. C. Hadjipanayis, NATO Advanced Study Institute on Nanophase Materials: Synthesis-Properties-Applications, Corfu, Greece, June-July 1993

Session Chairman, Symposium on Forming, Characteristics and Processing of Ceramics, 24th Annual Meeting of the Fine Particle Society, Chicago, Illinois, August 1993

Session Chairman, Symposium on Frontiers of Materials Science and Engineering, 3rd IUMRS International Conference on Advanced Materials, Tokyo, Japan, September 1993

Other (continued):

Symposium Chair and co-organizer with K. Niihara, K. Murata, and I. A. Aksay, Symposium on Nanophase and Nanocomposite Materials, The 3rd International Union of Materials Research Societies (IUMRS) International Conference on Advanced Materials, Tokyo, Japan, August-September 1993

Organizer and Chairman, with D. N. Seidman and P. D. Bristowe, Symposium on Atomic Scale Imperfections in Materials: R. W. Balluffi Fest, at the Materials Research Society 1993 Fall Meeting, Boston, Mass., November-December 1993

Chairman and co-organizer with H. Gleiter and J.-Ph. Ansermet, Engineering Foundation Conference on Nanophase Materials, Davos, Switzerland, March 1994

Organizer and Chairman, with P. Jena, Division of Materials Physics Focussed Sessions on Clusters and Cluster-Assembled Materials, at the American Physical Society Meeting, Pittsburgh, Pennsylvania, March 1994

Organizing Committee and Session Chairman, International Conference on the Structure and Properties of Brittle and Quasiplastic Materials (SPM'94), Riga, Latvia, June 1994

The Washington Technology Center, Advanced Materials Technology Center Advisory Committee, member 1991 - 1992; Advanced Materials & Manufacturing Group Advisory Committee, member 1993 - 1994

International Advisory Committee, Forum on New Materials, 8th CIMTEC (International Context on Modern Materials Technologies), Florence, Italy, June-July 1994

Advisory Committee, Second International Conference on Nanostructured Materials, Stuttgart, Germany, October 1994

Session Chairman, Grain Size and Thermomechanical Properties, Symposium on Grain Size and Mechanical Properties-Fundamentals and Applications, Materials Research Society 1994 Fall Meeting, Boston, Massachusetts, November-December 1994

International Advisory Committee, International Workshop on Clusters and Nanostructured Materials, Puri, Orissa, India, December 1994-January 1995

International Advisory Board, International Symposium on the Science and Technology of Atomically Engineered Materials, Richmond, Virginia, October-November 1995

Organizer, with J. E. E. Baglin, and Moderator, Forum on Electronic Publishing Initiatives, at the Materials Research Society 1995 Spring Meeting, San Francisco, California, April 1995

Session Chairman, Symposium on Processing and Properties of Nanocrystalline Materials, TMS-ASM Materials Week, Cleveland, Ohio, October 1995

Board of Advisors, Gorham Advanced Materials Institute Conference on Nanostructured Materials and Coatings, Atlanta, Georgia, November 1995

International Advisory Committee, International Symposium on Metastable Mechanically Alloyed and Nanocrystalline Materials (ISMANAM-96), Rome, Italy, May 1996

Other (continued):

Steering Committee, Advisory Committee, and Session Chairman, Third International Conference on Nanostructured Materials, Kona, Hawaii, July 1996

International Advisory Committee, Eighth International Symposium on Physics of Materials: Materials Science and Physics of Low Dimensional Structures and Cluster Assembly, Hangzhou, China, October 1996

International Advisory Committee/Scientific Committee, International Conference on the Physics of Disordered Materials, University of Rajasthan, Jaipur, India, January 1997

International Program Committee, Second International Conference on MicroMaterials (Micro Mat '97), Berlin, Germany, April 1997

Member, Boards of Examiners: Department of Nuclear Physics, University of Madras, India, Ph.D. Theses of V. Manohar (1984), S. Sankar (1987), S. R. Dhanalakshmi (1988), A. Bharathi (1989-1990); Departement de Physique des Matériaux, Université Claude Bernard-Lyon I, France, Ph.D. Thesis of V. Paillard (1993); Department of Physics, Jadavpur University, Calcutta, India, Ph.D. Thesis of S. Roy (1993); Department of Physics, State University of New York at Albany, Ph.D. Thesis of G. Gopalakrishnan (1998), Department of Materials Science and Engineering, Northwestern University, Ph.D. Theses of J. D. Hansen (1991) and D. N. Dunn (1992); Departement de Science de l'Energie et des Matériaux, INRS-ÉMT, Université du Québec, Ph.D. Thesis of F. Variola (2010)

Graduate Research Advisor: Department of Materials Science and Engineering, Northwestern University, M.S. Thesis (1989) and Ph.D. Theses (1991) of G. W. Nieman (co-advisor with J. R. Weertman), Ph.D. Thesis (1995) of G. E. Fougere (co-advisor with J. R. Weertman), Ph.D. Thesis (1996) of P. G. Sanders (co-advisor with J. R. Weertman)

International Advisory Committee, International Symposium on Metastable, Mechanically Alloyed and Nanocrystalline Materials (ISMANAM-97), Sitges (Barcelona), Spain, September 1997

Expert Selection Committee for Nanostructure Physics Professor in the Physics Department, School of Engineering Physics, Royal Institute of Technology, Stockholm, Sweden: member 1996-97

Visiting Committee for Natural Sciences and Engineering Research Council of Canada Industrial Research Chair in Microengineered Materials at the University of Toronto, Toronto, Canada, November 1996

Editorial Board, Bulletin of Materials Science, Indian Academy of Sciences, Bangalore, 1992-1996

Atomic Transport Committee of the Materials Science Division of the American Society of Metals: member 1987 - 2000

Materials Research Society: Program Committee, member 1987-90; Spring Meeting Chair 1989; Council, elected member 1993-95; Audit Committee, member 1993-95, chairman 1994-95; Grass Roots Education Committee, member 1992-94; Long Range Planning Committee, chairman 1996-97; Public Affairs Committee, member 1994-2000; Fellow 2010

Other (continued):

Reference Group member (advisor), Swedish Materials Research Consortium on Clusters and Ultrafine Particles, 1991-98

International Committee on Nanostructured Materials: chairman 1992-1996; member 1992-2000

University Materials Council: member 1995-2000

Associate Editorial Board, Materials Letters, North-Holland Publishing Co., Amsterdam, 1981-2006

Founding Principal Editor, Nanostructured Materials, Acta Metallurgica, Inc., Pergamon Press, Elsevier Science Ltd., Oxford, 1991-99

Board of Advisors, Encyclopedia of Materials Science and Engineering for the Third Millenium, Pergamon Press, Elsevier Science Ltd., 1994-98

International Advisory Committee and Program Committee, Fourth International Conference on Nanostructured Materials (NANO'98), Stockholm, Sweden, June 1998

Reviewer of proposals and publications for: Department of Energy, Department of the Army, National Science Foundation, Research Corporation, Academic Press, The Institute of Physics, Acta Metallurgica, Scripta Metallurgica, Canadian Journal of Physics, Journal of Applied Physics, Applied Physics Letters, Journal of Nuclear Materials, Physical Review, Physical Review Letters, Physica Status Solidi, Metallurgical Transactions, Gas Research Institute, Petroleum Research Fund (American Chemical Society), Materials Science and Engineering, Annales de Chimie: science des matériaux, Materials Letters, Journal of Materials Research, International Journal of Physics and Chemistry of Solids, Nuclear Instruments and Methods in Physics Research, Surface Science, American Society for Metals, Materials Research Society, State of Connecticut-Department of Higher Education, Connecticut Innovations, Physics Letters, Australian Research Council, Journal of Solid State Chemistry, The Washington Technology Center, Chemistry of Materials, Nature, Kluwer Academic Publishers, Pergamon Press, Elsevier Science Publishers, CRC Press, Chapman & Hall, John Wiley & Sons, National Research Council, National Institute of Standards and Technology, Journal of Aerosol Science, North Atlantic Treaty Organization, Science, International Science Foundation, The Journal of Physical Chemistry, Aerosol Science and Technology, The Journal of Vacuum Science and Technology, Swedish Research Council for Engineering Sciences (TFR), Hong Kong Research Grants Council, Philosophical Magazine and Philosophical Magazine Letters, Materials Chemistry and Physics, Consiglio Nazionale delle Ricerche (Italy), City University of Hong Kong, Journal of the American Chemical Society, Advanced Materials, Europhysics Letters, W. M. Keck Foundation, Michigan Life Sciences Corridor (Washington Advisory Group), Louisiana Board of Regents, Laura Bassi Centres of Expertise (Austria), Science Foundation Ireland, *etc.*

Panel Chairman, World Technology Evaluation Center (WTEC) Global Assessment of Research and Development Status and Trends in Nanoparticles, Nanostructured Materials, and Nanodevices (Nanostructure Science and Technology), sponsored by the NSF, AFOSR, ONR, DOC, NIST, DOE, NIH, and NASA, 1996-98

Alexander von Humboldt Foundation Senior Research Award 1994 (Max-Planck-Institut für Mikrostrukturphysik, Halle, Germany 1995-98)

Other (continued):

Judge, The 1998 Discover Magazine Awards for Technological Innovation: Emerging Technology, February 1998

Review Committee: Department of Ceramic and Materials Engineering, Rutgers University, April 1998

Discussion Leader, Gordon Research Conference on High Temperature Materials Processing and Diagnostics, Plymouth, New Hampshire, July 1998

International Advisory Committee, International Symposium on Metastable, Mechanically Alloyed and Nanocrystalline Materials (ISMANAM-98), Wollongong, Australia, December 1998

Advisory Board, 1999 Discover Magazine Awards

Moderator, Applications: Consolidated Nanostructures Session, at the OSTP Committee on Technology Interagency Working Group on NanoScience, Engineering and Technology Workshop on Vision for Nanotechnology R&D in the Next Decade, National Science Foundation, Arlington, Virginia, January 1999

Chairman, with P. M. Ajayan, Engineering Foundation Conference on Nanocomposite Materials: Design and Applications, Girdwood (Anchorage), Alaska, March-April 1999

International Advisory Board, International Symposium on Clusters and Nanostructures, Richmond, Virginia, October 1999

Program Committee, 3rd International Conference and Exhibition on MicroMaterials (MicroMat 2000), Berlin, Germany, April 2000

International Advisory Committee and Session Charman, Fifth International Conference on Nanostructured Materials (NANO'2000), Sendai, Japan, August 2000

Section Editor: Characterization Techniques, with E. A. Stern, Current Opinion in Solid State & Materials Science, A. K. Cheetham, M. S. Dresselhaus, and Sir J. M. Thomas (Eds.), Volume 4, Issue 4, 1999 (Current Chemistry Ltd., Letchworth)

International Advisory Committee, International Symposium on Metastable, Mechanically Alloyed and Nanocrystalline Materials (ISMANAM-99) and Euro Conference on Gas Phase Synthesis of Nanocrystalline Materials, Dresden, Germany, August-September 1999

International Advisory Committee, International Conference on Mass and Charge Transport in Inorganic Materials - Fundamentals to Devices, Venice (Jesolo Beach), Italy, May-June 2000

Panel Member, Vision 2020-Materials Technology Roadmap Workshop II, Golden, Colorado, September-October 1999

Advisory Board, Institute for Nanotechnology and (since 2002) Nanotechnology Program, Forschungszentrum Karlsruhe (in conjunction with the Universities of Karlsruhe and Strasbourg), 1999-2004

Other (continued):

Scientific Advisory Board, Journal of Metastable and Nanostructured Materials, Trans Tech Publications, 2000-present

International Advisory Committee, International Symposium on Metastable, Mechanically Alloyed and Nanocrystalline Materials (ISMANAM 2000), St. Catherine's College, Oxford, England, July 2000

Editorial Board, Journal of Nanoscience and Nanotechnology, American Scientific Publishers, 2001-present

Editorial Advisory Board, Encyclopedia of Nanoscience and Nanotechnology, American Scientific Publishers, 2002

International Scientific Committee, 7th Annual Conference on Ceramics, Cells and Tissues: Biomimetic Engineering, New Role for Ceramics, Faenza, Italy, June 2001

International Advisory Committee, International Symposium on Metastable, Mechanically Alloyed and Nanocrystalline Materials (ISMANAM 2001), University of Michigan, Ann Arbor, Michigan, June 2001

Organizing Committee, United Engineering Foundation Conference on Novel Synthesis and Processing of Nanostructured Coatings for Protection Against Degradation, Davos, Switzerland, August 2001

Session Chairman and Faculty Lecturer, Nanobiotechnology, Second Annual Conference on Regenerative Medicine, Washington, D.C., December 2001

Program Committee, BioMEMS and Smart Nanostructures, SPIE International Symposium on Micro/MEMS, Adelaide, Australia, December 2001

Scientific Program Committee, Sixth International Conference on Nanostructured Materials (Nano 2002), Orlando, Florida, June 2002

RIKEN (The Institute of Physical and Chemical Research) Eminent Scientist Award, Japan, December 2001

International Advisory Committee of ICMAT 2003 (International Conference on Materials for Advanced Technologies), Singapore, June-July 2003

Director and lecturer, NSF Chautauqua Short Course on Nanotechnology and Nanostructured Materials and Devices, Rensselaer Polytechnic Institute, June 2002

2002 Motorola Research Visionary Board

Global Trends 2015: Science and Technology – Biotechnology, Nanotechnology, Advanced Materials, and Information Technology Roundtable hosted by the Central Intelligence Agency Directorate of Science and Technology and the Library of Congress Federal Research Division, Washington, D. C., July 2002

Organizer (with Joanna R. Groza, Dan Descalu, and Maria Zaharescu) and lecturer, NSF Workshop on Communication and Integration in Nanomaterials, Transylvania University, Brasov, Romania, September-October 2002

Other (continued):

Advisory Board, International Conference on Nano-Micro-Interfaces (NAMIX), Berlin, Germany, May 2003

International Scientific Committee, 8th Annual Conference on Ceramics, Cells and Tissues: Bioceramic Surfaces (behavior *in vitro* and *in vivo*), Faenza, Italy, March 2003

Program Committee, Nanotechnology Conference at the SPIE First International Symposium on Microtechnologies for the New Millennium, Maspalomas, Gran Canaria, Canary Islands, Spain, May 2003

Steering Committee Member and Workshop Participant, NSF-NNI Nanomaterials Grand Challenges Workshop, Arlington, Virginia, June 2003

International Advisory Committee, 10th International Symposium on Metastable, Mechanically Alloyed and Nanocrystalline Materials (ISMANAM 2003), Foz do Iguaçu, Brazil, August 2003

International Advisory Board, International Symposium on Clusters and Nanoassemblies: Physical and Biological Systems, Richmond, Virginia, November 2003

International Program Committee, 4th International Conference on Micromaterials and Nanomaterials (MicroMat 2004), Berlin, Germany, April 2004

Director and lecturer, NSF Chautauqua Short Course on Nanotechnology and Nanostructured Materials and Devices, Rensselaer Polytechnic Institute, June 2003

Advisory Board, 7th International Conference on Nanostructured Materials (NANO 2004), Wiesbaden, Germany, June 2004

2003 Deutsche Bank Prize: Pioneer in Nanotechnology – Nanomaterials, Berlin, Germany, May 2003

Nanotechnology Technical Advisory Group (N-TAG) to the US President's Council of Advisors on Science and Technology (PCAST), June 2003-09

Permanent International Scientific Committee, Annual Conference Series on Ceramics, Cells and Tissues (CCT), Italian National Research Council, Institute of Science and Technology for Ceramics, Faenza, Italy, 2003-12

Advisory Committee, Second Conference on Local and Nanoscale Structure in Complex Systems (LNSCS-II), Dynamic Energy Landscapes and Functional Systems, March 2004, Santa Fe, New Mexico.

Organizer, with Catherine Brechignac, U.S.-France Workshop on the Intersection between Biology, Chemistry, and Physics for Creating Materials with Nanoscale Architectures, Honfleur, France, May 2004

NNI-SRC Consultative Working Group on Novel Materials and Assembly Methods for Extending Charge-Based Technologies, 2004-07

Director and lecturer, NSF Chautauqua Short Course on Nanotechnology and Nanostructured Materials and Devices, Rensselaer Polytechnic Institute, June 2004

Other (continued):

Perspective Committee for the Research Center Jülich, Germany commissioned by the German Federal Ministry of Education and Research (BMBF) and the Ministry of Science and Research of the State of North Rhine-Westphalia, 2004

Expert Selection Committee for the Professor in Nanotechnology in the Faculty of Science and Technology at Uppsala University, Uppsala, Sweden, 2004

Advisory Board, Synergistic Partnership for Research and Education on Functional and Nanostructured Materials, an NSF PREM at the University of Puerto Rico-Mayagüez and the University of Wisconsin-Madison, 2004-09

Advisory Committee, Conference on Design and Characterization of Advanced Materials (DCAM-2004), Banaras Hindu University, Varanasi, India, December 2004

International Advisory Board (Steering Committee), and Co-Chair of the Special Symposium "Disclosing Materials at the Nanoscale" of the 11th International Ceramics Congress, CIMTEC 2006 in Acireale, Sicily, Italy, June 2006

Peer Group for evaluation of the Technology-Oriented Program TOP NANO 21 (2000 - 2003) in Switzerland, commissioned by the Swiss Federation represented by the Commission for Technology and Innovation, 2004-05

Director and lecturer, NSF Chautauqua Short Course on Nanotechnology and Nanostructured Materials and Devices, Rensselaer Polytechnic Institute, June 2005

Perspective Committee for the Research Center Karlsruhe, Germany commissioned by the German Federal Ministry of Education and Research (BMBF) and the Ministry of Trade and Commerce of the State of Baden-Württemberg, 2005-06

Director and lecturer, NSF Chautauqua Short Course on Nanotechnology and Nanostructured Materials and Devices, Rensselaer Polytechnic Institute, June 2006

Scientific and Industrial Advisory Board, Education and Research Unit (ERU): Particles and Surface Engineering, Competence Centre for Material Science and Technology (CCMX), Switzerland, 2006-12

International Advisory Board, Chairman, National Nanotechnology Center of Thailand (NANOTEC), National Science and Technology Development Agency (NSTDA), Thailand, 2006-08

Scientific Review Panel, Virginia Bioinformatics Institute, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, June 2007

International Advisory Board (to the German Science Council), Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany, 2007-10

Advisory Board, Forest Bioproducts Research Initiative, The University of Maine, Orono, Maine, 2007-10

International Advisory Board, International Conference on Nano Science and Technology (ICONSAT-2008), Chennai, India, February 2008

Other (continued):

Advisory Committee, NanoBiotech 2007, Rensselaer Polytechnic Institute, September 2007

Scientific Advisory Board, Virginia Bioinformatics Institute, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, 2007-11

International Advisory Committee, 9th International Conference on Nanostructured Materials – NANO 2008 (NANO–RIO), Rio de Janeiro, Brazil, June 2008

International Advisory Board, First International Conference on Tissue Engineering and Stem Cell Research using Nanomaterials (NANOBIO 2009), Amrita Institute of Medical Sciences, Kochi, India, February 2009

Evaluation Panel Member, Spanish Research Council (CSIC – Consejo Superior de Investigaciones Científicas) Materials Research Centers, Spain, 2008-09

Senior International Advisor, Global Green Research Institute, Handong Global University, Pohang, South Korea, 2009-10

Participant, NSF-WTEC International Study of the Long-term Impacts and Future Opportunities for Nanoscale Science and Engineering, Chicago Workshop, March 2010

International Advisory Board, 2nd International Conference on Disclosing Materials at the Nanoscale, 12th International Ceramics Congress (CIMTEC 2010), Montecatini Terme, Tuscany, Italy, June 2010

International Advisory Board, X International Conference on Nanostructured Materials (NANO 2010), Rome, Italy, September 2010

Scientific and Industrial Advisory Board, International GENNESYS Congress on Nanotechnology and Research Infrastructures, Barcelona, Spain, May 2010

Co-President, 13th Ceramics, Cells and Tissues (13 CCT) Seminar and Meeting, Regenerative Nanomedicine, Tissue and Genetic Engineering: the Role of Ceramics, Italian National Research Council, Institute of Science and Technology for Ceramics, Faenza, Italy, May 2011

Founding Member, Advisory Board, Forest Bioproducts Research Institute, The University of Maine, Orono, Maine, 2010-2016

Science Advisory Board, The 1st World Congress of Nanomedicine (Nanomedicine 2010) – Integrative Nanotechnology for Biomedicine, Beijing, China, October 2010

International Advisory Board and session chair, YUCOMAT Conferences of the MRS-Serbia, 2010-present

International Advisory Committee, International Workshop on Functional Materials (IWFM), Berhampur, India, 2011

RUSNANOPRIZE 2013 nominee, finalist, and Expert Group member

Visiting Professor, School of Materials Science and Engineering, Shanghai Jiao Tong University, Shanghai, China, May 2014

Other (continued):

Elected to the College of Fellows of the American Institute of Medical and Biological Engineering, January 2015

International Scientific Committee and Session Chair, 1st Biennial Conference BioMaH – Biomaterials for Healthcare, Biomaterials for Tissues and Genetic Engineering and the Role of Nanotechnology, Rome, Italy, October 2016

Seminar and Meeting on Tissue Regeneration: Advanced Ceramics and Composites (TRACE), Department of Surgical Sciences and Integrated Diagnostics, Università degli Studi di Genova, Genoa, Italy, October 2017

Elected to the National Academy of Inventors, December 2017

Grants, Contracts and Fellowships:

State University of New York at Stony Brook Graduate School, Faculty Fellowship, Summer 1967 (\$1,400)

State University of New York at Stony Brook Graduate School, Grants-in-Aid (various), 1967-1970 (\$4,429 total)

State University of New York Research Foundation, Faculty Fellowship, Summer 1968 (\$1,500)

State University of New York Research Foundation, Grant-in-Aid, "Vacancy Precipitation in Quenched Gold", 5/1/67 - 5/1/69 (\$500)

State University of New York Research Foundation, Grant-in-Aid, "Effect of Impurities on the Migration of Vacancies in Gold", 1/1/68 - 1/1/70 (\$200)

National Science Foundation, Research Initiation Grant, "Vacancy-Impurity Interactions in Dilute Aluminum Alloys", 6/1/68 - 3/31/70 (\$15,000)

National Science Foundation, Research Grant, "Solute-Vacancy Interactions in Dilute Alloys", 11/1/70 - 4/31/73 (\$58,400)

National Science Foundation, Faculty Research Participation Grant, Argonne Center for Educational Affairs, "Materials Used in Energy Conversion Systems", Summer 1975 (\$18,480)

National Science Foundation, Grant, "International Conference on the Properties of Atomic Defects in Metals", Argonne National Laboratory, 1976 (\$2,500)

Atomic Energy Commission, Research Contracts - Argonne: Metal Physics and Effects of Cyclic Loading on Electrical Conduction, 7/74 - 6/75 (\$967,000)

Energy Research and Development Administration, Research Contracts - Argonne: Metal Physics, Diffusion Studies, and Effects of Cyclic Loading on Electrical Conduction, 7/75 - 9/76 (\$1,393,900)

Energy Research and Development Administration, Research Contracts - Argonne: Metal Physics and Diffusion Studies, 10/76 - 9/77 (\$1,015,700)

National Science Foundation, Supplementary Research Grant in collaboration with Prof. S. Berko, Brandeis University, "Positron Annihilation Spectroscopic Study of Vacancy Defects in Aluminum", 11/1/80 - 10/31/81 (\$27,688)

National Science Foundation, International Travel Grant, India 1/27/82 - 2/24/82 (\$1,943)

Department of Energy, Research Contract - Argonne: Metal Physics, 10/77 - 9/82 (\$5,546,000)

Department of Energy, Research Contract - Argonne: Electron Microscopy Center for Materials Research, 10/83 - 9/84 (\$716,000)

National Science Foundation, International Travel Grant, India 1/3/85 - 2/1/85 (\$1,900)

Grants, Contracts and Fellowships (continued):

Department of Energy, Research Contract - Argonne: Defects in Metals and Alloys, 10/82 - 9/86 (\$4,362,000)

Office of Naval Research, Workshop Support, International Workshop on "Electronic Theory of Defects in Metals and Alloys", 6/86 (\$15,000)

Argonne Universities Associates Trust Fund, Workshop Support, International Workshop on "Electronic Theory of Defects in Metals and Alloys", 6/86 (\$7,500)

National Science Foundation, International Travel Grant, India, 10/16/86 - 11/14/86 (\$1,974)

National Science Foundation, U.S.-Japan Seminar on "Electronic Structure and Lattice Defects in Alloys", 5/87 (\$10,550)

National Science Foundation, Office of Naval Research, and Air Force European Office of Aerospace Research and Development, Engineering Foundation Conference on "Nanophase Materials", 3/94 (\$15,000)

Department of Energy, Research Contract - Argonne: Nanocrystalline Materials, 10/86 - 3/95 (*ca.* \$1,750,000)

Rensselaer Polytechnic Institute, Strategic Initiatives Grant on "Nanostructured Materials", 9/97-5/00 (\$35,000)

National Science Foundation, "Mechanical and Molecular Behavior of Nanoparticulate/Polymer Composites", with L. S. Schadler et al., 8/98-7/01 (\$562,717)

Office of Naval Research, "Mechanical and Molecular Behavior of Nanoparticulate/Polymer Composites", with L. S. Schadler et al., 1/99-9/01 (\$100,000)

National Science Foundation, "A PhD Co-op Program", with L. S. Schadler and D. J. Duquette, 4/99-8/05 (\$555,102)

National Science Foundation, Army Research Office, Office of Naval Research, Nanophase Technologies Corporation, RHK Technology Inc., and JEOL USA Inc., United Engineering Foundation Conference on "Nanocomposite Materials: Design and Applications", with P. M. Ajayan, 3-4/99 (\$37,000)

National Science Foundation, "Acquisition of State of the Art Micro-Raman Spectrometer", with L. S. Schadler et al., 6/99-5/00 (\$162,534)

Eastman Kodak Company, "Partnership in Nanotechnology", 9/99-8/04 (\$660,000)

Albany International Corporation, "Partnership in Nanotechnology", 6/00-5/04 (\$480,000)

ABB Ltd., "Partnership in Nanotechnology", 1/00-6/12 (\$1,792,000)

IBM Corporation, "Partnership in Nanotechnology", 9/00-6/14 (\$1,467,500)

Philip Morris USA, "Partnership in Nanotechnology", 1/01-12/06 (\$2,300,000)

Alcoa (\$100,000), General Motors (\$72,000), General Electric (\$50,000+), etc., “Research Fellowships and Scholarships in Materials Science and Engineering”, 1999-2000

Grants, Contracts and Fellowships (continued):

U.S. Army Natick Soldier Center, “Hierarchical Multilayered Nanocomposites for Ballistic Protection”, with P. M. Ajayan, R. H. Doremus, and L. S. Schadler, 4/00-4/03 (\$772,949)

U.S. Army Natick Soldier Center, SBIR Phase I and II subcontracts from MER (Materials and Electrochemical Research) Corp., “Nanocomposites for Ballistic Protection”, with R. H. Doremus and L. S. Schadler, 12/02-6/03, 9/03-11/03, 11/03-11/04 (\$22,500+\$15,000+\$83,076 = \$120,576 total)

National Science Foundation, CNRS-NSF Workshop on “Nanomaterials: Towards Engineering Applications”, Montreal, Quebec, Canada and follow-up US-French Meeting on “Intersection between Biology, Chemistry, and Physics for Creating Materials with Nanoscale Architecture”, Honfleur, France: 11/00-9/04 (\$27,000)

National Science Foundation, “Nanoscale Science and Engineering Center for Directed Assembly of Nanostructures”, 9/01-9/11 with NCE to 9/12 (\$20,653,291)

New York State Office of Science, Technology, and Academic Research (NYSTAR), Matching Funds for NSF “Nanoscale Science and Engineering Center for Directed Assembly of Nanostructures”, 9/01-9/11 with NCEs to 12/13 (\$4,960,000)

Rensselaer Polytechnic Institute, Rensselaer Nanotechnology Center Support and Matching Funds for NSF “Nanoscale Science and Engineering Center for Directed Assembly of Nanostructures”, 9/01-9/11 (\$4,965,000)

Rensselaer Polytechnic Institute, “Gas Permeation Through Polymeric Nanoconmosite Membranes”, with R. Ozisik and B. C. Benicewicz, 1/04-12/04 (\$37,000)

Lockheed Martin Corporation, “Directed Assembly of Biologically-Based Sensor Platforms”, 1/04-6/05 (\$70,000)

Intel Corporation, “Partnership in Nanotechnology”, 1/05-12/08 (\$570,000)

Sealed Air Corp., “Partnership in Nanotechnology”, 9/05-12/06, 11/10-12/12 (\$450,000)

Chisso/JNC Corp., “Partnership in Nanotechnology”, 3/08-12/10, 7/12-6/13 (\$600,000)

Private donor, “The Molecularium® Project”, 3/06 – 12/14 (\$3,900,000)

Total: \$61,352,091

Community Service:

Hinsdale (Illinois) Village Caucus: member 1979 - 1982:

Illinois School District 181 (Hinsdale and Clarendon Hills) Board of
Education Nominating Committee: member 1979;
Hinsdale Village Officer Nominating Committee: chairman 1980

Palisades School District: Lecturer, Career Counseling Week 1979

American Youth Soccer Organization: assistant coach 1982; coach 1983-1985

Hinsdale Tennis Association: co-vice-president 1985-1986, co-president 1986-1987;
Executive Board member 1985 - 1988

Hinsdale (Illinois) Township High School District 86 Board of Education: member 1983 -
1987; president 1987 - 1991

Finance Committee: member 1983 - 1985

Personnel Committee: member 1984 - 1987

Facilities Committee: chairman 1985 - 1987

DuPage/West Cook (Counties) Regional Special Education Association:

Board of Control: member 1983 - 1984;

Program and Support Services Committee: member 1984

Governing Board: secretary 1985 - 1990, member 1991

Executive Board: secretary 1985 - 1989, vice-president 1989 - 1990

Joint Special Education Cooperative Regional Task Force: vice chairman 1986

LaGrange Area Department of Special Education: Exemplary Service Award, May 1990

Illinois State Board of Education: "Those Who Excel" Award of Merit, September 1991

The Children's Museum of Science and Technology, Troy, New York, 2011 *Explore -
Discover - Imagine* Award, June 2011

Publications:

Books Edited:

1. Peterson, N. L., and Siegel, R. W., editors, Properties of Atomic Defects in Metals, Proc. of the Intl. Conf. on the Properties of Atomic Defects in Metals, Oct. 18-22, 1976, ANL, Argonne, IL., J. Nucl. Mater., Vol. 69-70, (North-Holland Publ. Co., Amsterdam, 1978), pp. 1-856
2. Siegel, R. W., Weertman, J. R., and Sinclair, R., editors, Characterization of Defects in Materials, Materials Research Society, Pittsburgh, Symposium Proceedings Vol. 82, 532 pp. (1987)
3. Siegel, R. W., and Fujita, F. E., editors, Electronic Structure and Lattice Defects in Alloys, Trans Tech Publ. Ltd., Aedermannsdorf, Proc. U.S.-Japan Seminar, Materials Science Forum 37, 1-315 (1989)
4. McCandlish, L. E., Polk, D. E., Siegel, R. W., and Kear, B. H., editors, Multicomponent Ultrafine Microstructures, Mater. Res. Soc. Symp. Proc. 132, 1-243 (1989)
5. Gupta, D., Jain, H., and Siegel, R. W., editors, Atomic Migration and Defects in Materials, Sci-Tech Publ. Ltd., Vaduz, Proc. ASM Seminar, Defect and Diffusion Forum, Vol. 75, 1-238 (1991)
6. Hadjipanayis, G. C., and Siegel, R. W., eds., Nanophase Materials: Synthesis-Properties Applications, Proc. NATO Advanced Study Institute, Corfu, 1993 (Kluwer, Dordrecht, 1994) 808 pp.
7. Seidman, D. N., Siegel, R. W., and Bristowe, P. D., eds., Atomic Scale Imperfections in Materials: R. W. Balluffi Festschrift (Proc. Mater. Res. Soc. Symp., Boston, 1993), J. Phys. Chem. Solids, Vol. 55, No. 10 (Pergamon, Oxford, 1994) 318 pp.
8. Siegel, R. W., Hu, E., and Roco, M. C., eds., World Technology Evaluation Center (WTEC) Workshop Report on R&D Status and Trends in Nanoparticles, Nanostructured Materials, and Nanodevices in the United States, (ITRI, Baltimore, 1998) 212 pp.
9. Siegel, R. W., Hu, E., and Roco, M. C., eds., Nanostructure Science and Technology: World Technology Evaluation Center (WTEC) Panel Report on R&D Status and Trends in Nanoparticles, Nanostructured Materials, and Nanodevices (Kluwer, Dordrecht, 1999) 336 pp.
10. Hahn, H., Tannenbaum, R., Feldheim, D. L., Kubiak, C. P., and Siegel, R. W., eds., Synthesis, Functional Properties and Applications of Nanostructures, Materials Research Society Symposium Proceedings Vol. 676, Y1.2.1-Y9.8.5 (2002)

Issued Patents:

1. Siegel, R. W., Hahn, H., and Eastman, J. A., "Method of Making Nanocrystalline Alpha Alumina", U.S. Patent No. 5,128,081 (Issued: 7 July 1992)
2. Siegel, R. W., Nieman, G. W., and Weertman, J. R., "Nanocrystalline Ceramic Materials", U.S. Patent No. 5,320,800 (Issued: 14 June 1994)

3. Beck, D. D., and Siegel, R. W., "Hydrogen Sulfide Conversion with Nanophase Titania", U.S. Patent No. 5,547,649 (Issued: 20 August 1996)

Issued Patents (continued):

4. Balachandran, U., Siegel, R. W., and Askew, T., "Method of Manufacturing a High Temperature Superconductor with Improved Transport Properties", U.S. Patent No. 6,191,075 (Issued: 20 February 2001)
5. Goretta, K. C., Lanagan, M. T., Miller, D. J., Sengupta, S., Parker, J. C., Hu, J., Balachandran, U., Siegel, R. W., Shi, D., "Engineered Flux-Pinning Centers in BSCCO, TBCCO and YBCO Superconductors", U. S. Patent No. 5,929,001 (Issued: 27 July 1999)
6. Ng, C. B., Schadler, L. S., and Siegel, R. W., "Nanoparticle-Filled Polymers", U.S. Patent No. 6,667,360 (Issued: 23 December 2003)
7. Webster, T. J., Siegel, R. W., and Bizios, R., "Nanostructured Ceramics and Composite Materials for Orthopaedic-Dental Implants", U. S. Patent No. 6,270,347 (Issued: 7 August 2001)
8. Chang, S., Doremus, R. H., Siegel, R. W., and Ajayan, P. M., "Ceramic Matrix Nanocomposites Containing Carbon Nanotubes for Enhanced Mechanical Behavior", U.S. Patent No. 6,420,293 (Issued: 16 July 2002)
9. Siegel, R. W., Nugent, J. M., and Ajayan, P. M., "Carbon Nanotrees Formed by Flash CVD Method", U.S. Patent No. 7,504,152 (Issued: 17 March 2009)
10. Li, T., Chen, Q., Schadler, L. S., Siegel, R. W., Mendel, J., and Irvin, G. C., "Gelatin Nanocomposites", U.S. Patent No. 6,783,805 (Issued: 31 August 2004)
11. Ma, D., Schadler, L. S., and Siegel, R. W., "Tubular Microstructures via Controlled Nanoparticle Assembly", U.S. Patent No. 6,960,378 (Issued: 1 November 2005)
12. Mårtensson, E., Hong, J. I., Schadler, L. S., Siegel, R. W., Palmqvist, L., Gustafsson, A., and Önnby, C., "Field Grading Material", Sweden Patent No. WO9135; SE0203121-9 (Issued: 1 March 2005); U.S. Patent No. 7,868,079 (Issued: 11 January 2011)
13. Zheng, J., Ozisik, R., and Siegel, R. W., "Block Copolymer and Nanofiller Composites", U.S. Patent No. 8,974,915 (Issued: 10 March 2015)
14. Hong, J.-I., Ma, D., Schadler, L. S., Siegel, R. W., Mårtensson, E., and Önnby, C., "Nanocomposites with Controlled Electrical Properties", China Patent No. 200480030818.2 (Issued: 26 April 2010); India Patent No. IN 242852 (Issued: 16 September 2010); U.S. Patent No. 7,923,500 (Issued: 12 April 2011); Japan Patent No. 4772676 (Issued: 14 September 2011)
15. Bhimaraj, P., Toney, G. C., Schadler, L. S., and Siegel, R. W., "Method for Producing Polyester Nanocomposites", Russia Patent No. 2,458,080 (Issued 10 August 2012); Japan Patent No. 50737 (Issued: 31 August 2012); U.S. Patent No. 8,436,076 (Issued: 7 May 2013); Europe Patent No. 2,059,562 (Issued: 9 October 2013, also in Austria, Belgium, Czech Republic, Finland, France, Germany, Hungary, Italy, Netherlands, Poland, Sweden, Switzerland, Great Britain); Mexico Patent No. 320500 (Issued: 27 May 2014)
16. Tao, P., Schadler, L. S., Siegel, R. W., Li, Y., and Benicewicz, B. C., "Nanofilled Polymeric Nanocomposites with Tunable Index of Refraction", U.S. Patent No.

8,518,473 (Issued: 27 August 2013); China Patent No. ZI.201180015132.6 (Issued: 4 June 2014)

Issued Patents (continued):

17. Dordick, J. S., Kane, R. S., Asuri, P., Karajanagi, S. S., Vertegel, A. A., and Siegel, R. W., "Enhanced Stability of Proteins Immobilized on Nanoparticles", U.S. Patent No. 9,360,475 (Issued: 7 June 2016); Canada Patent No. 2,579,254 (Issued: 8 May 2012); Europe Patent granted and being validated in UK, Germany, France (2014)
18. Poxson, D. J., Mont, F. W., Schubert, E. F., and Siegel, R. W., "Tunable Nanoporous Films on Polymer Substrates, and Methods for Their Manufacture", U.S. Patent No. 9,732,427 (Issued: 15 August 2017)
19. Benicewicz, B., Viswanath, A., Tao, P., Li, Y., Schadler, L. S., and Siegel, R. W., "Silicone Based Nanocomposites Including Inorganic Nanoparticles and Their Methods of Manufacture and Use", U.S. Patent No. 9,187,643 (Issued: 17 November 2015)
20. Tao, P., Li, Y., Schadler, L. S., Karlicek, R., Siegel, R. W., Wang, L., and Benicewicz, B. C., "Organic Phosphor-Functionalized Nanoparticles and Compositions Comprising the Same", U.S. Patent No. 9,773,953 (Issued: 26 September 2017); Singapore Patent No. 11201508122U (Issued: 26 February 2018)
21. Qian, X., Gagner, J. E., Dordick, J. S., and Siegel, R. W., "Internalization of Proteins into Hollowed Gold Nanostructures", U.S. Patent No. 9,562,225 (Issued: 7 February 2017)

Journal Articles, Book Chapters, etc:

1. Ytterhus, J. A., Balluffi, R. W., Koehler, J. S., and Siegel, R. W., "Comments on Recent Work on the Annealing of Vacancy Defects in Gold Quenched in Different Atmospheres", *Phil. Mag.* 10, 169-172 (1964)
2. Ytterhus, J. A., Siegel, R. W., and Balluffi, R. W., "An Investigation of the Annealing of Quenched-in Vacancies in Gold", *Lattice Defects in Quenched Metals*, R. M. J. Cotterill et al., eds., pp. 679-691, Academic Press, New York (1965)
3. Balluffi, R. W., and Siegel, R. W., "On Problems Associated with the Analysis of Complex Annealing Kinetics in Quenched Metals: Annealing Model for Quenched Gold", *Lattice Defects in Quenched Metals*, R. M. J. Cotterill et al., eds., pp. 693-712, Academic Press, New York (1965)
4. Siegel, R. W., "An Investigation of the Vacancy Annealing Kinetics and Precipitate Structure in Quenched Gold", Ph.D. Thesis, University of Illinois at Urbana-Champaign (1965); No. AAD65-11870, University Microfilms, Ann Arbor (1965) pp. 1-88
5. Siegel, R. W., "An Investigation of the Vacancy Annealing Kinetics and Precipitate Structure in Quenched Gold", *Phil. Mag.* 13, 337-358 (1966)
6. Siegel, R. W., "A Measurement of the Electrical Resistivity of Lattice Vacancies and Stacking Faults in Gold", *Phil. Mag.* 13, 359-366 (1966)
7. Siegel, R. W., Balluffi, R. W., and Thomas, L. E., "On the Efficiency of Stacking Fault Tetrahedra as Vacancy Sinks in Quenched Gold", *Acta Met.* 16, 7-12 (1968)

8. Balluffi, R. W., Seidman, D. N., and Siegel, R. W., "On the Identification and Properties of the Vacancy Defects in Quenched and Annealed Gold", Materials Science Center Report #3836, Cornell University (1968)

Journal Articles, Book Chapters, etc. (continued):

9. Siegel, R. W., Jain, K. C., Schober, T., Balluffi, R. W., and Thomas, L. E., "A Measurement of the Vacancy Sink Efficiency of Stacking-Fault Tetrahedra in Quenched Gold", *Crystal Lattice Defects* **1**, 31-36 (1969)
10. Balluffi, R. W., Lie, K. H., Seidman, D. N., and Siegel, R. W., "Determination of Concentrations and Formation Energies and Entropies of Vacancy Defects from Quenching Experiments", *Vacancies and Interstitials in Metals*, A. Seeger et al., eds., pp. 125-167, North-Holland Publ. Co., Amsterdam (1970) INVITED
11. DiMelfi, R. J., and Siegel, R. W., "Effect of Impurities upon the Nucleation of Dislocation Loops in Quenched Aluminum", *Phil. Mag.* **24**, 279-294 (1971)
12. Jain, K. C., and Siegel, R. W., "Temperature Dependence of the Vacancy Sink Efficiency of Stacking-fault Tetrahedra in Quenched Gold", *Phil. Mag.* **25**, 105-115 (1972)
13. Jain, K. C., and Siegel, R. W., "On the Growth and Annealing of Stacking-fault Tetrahedra in Gold", *Phil. Mag.* **26**, 637-647 (1972)
14. Gupta, K. P., Siegel, R. W., and Wang, F. F. Y., "A Scanning Electron Microscopic Examination of Sintered Barium Sodium Niobate", *J. Mater. Sci.* **9**, 867-870 (1974)
15. Jain, K. C., and Siegel, R. W., "On the Efficiency of Vacancy Annihilation at an Anodized Gold Surface", *Acta Met.* **22**, 1497-1503 (1974)
16. Hall, T. M., Goland, A. N., Jain, K. C., and Siegel, R. W., "Temperature Dependence of the Rate of Positron Trapping by Vacancies in Gold", *Phys. Rev. B* **12**, 1613-1619 (1975)
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273. Tao, P., Viswanath, A., Schadler, L. S., Benicewicz, B. C., and Siegel, R. W., "Preparation and Optical Properties of Indium Tin Oxide/Epoxy Nanocomposites with Polyglycidyl Methacrylate Grafted Nanoparticles", *ACS Applied Materials and Interfaces* 3, 3638-3695 (2011)

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288. Siegel, R. W., "Fundamentals of Nanoscale Materials and Technology", in Webster, T.J. (ed.), *Nanomedicine, The Biomedical & Life Sciences Collection*, Henry Stewart Talks Ltd, London, 2015 (online at <http://hstalks.com/?t=BL1953959-Siegel>)
289. Qian, X., Rameshbabu, U., Dordick, J. S., and Siegel, R. W., "Selective Characterization of Proteins on Nanoscale Concave Surfaces", *Biomaterials* 75, 305-312 (2016)
290. Downs, E. E., Ao, S. S., Siegel, R. W., and Schadler, L. S., "Transition Metal Doping of Amorphous Silica Particles", *J. Nanoparticle Research* 19, 337 (2017)

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1. "Vacancy Annealing Kinetics and Precipitation in Quenched Gold", Department of Metallurgy and Metallurgy Institute for Atomic Research, Iowa State University, Ames, November 1965
2. "Vacancy Precipitation in Quenched Gold", Division of Engineering and Applied Science, California Institute of Technology, Pasadena, California, May 1966
3. "Determination of Concentrations and Formation Energies and Entropies of Vacancy Defects from Quenching Experiments", with R. W. Balluffi, K. H. Lie and D. N. Seidman, at the International Conference on Vacancies and Interstitials in Metals, Kernforschungsanlage, Jülich, Germany, September 1968
4. "Defect Interaction Measurements Using Electron Microscopy", Materials Science Department, State University of New York at Stony Brook, November 1971
5. Invited participant, Seminar on High Voltage Electron Microscopy, Zürich, Switzerland, November 1972
6. "Direct Observations of Vacancy Precipitation in Quenched Gold", Institut für Theoretische und Angewandte Physik, Universität Stuttgart and Institut für Physik am Max-Planck-Institut für Metallforschung, Stuttgart, Germany, December 1972
7. "Vacancy Properties in Gold", Institut für Festkörperforschung, Kernforschungsanlage, Jülich, Germany, February 1973
8. "Vacancy Properties in Quenched Gold", Section de Physique du Solide, Département de Recherche Fondamentale, Centre D'Etudes Nucléaires de Grenoble, France, March 1973
9. "Vacancy Properties in Gold", Physik Department, Technische Universität München, Garching bei München, Germany, July 1973
10. "Vacancy Properties in Gold", Materials Science Department, State University of New York at Stony Brook, October 1973
11. "Determining Vacancy Properties in Metals: A Case Study of Gold", Department of Physics, Queen's University, Kingston, Ontario, Canada, October 1973
12. "Observations of Vacancy Clusters in Gold and Aluminum", IBM Research Center, Yorktown Heights, New York, November 1973
13. "Observations of Vacancy Precipitates in Metals", Materials Science Division, Argonne National Laboratory, Argonne, Illinois, January 1974
14. "Positron Annihilation to Study Defects", Materials Science Division Review Committee, Argonne National Laboratory, Argonne, Illinois, November 1974
15. "The Study of Lattice Defects in Metals Using Positron Annihilation", at the Annual Meeting of the AIME, Las Vegas, Nevada, February 1975
16. "Experimental Studies of Vacancy Defects in Metals", Physics Department, University of Illinois-Chicago Circle, Chicago, Illinois, May 1975

Invited Presentations (continued):

17. "Positron Annihilation Techniques in Materials Studies", Materials Science Seminar, Departments of Metallurgical and Mineral Engineering and Nuclear Engineering, University of Wisconsin-Madison, October 1975
18. "The Study of Point Defects and Their Interactions in Metals Using Positron Annihilation", Department of Metallurgy and Mining Engineering, University of Illinois at Urbana-Champaign, Illinois, April 1976
19. "The Study of Atomic Defects in Metals Using Positron Annihilation", Physics Division, Research Laboratory, United States Steel Corp., Monroeville, Pennsylvania, May 1976
20. "Experimental Studies of Vacancy Properties in Metals", Chemistry and Materials Division, Atomic Energy of Canada Ltd., Chalk River Nuclear Laboratories, Chalk River, Ontario, Canada, May 1976
21. "Vacancies in Metals", Institut für Festkörperforschung, Kernforschungsanlage, Jülich, W. Germany, August 1976
22. "Experimental Studies of Vacancies in Metals", Colloquium, Dept. of Physics, University of British Columbia, Vancouver, B.C., Canada, September 1976
23. "Vacancy Concentrations in Metals", at the International Conference on the Properties of Atomic Defects in Metals, Argonne, Illinois, October 1976
24. "Vacancy Properties in Gold", with R. P. Sahu and K. C. Jain, at the International Conference on the Properties of Atomic Defects in Metals, Argonne, Illinois, October 1976
25. "The Study of Atomic Defects in Metals Using Positron Annihilation Spectroscopy", Department of Materials Science and Engineering, Technological Institute, Northwestern University, Evanston, Illinois, January 1977
26. "Positron Annihilation at Atomic Defects", Department of Materials Science and Engineering, Cornell University, Ithaca, New York, May 1977
27. "The Temperature Dependent Behavior of Positrons in Metals", with M. K. Chason, M. J. Fluss, D. G. Legnini, and L. C. Smedskjaer, at the Joint Conference, Chemical Institute of Canada/American Chemical Society, Montreal, Canada, May 1977
28. "Positron Annihilation Studies of Defects in Metals", with Raju P. Gupta, at the Midwest Solid State Theory Symposium, Argonne, October 1977
29. "Positron Annihilation Spectroscopy of Point Defects", at the Symposium on Recovery, Recrystallization and Grain Growth in Materials, TMS-AIME Fall Meeting, Chicago, Illinois, October 1977
30. "Positron Annihilation in Metals", Materials Science Division Review Committee, Argonne National Laboratory, Argonne, Illinois, November 1977
31. "Positron Annihilation Spectroscopy of Atomic Defects", Department of Materials Science and Engineering, Stanford University, Palo Alto, California, February 1978

Invited Presentations (continued):

32. "Positron Annihilation Spectroscopy of Atomic Defects in Metals", Dept. of Materials Science, College of Engineering and Applied Sciences, State University of New York at Stony Brook, October 1978
33. "The Positron - A Localized Probe of Vacancies in Metals", at the Symposium on Metallurgical Implications of Positron Annihilation, Annual Meeting of the AIME, New Orleans, Louisiana, February 1979
34. "Radiation Damage Analysis by Positron Annihilation Spectroscopy", at the Workshop on Techniques for Radiation Damage Analysis, sponsored by the Damage Analysis and Fundamental Studies Committee of the DOE Office of Fusion Energy, Oak Brook, Illinois, March 1979
35. "Vacancies in Metals", Department of Metallurgy and Materials Science, University of Tokyo, Japan, April 1979
36. "Positron Annihilation in Metals", Department of Metallurgy and Materials Science, University of Tokyo, Japan, April 1979
37. "Vacancies in Metals", Department of Metal Science and Technology, Kyoto University, Japan, April 1979
38. "Positron Annihilation Spectroscopy", at the Symposium on Advanced Techniques for the Characterization of Microstructures, Annual Meeting of the AIME, Las Vegas, Nevada, February 1980
39. "Positron Annihilation Spectroscopy in Metals", Departments of Mechanical and Aerospace Sciences and Physics and Astronomy, The University of Rochester, New York, March 1980
40. "Positron Annihilation Spectroscopy in Metals", Solid State Physics Department, Nahal Soreq Nuclear Research Centre, Yavne, Israel, January 1981
41. "Positron Annihilation Spectroscopy in Metals", Department of Physics and Astronomy, Tel-Aviv University, Tel Aviv, Israel, January 1981
42. "Positron Annihilation Spectroscopy in Metals", Racah Institute of Physics, The Hebrew University, Jerusalem, Israel, January 1981
43. "Positron Annihilation Spectroscopy in Metals", Physics and Materials Engineering Departments, Ben-Gurion University of the Negev, Beer-Sheva, Israel, January 1981
44. "Atomic Defects and Diffusion in Metals", Department of Materials Engineering, The Technion-Israel Institute of Technology, Haifa, Israel, January 1981
45. "Atomic Defects and Diffusion in Metals", Materials Engineering Department, Ben-Gurion University of the Negev, Beer-Sheva, Israel, January 1981
46. "Atomic Defects and Diffusion in Metals", at the Yamada Conference V on Point Defects and Defect Interactions in Metals, Kyoto, Japan, November 1981

47. "Atomic-Defect Mechanisms of Diffusion in Metals", Research Institute for Applied Mechanics, Kyushu University, Fukuoka, Japan, November 1981

Invited Presentations (continued):

48. "Atomic Mechanisms of Diffusion in Metals", Research Institute for Iron, Steel and Other Metals, Tohoku University, Sendai, Japan, December 1981
49. "Positron Annihilation Spectroscopy in Metals", Neutron Physics Division, Bhabha Atomic Research Centre, Bombay, India, January 1982
50. "Positron Annihilation Studies", Materials Research Laboratory and Department of Metallurgy, Indian Institute of Science, and Indian Institute of Metals, Bangalore, India, February 1982
51. "Atomic Mechanisms of Diffusion in Metals", Materials Science Laboratory, Reactor Research Centre, Kalpakkam, India, February 1982
52. "Defects in Metals", at the Second National Symposium on Positron Annihilation, Madras, India, February 1982
53. Panel member, Panel Discussion on the "Future of Positron Annihilation Research in India", at the Second National Symposium on Positron Annihilation, Madras, India, February 1982
54. "Positron Annihilation Spectroscopy of Defects in Metals", Department of Physics and Astrophysics, University of Delhi, Delhi, India, February 1982
55. "Positron Annihilation Spectroscopy in Metals", Department of Physics, Indian Institute of Technology, Kanpur, India, February 1982
56. "Some Aspects of Atomic Diffusion in Metals", School of Materials Science and Technology, Banaras Hindu University and Indian Institute of Metals, Varanasi, India, February 1982
57. "Positron Annihilation Spectroscopy of Defects in Metals: A Critical Assessment and Comparison with Other Techniques", at the Sixth International Conference on Positron Annihilation, Fort Worth, Texas, April 1982
58. "Positron Annihilation Spectroscopy in Metals", Department of Physics, University of Cincinnati, October 1982
59. "Positron Annihilation Spectroscopy of Defects in Metals", Chemical Technology and Materials Science and Technology Divisions, Argonne National Laboratory, Argonne, Illinois, February 1983
60. "Positron Annihilation Spectroscopy of Defects in Metals", Instituto Nacional de Investigaciones Nucleares, Salazar, Mexico, July 1983
61. "Materials Characterization with Positron Annihilation Spectroscopy", at the Symposium on Modern Materials Characterization Techniques, The Metallurgical Society of AIME Fall Meeting, Philadelphia, Pennsylvania, October 1983
62. "Positron Annihilation Spectroscopy of Atomic Defects and Their Aggregates in Metals", at the Symposium on Applications of Positron Annihilation to Materials Research, Materials Research Society Meeting, Boston, Massachusetts, November 1983

Invited Presentations (continued):

63. "Probing Materials with Electron Microscopy", at the National Science Foundation Chautauqua Short Course on New Materials, Argonne National Laboratory, April 1984
64. "Positron Annihilation Spectroscopy of Atomic Defects and Their Aggregates in Metals", Section de Recherches de Metallurgie Physique, Centre d'Etudes Nucléaires de Saclay, Gif-sur-Yvette, France, August 1984
65. "Positron Annihilation Spectroscopy of Defects in Metals", Bereich Kernchemie und Reaktor, Hahn-Meitner-Institut für Kernforschung Berlin, W. Germany, August 1984
66. "The Use of Positron Annihilation in Materials Science", with M. J. Fluss and L. C. Smedskjaer, at the 5th Risø International Symposium on Metallurgy and Materials Science-"Microstructural Characterization of Materials by Non-Microscopical Techniques", Roskilde, Denmark, September 1984
67. "Positron Annihilation Spectroscopy of Defects in Metals", Institut für Festkörperforschung, Kernforschungsanlage, Jülich, W. Germany, September 1984
68. "Positron Annihilation Spectroscopy of Defects in Metals", Materials Science Research Centre, Indian Institute of Technology, Madras, India, January 1985
69. "Positron Annihilation Spectroscopy of Defects in Materials", Materials Science Laboratory, Reactor Research Centre, Kalpakkam, India, January 1985
70. "Positron Annihilation Spectroscopy of Defects in Metals", Nuclear Physics Department, Madras University, Madras, India, January 1985
71. "Positron Annihilation Spectroscopy of Defects in Materials", Materials Research Laboratory and Department of Metallurgy, Indian Institute of Science, Bangalore, India, January 1985
72. "Positron Annihilation Spectroscopy of Defects in Metals and Alloys", Tata Institute of Fundamental Research, Bombay, India, January 1985
73. "Positron Annihilation Spectroscopy of Defects in Materials", Physics Colloquium, Department of Physics and Astronomy, The University of Kansas, Lawrence, Kansas, April 1985
74. "Positron Annihilation Spectroscopy of Defects in Materials", Institute for Materials Science and Engineering, National Bureau of Standards, Gaithersburg, Maryland, August 1985
75. Invited participant, Workshop on the Scientific Case for a 6-GeV Synchrotron Source, Argonne National Laboratory, Argonne, Illinois, December 1985
76. "Positron Annihilation Spectroscopy of Defects in Materials", McDonnell-Douglas Research Laboratory, St. Louis, Missouri, April 1986
77. "Positron Annihilation Studies of Recovery", with L. C. Smedskjaer, at the ASM Symposium on Advances in the Fundamentals of Recovery and Annealing, Materials Week '86, Orlando, Florida, October 1986

Invited Presentations (continued):

78. "Positron Annihilation Spectroscopy of Defects in Materials", Department of Physics, University of Rajasthan, Jaipur, India, October 1986
79. "Experimental Study of Defect States in Metals and Alloys", series of three lectures at the International School on Electronic Band Structure and its Applications, Indian Institute of Technology - Kanpur, India, October 1986
80. Panel Discussion leader on "Defect Electronic Structure", at the International School on Electronic Band Structure and its Applications, Indian Institute of Technology - Kanpur, India, October 1986
81. "Positron Annihilation Spectroscopy of Defects in Metals and Alloys", Saha Institute of Nuclear Physics, Calcutta, India, November 1986
82. "Positron Studies of Defects in Metals", Indian Association for the Cultivation of Science, Calcutta, India, November 1986
83. "Nanophase Materials", at the Symposium on Current Trends in the Physics of Materials, Department of Physics and Advanced Centre for Materials Science, Indian Institute of Technology - Kanpur, India, November 1986
84. "Nanophase Materials - their synthesis, characterisation and properties", Tata Institute of Fundamental Research, Bombay, India, November 1986
85. "Positron Annihilation Spectroscopy in Metals and Alloys", Department of Materials Science and Engineering, Colloquium on Progress in Materials Science, The Technological Institute, Northwestern University, November 1986
86. "Nanophase Materials - their synthesis, characterization, and properties", Metallurgy Department, Risø National Laboratory, Roskilde, Denmark, March 1987
87. "Nanophase Materials - their synthesis, characterization, and properties", Joint Physics Colloquium, Pädagogischen Hochschule Halle (Saale) and Martin-Luther-Universität, Halle-Wittenberg, E. Germany, March 1987
88. "Nanophase Materials - their synthesis, characterization, and properties", Institute Colloquium, Central Institute of Nuclear Research, Rossendorf, E. Germany, March 1987
89. "Vacancies in Metals and Alloys", at the European Meeting on Positron Studies of Defects, Wernigerode, E. Germany, March 1987
90. "Positron Annihilation Spectroscopy in Metals and Alloys", Laboratoire de Magnétisme et Structure Électronique de Solides, Université Louis Pasteur, Strasbourg, France, March 1987
91. "Synthesis, Characterization, and Properties of Nanophase TiO_2 ", Colloquium on New Materials, Universität des Saarlandes, Saarbrücken, W. Germany, April 1987
92. "Kinetic Processes in Nanocrystalline Materials", with H. Hahn, R. S. Averback, and H.-J. Höfler, at the Symposium on the Science and Fabrication of Small Clusters, Materials Research Society Spring Meeting, Anaheim, California, April 1987

Invited Presentations (continued):

93. "Nanophase Ultrafine-Grained Materials", at the U.S.-Japan Seminar on Electronic Structure and Lattice Defects in Alloys, East-West Center, Honolulu, Hawaii, May 1987
94. "Positron Annihilation Spectroscopy and its Applications in Materials Science", Shanghai Institute of Metallurgy, Academia Sinica, Shanghai, People's Republic of China, September 1987
95. "Nanophase Materials", Shanghai Institute of Metallurgy, Academia Sinica, Shanghai, People's Republic of China, September 1987
96. "Positron Annihilation Spectroscopy and its Applications in Material Science", Department of Physics and Institute of Solid State Physics, Nanjing University, Nanjing, People's Republic of China, September 1987
97. "Nanophase Materials", Institute of Solid State Physics, Academia Sinica, Hefei, People's Republic of China, September 1987
98. "Defects and Diffusion in BCC Refractory Metals", Institute of Solid State Physics, Academia Sinica, Hefei, People's Republic of China, September 1987
99. "Positron Annihilation Spectroscopy and its Applications in Materials Science", Institute of High Energy Physics, Academia Sinica, Beijing, People's Republic of China, October 1987
100. "Defects and Diffusion in BCC Refractory Metals", Institute of High Energy Physics, Academia Sinica, Beijing, People's Republic of China, October 1987
101. "Nanophase Materials", Institute of High Energy Physics, Academia Sinica, Beijing, People's Republic of China, October 1987
102. "Materials Research at Argonne National Laboratory", Institute of Low Energy Nuclear Physics, Beijing Normal University, Beijing, People's Republic of China, October 1987
103. "Materials Research at Argonne National Laboratory", General Research Institute for Non-Ferrous Metals, Beijing, People's Republic of China, October 1987
104. "Nanophase Materials", Materials Science Division, Argonne National Laboratory, Argonne, Illinois, November 1987.
105. "Nanophase Materials", Sandia National Laboratories, Livermore, California, January 1988
106. "Nanophase Materials - their synthesis, characterization, and properties", Instituto de Física, Universidad Nacional Autónoma de México, México, D. F., México, February 1988
107. "Nanophase Ceramics: ultrafine-powder processing for improved performance", at Micrometallurgy '88: Non-traditional Metallurgy in a Changing Environment, 1988 Pacific Regional Meeting of The Metallurgical Society, Lake Tahoe, California, March 1988

108. "Nanophase Materials - their synthesis, characterization, and properties", Daido Institute of Technology, Nagoya, Japan, May 1988
109. "Synthesis of Nanophase Materials from Ultrafine Powders", at the Symposium on Powder Preparation, Materials Research Society International Meeting on Advanced Materials, Sunshine City, Ikebukuro, Tokyo, Japan, June 1988

Invited Presentations (continued):

110. "Electronic Structure of Disordered CuPd Alloys by Positron-Annihilation 2D-ACAR", with L. C. Smedskjaer, R. Benedek, D. G. Legnini, M. D. Stahulak, and A. Bansil, at the Eighth International Conference on Positron Annihilation, Gent, Belgium, September 1988
111. "Nanophase Materials - their synthesis, characterization, and properties", Department of Materials Science and Engineering, Stanford University, Stanford, California, October 1988
112. "Synthesis, Characterization, and Properties of Nanophase Ceramics", at the Symposium on Multicomponent Ultrafine Microstructures, Materials Research Society Fall 1988 Meeting, Boston, Massachusetts, December 1988
113. "SANS and Related Studies of Nanophase Ceramics", Intense Pulsed Neutron Source Seminar, Argonne National Laboratory, Argonne, Illinois, January 1989
114. "Cluster-Assembled Materials", with L. E. Brus, at the Symposium on Insulator and Semiconductor Clusters, Materials Research Society Spring 1989 Meeting, San Diego, California, April 1989
115. "The Processing and Properties of Nanophase Ceramics", with J. A. Eastman, at the Symposium on Processing Science of Advanced Ceramics, Materials Research Society Spring Meeting, San Diego, California, April 1989
116. "Synthesis, Characterization, and Properties of Nanophase Materials", Instituto de Física, Universidad Nacional Autónoma de México, Ensenada, México, May 1989
117. "Nanophase Materials - their synthesis, characterization, and properties", Joint Colloquium, Departments of Physics and Metallurgy, Mechanics, and Materials Science, Michigan State University, East Lansing, Michigan, May 1989
118. "Nanophase Materials Assembled from Atomic Clusters", at the International Symposium on Physics of New Materials, Osaka, Japan, June 1989
119. "Nanophase ceramics: fundamental properties and possible future applications", Daido Institute of Technology, Nagoya, Japan, June 1989
120. "Nanophase Materials Assembled from Atomic Clusters", Toyota Central Research & Development Laboratories, Inc., Nagakute, Japan, June 1989
121. "Nanophase Materials", Faculty of Engineering, Nagoya University, Nagoya, Japan, June 1989
122. "Nanophase Materials Assembled from Atomic Clusters", New Materials Research Laboratories, Nisshin Steel Co., Ltd., Ichikawa, Japan, June 1989

123. "Synthesis, Characterization, and Properties of Nanophase Materials", R & D Laboratories - I, Nippon Steel Corporation, Kawasaki, Japan, June 1989
124. "Nanophase Materials - their synthesis, characterization, and properties", Wright Research and Development Center, Materials Laboratory, Wright-Patterson Air Force Base, Ohio, July 1989

Invited Presentations (continued):

125. "Nanophase Ceramics Processing", at the 1989 Gordon Conference on Ceramics: Novel Processing for Flaw-Free Ceramics, Colby Sawyer College, New London, New Hampshire, August 1989
126. "Cluster-Assembled Nanophase Materials", at Technology Outlook - 1990 into the 21st Century, University of Wisconsin - Milwaukee Short Course, Milwaukee, Wisconsin, August 1989
127. "Interfacial Structure in Nanocrystalline Materials", with J. A. Eastman, at the Symposium on Structure and Properties of Ultrafine Particles, Surfaces and Interfaces, The Metallurgical Society Fall Meeting, Indianapolis, Indiana, October 1989
128. "Cluster-Assembled Nanophase Materials", at Student Night, American Society of Metals, Chicago Electronic Materials Chapter, Chicago, Illinois, October 1989
129. "Nanophase Materials", Distinguished Visiting Lecturer Series, Engineering Physics Department, Air Force Institute of Technology, Wright-Patterson Air Force Base, Dayton, Ohio, January 1990
130. "Cluster-Assembled Nanophase Materials", Materials Science and Components Technology Division, Naval Research Laboratory, Washington, D.C., January 1990
131. "Cluster-Assembled Nanophase Materials", Department of Materials Science and Engineering, University of Michigan, Ann Arbor, Michigan, February 1990
132. "Structure, Stability, and Properties of Nanophase Materials", at the Symposium of the Division of Condensed Matter Physics: Grain Growth, American Physical Society March Meeting, Anaheim, California, March 1990
133. "Structure and Properties of Cluster-Assembled Nanophase Materials", at the Frontier Topic: Nanostructure-Property Relationships Session, Fortieth Anniversary Meeting of the American Crystallographic Association, New Orleans, Louisiana, April 1990
134. "Is Superplasticity in the Future of Nanophase Materials?", at the Symposium on Superplasticity in Metals, Ceramics, and Intermetallics, Materials Research Society Spring Meeting, San Francisco, California, April 1990
135. "Synthesis, Structure, and Properties of Nanophase Materials", at the Symposium on Frontiers of Materials Research, Materials Research Society Spring Meeting, San Francisco, California, April 1990
136. "Structure and Properties of Cluster-Assembled Nanophase Materials", Materials Science Division, Argonne National Laboratory, April 1990

137. "Synthesis of Nanophase Materials from Aerosols", at the Session on Materials Synthesis by Vapor Phase Processes, Annual Meeting of the American Association of Aerosol Research, Philadelphia, Pennsylvania, June 1990
138. "Synthesis of Nanophase Ceramics for Electronic Applications", at the DOE/BES Workshop on Highly Conducting Ceramics, Jackson Hole, Wyoming, July 1990
139. "Processing and Properties of Nanoscale Structures", at the DARPA Workshop on Nanostructural Materials, La Jolla, California, July 1990

Invited Presentations (continued):

140. "Nanophase Materials", Alcoa Laboratories, Pittsburgh, Pennsylvania, September 1990
141. "Mechanical Behavior of Nanocrystalline Metals", with G. W. Nieman and J. R. Weertman, at the Acta Metallurgica Conference on Materials with Ultrafine Microstructures, Atlantic City, New Jersey, October 1990
142. "Defects in Ultrafine Grain Palladium", with G. J. Thomas, at the Acta Metallurgica Conference on Materials with Ultrafine Microstructures, Atlantic City, New Jersey, October 1990
143. "Raman Scattering Studies of Nanophase TiO₂", with J. C. Parker, at the Acta Metallurgica Conference on Materials with Ultrafine Microstructures, Atlantic City, New Jersey, October 1990
144. "Synthesis, Structure, and Properties of Nanophase Materials", Materials Science and Engineering Department, Massachusetts Institute of Technology, October 1990
145. "Cluster-Assembled Nanophase Materials", at the Symposium on Multifunctional Nanophase Composites, 43rd Pacific Coast Regional Meeting of the American Ceramic Society, Seattle, Washington, October 1990
146. "From Argonne to ARCH to Nanophase Technologies - a Technology Transfer Odyssey", at the Symposium on Commercialization of Public Ceramic Technology by Entrepreneurs, 43rd Pacific Coast Regional Meeting of the American Ceramic Society, Seattle, Washington, October 1990
147. "Nanophase Materials - a novel scientific approach to technology", Tamil Nadu Academy of Sciences, Madras, India, November 1990
148. "Grain Boundary and Defect Structures in Nanophase Materials", Department of Nuclear Physics, University of Madras, Madras, India, November 1990
149. "Synthesis, Structure, and Properties of Nanophase Materials", Indira Gandhi Centre for Atomic Research, Kalpakkam, India, November 1990
150. "Synthesis, Structure, and Properties of Nanophase Materials", Department of Physics, Madurai Kamaraj University, Madurai, India, November 1990
151. "Cluster-Assembled Nanophase Materials", at the International Symposium on Materials for Advanced Technology Systems, 1990 Annual Technical Meeting of the Indian Institute of Metals, Tiruchirapalli, India, November 1990

152. "Grain Boundary Structures in Nanophase Materials", with G. J. Thomas, at the Symposium on Defects in Materials, Materials Research Society Fall Meeting, Boston, Massachusetts, December 1990
153. "Structure and Properties of Nanophase Materials", at the 1991 Arizona State University HREM Workshop on Structure and Properties of Interfaces, Wickenburg, Arizona, January 1991

Invited Presentations (continued):

154. "Synthesis of Nanophase Materials from Gas-Condensed Clusters", with J. A. Eastman and Y. X. Liao, at the Symposium on Microcomposites and Nanophase Materials, 1991 TMS Annual Meeting, New Orleans, Louisiana, February 1991
155. "Physical Properties and Mechanical Behavior of Cu Samples with Nanometer Grain Sizes", with G. W. Nieman and J. R. Weertman, at the Symposium on Microcomposites and Nanophase Materials, 1991 TMS Annual Meeting, New Orleans, Louisiana, February 1991
156. "Synthesis, Structure, and Properties of Nanophase Materials", Materials Science and Engineering Department, University of Washington, Seattle, Washington, March 1991
157. "Synthesis, Structure, and Properties of Nanophase Materials", Materials Science Department, Physical Sciences Laboratory, Battelle Pacific Northwest Laboratory, Richland, Washington, March 1991
158. "Nanostructured Materials", at the Inaugural Meeting of the MRS de México (I Congreso Nacional de Ciencia de Materiales), Mexico City, April 1991
159. "Nanophase Materials", Institute for Defense Analysis, Arlington, Virginia, April 1991
160. "The Mechanical Behavior of a Grain Boundary-Rich (Nanocrystalline) Metal", with M. J. Mayo, S. K. Ganapathi, and W. D. Nix, at the Symposium on Structure/Property Relationships for Metal/Metal Interfaces, Materials Research Society Spring Meeting, Anaheim, California, April 1991
161. "Grain Boundaries, Diffusion, and Grain Growth in Nanophase Materials", at the International Conference on Diffusion and Defects in Solids DD-91, Moscow to Perm, USSR, July 1991
162. "Structure and Properties of Cluster-Assembled Nanophase Materials", at the 1991 Gordon Research Conference on Semiconductor and Metal Clusters, Brewster Academy, Wolfborough, New Hampshire, August 1991
163. "Nanostructured Materials", at the First United States-México Bilateral Symposium: The Frontiers in Materials Science, Ixtapa, México, September 1991
164. "Structure and Properties of Cluster-Assembled Nanoscale Materials", at the International Symposium on the Physics and Chemistry of Finite Systems: From Clusters to Crystals, Richmond, Virginia, October 1991

165. "Nanophase Materials - An Overview", at the ASM International 1991 Materials Congress, Advanced Materials Technologies Symposium, Cincinnati, Ohio, October 1991
166. "Small Angle Neutron Scattering of Nanometer Grain Sized Materials" at the International Workshop - Studies of Magnetic Properties of Fine Particles and Their Relevance to Materials Science, Rome, Italy, November 1991
167. "Nanophase Materials - An Overview", at the Third Topical Conference on Emerging Technologies in Materials, 1991 Annual Meeting of the American Institute of Chemical Engineers, Los Angeles, California, November 1991

Invited Presentations (continued):

168. "Cluster Assembly of Hierarchical Nanostructures", at the Symposium on Hierarchically Structured Materials, Materials Research Society Fall Meeting, Boston, Massachusetts, December 1991
169. "Gas-Condensed Cluster-Assembled Nanophase Ceramics", at the Engineering Foundation Conference on Vapor Phase Manufacture of Ceramics, Kona, Hawaii, January 1992
170. "Nanophase Materials", Department of Physics and Astronomy, University of Hawaii at Manoa, Honolulu, Hawaii, January 1992
171. "Nanostructured Materials", Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, Minnesota, February 1992
172. "Nanostructured Materials", Departments of Chemical Engineering and Materials Science, California Institute of Technology, Pasadena, California, February 1992
173. "Structure and Properties of Nanophase Materials Assembled from Gas-Condensed Atom Clusters", at the Symposium on Nanophases and Nanocrystalline Structures, 1992 TMS Annual Meeting, San Diego, California, March 1992
174. "Nanostructured Materials", Department of Applied Mechanics and Engineering Sciences, Materials Science Program, and Center of Excellence for Advanced Materials, University of California at San Diego, March 1992
175. "Nanostructured Materials", Departments of Physics and Mechanics and Materials Engineering, Washington State University, Pullman, Washington, March 1992
176. "Nanostructured Materials", Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign, April 1992
177. "Nanostructured Materials", Department of Electrical Engineering, University of Notre Dame, Notre Dame, Indiana, April 1992
178. "Synthesis and Properties of Nanophase Materials", at the Symposium on Aerosol Precursors to Materials, Materials Research Society Spring Meeting, San Francisco, California, April 1992

179. "Nanostructured Materials - an overview", at the First NIST Workshop on Nanostructured Materials, National Institute of Standards and Technology, Gaithersburg, Maryland, May 1992
180. "Synthesis and Processing of Nanophase Ceramics and Metals", at the Department of Energy, Basic Energy Sciences-Materials Sciences Information Meeting on Synthesis and Processing of Tailored Materials, Oak Ridge, Tennessee, May 1992
181. "Synthesis and Processing of Nanostructured Materials", at the NATO Advanced Study Institute on Mechanical Properties and Deformation Behavior of Materials Having Ultra-Fine Microstructures, Vimeiro, Portugal, June 1992
182. "Nanostructured Materials - mind over matter", Keynote lecture at the First International Conference on Nanostructured Materials, Cancun, México, September 1992

Invited Presentations (continued):

183. "Nanostructured Materials - an overview", at a joint plenary session of the National Meetings of Academia Mexicana de Ciencia de Materiales and Sociedad Mexicana de Ciencia de Superficies y de Vacio, Cancun, México, September 1992
184. "Cluster-Assembled Nanophase Materials", at the 4th NEC Symposium on Fundamental Approaches to New Material Phases: Physics and Chemistry of Nanometer-Scale Materials, Karuizawa, Japan, October 1992
185. "Cluster Assembly of Nanophase Materials", at the Third International Stein Conference on Advanced Materials - Synthesis to Applications, Philadelphia, Pennsylvania, October 1992
186. "Synthesis and Properties of Nanophase Materials", at the Nanophase Materials Symposium, EMRS-MatTech-FEMS Joint Conference, Strasbourg, France, November 1992
187. "Nanostructured Materials", at the 1992 Annual Meeting of the American Vacuum Society, Chicago, Illinois, November 1992
188. "Nanostructured Materials", Physics Department, Ford Research Laboratory, Dearborn, Michigan, January 1993
189. "Mechanical Properties of Nanocrystalline Materials", at the TMS/FEMS Joint Symposium on Nanocrystalline Materials, 1993 TMS Annual Meeting, Denver, Colorado, February 1993
190. "Synthesis and Sintering of Nanophase Ceramics", The James Franck Institute Colloquium, University of Chicago, Chicago, Illinois, March 1993
191. "Synthesis and Properties of Nanostructured Materials", Department of Materials Science and Engineering, Johns Hopkins University, Baltimore, Maryland, March 1993
192. "Synthesis and Properties of Nanostructured Materials", Department of Materials Science and Engineering, North Carolina State University, Raleigh, North Carolina, March 1993

193. "Ultrafine Particles and Nanostructured Materials", Keynote lecture at the Symposium on Ultrafine Particles and Nanostructured Materials, Royal Institute of Technology, Stockholm, Sweden, March 1993
194. "Physical Methods for Synthesis of Nanostructured Materials", at the Symposium on Ultrafine Particles and Nanostructured Materials, Royal Institute of Technology, Stockholm, Sweden, March 1993
195. "Ultrafine Particles and Nanostructured Materials", Department of Physics, Chalmers University of Technology and Göteborg University, Göteborg, Sweden, March 1993
196. "Ultrafine Particles and Nanostructured Materials", Department of Physics, Linköping University, Linköping, Sweden, March 1993
197. "Nanostructured Materials", DuPont Seminar Series in Particulate Materials, Particulate Materials Center, Pennsylvania State University, University Park, Pennsylvania, April 1993
198. "Synthesis and Properties of Nanophase Materials", U.S.-Italy Workshop on Advanced Materials, Argonne National Laboratory, Argonne, Illinois, April 1993

Invited Presentations (continued):

199. "Nanostructured Materials", Department of Electrical and Computer Engineering, University of Cincinnati, Cincinnati, Ohio, April 1993
200. "Nanophase Materials", four-lecture (12h) course on Matériaux nanophases at the Ecole Polytechnique Fédérale de Lausanne, Switzerland, sponsored by the "Troisième Cycle de la Physique en Suisse Romande" (Geneva, Lausanne, Neuchâtel, Freiburg, Bern), May-June 1993
201. "Nanostructured Materials", Institut de Physique Experimentale, Ecole Polytechnique Fédérale de Lausanne, Switzerland, June 1993
202. "Mechanical Properties of Nanophase Materials", with G. E. Fougere, at the NATO Advanced Study Institute on Nanophase Materials: Synthesis-Properties-Applications, Corfu, Greece, June-July 1993
203. "Assembling Nanophase Ceramics from Atom Clusters", at the Second Symposium on Forming, Characteristics and Processing of Ceramics, 24th Annual Meeting of the Fine Particle Society, Chicago, Illinois, August 1993
204. "What do we know about the structures of nanophase materials?", at the Symposium on Nanophase and Nanocomposite Materials, 3rd IUMRS International Conference on Advanced Materials, Tokyo, Japan, September 1993
205. "Synthesis and Properties of Nanostructured Materials", at the Symposium on Frontiers of Materials Science and Engineering, 3rd IUMRS International Conference on Advanced Materials, Tokyo, Japan, September 1993
206. "Mechanical Properties of Nanophase Materials", ONR Workshop on Nanostructured Materials, Naval Research Laboratory, Washington, D.C., September 1993

207. "Synthesis, Structure and Properties of Nanostructured Materials", lectures (3h) at the Scuola Nazionale Materiali nanostrutturati: Proprietà di base ed applicazioni, Rimini, Italy, September 1993
208. "Synthesis and Properties of Nanostructured Materials" at ENEA (Ente Nazionale per le Nuove Tecnologie, l'Energia e l'Ambiente) Centro Ricerche Energia, Casaccia (Rome), Italy, September 1993
209. "Characterization of Nanoparticles and Nanophase Materials", European Science Foundation Explorative Workshop on Aerosol Methods and Advanced Techniques for Nanoparticle Science and Nanopowder Technology, Duisburg, Germany, October 1993
210. "Nanostructured Materials: an Overview", at the Annual Conference of the INFM (National Institute for the Physics of Matter), Sezione "Magnetismo, Metalli e Superconduttività", Fermo, Italy, October 1993
211. "Nanostructured Materials", Department of Materials Science and Engineering, Cornell University, Ithaca, New York, November 1993

Invited Presentations (continued):

212. "Nanostructured Materials", Nanostructure Materials and Devices Seminar, Colleges of Engineering and of Mathematics and Physical Sciences, the OSU Center for Materials Research, IEEE, and the Departments of Electrical Engineering and Physics, Ohio State University, Columbus, Ohio, November 1993
213. "What Do We Really Know about the Structures of Nanophase Materials?", at the Symposium on Atomic Scale Imperfections in Materials: R. W. Balluffi Fest, Fall 1993 Materials Research Society Meeting, Boston, Massachusetts, December 1993
214. "Nanostructured Materials", Technologie des Materiaux, Institut de Recherche d'Hydro-Québec, Varennes, Québec, Canada, December 1993
215. "Nanostructured Materials", Physics Division, Argonne National Laboratory, Argonne, Illinois, January 1994
216. "Synthesis, Structure, and Properties of Nanostructured Materials", three lecture series sponsored by the Departments of Physics and Chemistry and the Technology Transfer Centre, The Hong Kong University of Science & Technology, Kowloon, Hong Kong, January 1994
217. "Nanostructured Materials", Physics Department, University of Illinois-Chicago, Chicago, Illinois, February 1994
218. "Nanostructured Materials", Departments of Physics and Chemistry, University of Kentucky, Lexington, Kentucky, February 1994
219. "Cluster-Assembled Nanophase Materials", Department of Materials Science and Engineering, University of Cincinnati, Cincinnati, Ohio, March 1994
220. "Synthesis of Nanostructured Materials via Cluster Assembly", at the Symposium on Molecularly Designed Ultrafine/Nanostructured Materials, Spring 1994 Materials Research Society Meeting, San Francisco, California, April 1994

221. "Synthesis, Structure and Properties of Nanostructured Materials", at the Department of Materials Science and Engineering, University of Arizona, Tucson, Arizona, May 1994
222. "Cluster-Assembled Nanophase Materials", The Centre for Materials Science, Chalmers University of Technology and Göteborg University, Göteborg, Sweden, June 1994
223. "Cluster-Assembled Nanophase Materials", Department of Physics, Uppsala University, Uppsala, Sweden, June 1994
224. "Mechanical Properties of Nanophase Ceramics and Related Materials", at the International Conference on the Structure and Properties of Brittle and Quasiplastic Materials, Riga, Latvia, June 1994
225. "Cluster-Assembled Nanophase Materials", Materials Department, Risø National Laboratory, Roskilde, Denmark, June 1994
226. "Nanostructured Materials", at the Forum on New Materials, Eighth CIMTEC (International Context on Modern Materials Technologies), Florence, Italy, June-July 1994

Invited Presentations (continued):

227. "Nanostructured Materials", Dipartimento di Fisica dell'Università di Bologna, Bologna, Italy, July 1994
228. "Nanophase Materials", at the 1994 Gordon Research Conference on High Temperature Chemistry of Advanced Materials, Kimball Union Academy, Meriden, New Hampshire, August 1994
229. "Nanoparticles: Building Blocks for Advanced Materials", Plenary lecture at the First International Particle Technology Forum, Denver, Colorado, August 1994
230. "Nanophase Materials: Synthesis, Structure, and Properties", lecture series (6h) at the Institute of Metal Research, Academia Sinica, Shenyang, China, August-September 1994
231. "Recent Progress in Cluster-Assembled Nanophase Materials", at the International Workshop on Nanostructured Materials IWNM'94, Institute of Metal Research, Academia Sinica, Shenyang, China, September 1994
232. "Nanophase Materials", at CAM-94, a Joint Meeting of the Canadian Association of Physicists, the American Physical Society, and the Mexican Physical Society, Cancun, Mexico, September 1994
233. "Mechanical Properties of Nanophase Metals", with G. E. Fougere, at the Second International Conference on Nanostructured Materials NANO'94, Stuttgart, Germany, October 1994
234. "Nanophase Materials and their Properties", Institut für Materialforschung III, Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Germany, October 1994
235. "Nanostructured Materials", Physics Department, Michigan Technological University, Houghton, Michigan, November 1994
236. "Nanophase Materials and their Properties", at the Ohio Chapter Meeting of the American Vacuum Society, Cleveland, Ohio, November 1994

237. "Nanostructured Materials" and "Transfer of Nanophase Technologies", at the Gorham/Intertech Consulting International Conference Nano-Particulates '94: Business Opportunities, Technologies, Markets and Applications, Monterey, California, November 1994
238. "Grain Size Dependent Mechanical Properties in Nanophase Materials", at the Symposium on Grain Size and Mechanical Properties: Fundamentals and Applications, Fall 1994 Materials Research Society Meeting, Boston, Massachusetts, December 1994
239. "Nanostructured Materials: a Global View", at the Symposium on Engineering of Nanostructured Materials, Fall 1994 Materials Research Society Meeting, Boston, Massachusetts, December 1994
240. "Nanostructured Materials", Materials Engineering Department, Rensselaer Polytechnic Institute, Troy, New York, December 1994
241. "Recent Progress in Cluster-Assembled Nanophase Materials", at the International Workshop on Clusters and Nanostructured Materials, Puri, Orissa, India, December 1994

Invited Presentations (continued):

242. "Nanostructured Materials", Regional Research Laboratory, Council of Scientific & Industrial Research, Bhubaneswar, India, January 1995
243. "Nanostructured Materials", Department of Physics, Utkal University, Bhubaneswar, India, January 1995
244. "Nanostructured Materials", Max-Planck-Institut für Mikrostrukturphysik, Halle (Saale), Germany, January 1995
245. "Nanostructured Materials", Department of Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, Pennsylvania, February 1995
246. "Characterization and Properties of Nanophase Materials", Analytical Sciences Discussion Group, Dow Chemical Company, Midland, Michigan, March 1995
247. "What Do We Really Know about the Structures of Nanophase Materials?", Analytical Sciences Laboratory, Dow Chemical Company, Midland, Michigan, March 1995
248. "Mechanical Behavior of Nanostructured Materials", Institut für Metallforschung, Technische Universität Berlin, Germany, March 1995
249. "Nanostructured Materials", School of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, Georgia, April 1995
250. "Nanostructured Materials", Materials Science Program and Department of Physics, University of Delaware, Newark, Delaware, May 1995
251. "Synthesis, Properties, and Applications of Nanophase Materials", at the International Colloquium on Plasma Processes, Antibes-Juan-les-Pins, France, June 1995
252. "What Can Chemists Do for Nanostructured Materials?", at the Symposium on Molecularly Designed Nanostructured Materials and Composites, American Chemical Society Fall Meeting, Chicago, Illinois, August 1995

253. "Nanostructures: an Overview", at the Symposium on Nanostructures, Nanomaterials, Molecular Electronics, American Chemical Society Fall Meeting, Chicago, Illinois, August 1995
254. "Recent Progress in the Cluster Assembly of Nanostructured Materials", at the Symposium on Nanostructured Materials, Fourth MRS International Conference on Advanced Materials, Cancun, Mexico, August-September 1995
255. "Structure and Properties of Nanophase Materials", Institut für Physikalische Chemie und Elektrochemie, Universität Hannover, Germany, September 1995
256. "Nanostructured Materials", Tetra Pak (Suisse) SA, Romont, Switzerland, October 1995
257. "Synthesis and Mechanical Properties of Nanomaterials", at the International Workshop on Nanomaterials: between research & industry, Lausanne, Switzerland, October 1995
258. "Nanostructured Materials", at the 6th European Conference on Applications of Surface and Interface Analysis ECASIA'95, Montreux, Switzerland, October 1995

Invited Presentations (continued):

259. "Nanophase Ceramics", at the 25th Anniversary Northeast Regional Meeting of the American Chemical Society, Rochester, New York, October 1995
260. "Recent Progress in Nanophase Materials", at the Symposium on Processing and Properties of Nanocrystalline Materials, 1995 TMS-ASM Materials Week, Cleveland, Ohio, October 1995
261. "What Is So Special About Nanostructured Materials and Coatings?", at the Gorham/Intertech Consulting Second International Conference Nanostructured Materials and Coatings '95, Atlanta, Georgia, November 1995
262. "Nanostructured Materials", Department of Materials Science and Engineering, University of Pennsylvania, Philadelphia, Pennsylvania, November 1995
263. "What Can We Learn from Biology about Nanostructuring?", at the Symposium on Materials Inspired by Biology, Fall 1995 Materials Research Society Meeting, Boston, Massachusetts, November-December 1995
264. "Nanostructured Materials: Opportunities and Recent Advances", Physics Department Colloquium, State University of New York at Albany, December 1995
265. "Nanostructured Materials: Opportunities and Recent Advances", at the Conference on Perspectives in Materials Science, Bangalore, India, December 1995
266. "Nanostructured Materials: a new frontier", Physics Department Colloquium, Williams College, Williamstown, Massachusetts, January 1996
267. "Nanostructured Materials: a new frontier", Materials Science and Engineering Department, Rensselaer Polytechnic Institute, Troy, New York, February 1996
268. "Nanostructured Materials: Opportunities and Recent Advances", at the Mardi Gras Conference on Experimental and Simulation Challenges in Nanostructured Materials, Baton Rouge, Louisiana, February 1996

269. "Nanostructured Materials: Opportunities and Recent Advances", the Weissberger-Williams Lecture Series, Eastman Kodak Company, Rochester, New York, February 1996
270. "Nanostructured Materials: Opportunities and Recent Advances", Center for Advanced Materials Processing and Chemical Engineering Department, Clarkson University, Potsdam, New York, February 1996
271. "Nanostructured Materials", Materials Science and Metallurgical Engineering Colloquium, Department of Chemical Engineering, Materials Science and Mining Engineering, Henry Krumb School of Mines, Columbia University, New York, March 1996
272. "Structure-Property Relationships in Nanophase Materials", at the 3rd International Workshop on Metastable Phases: Amorphous and Nanocrystalline Materials, Theoretical Aspects, Industrial and Technology Transfer, Bologna, Italy, April 1996
273. "Nanostructured Materials: a new frontier", Chemical Engineering Department, Rensselaer Polytechnic Institute, Troy, New York, April 1996

Invited Presentations (continued):

274. "Mechanical Properties of Nanophase Materials" and "Closing Remarks", at the 1996 International Symposium on Metastable, Mechanically Alloyed and Nanocrystalline Materials (ISMANAM-96), Rome, Italy, May 1996
275. "The Future of Nanocrystalline Materials", the 33rd D.K.C. MacDonald Memorial Lecture at the 8th Canadian Materials Science Conference, London, Ontario, June 1996
276. "Nanostructured Materials", Medtronic, Inc., Minneapolis, Minnesota, August 1996
277. "Nanostructured Materials: a new frontier", at the European Physical Society Industrial Workshop Towards Applications of Nano- and Quasicrystalline Materials, Berlin, Germany, September 1996
278. "Transferring Technology from the Laboratory to the Marketplace", at the Technical University - Darmstadt, Darmstadt, Germany, September 1996
279. "Nanostructured Materials: a new frontier", Medtronic Promeon, Brooklyn Center, Minnesota, September 1996
280. "Nanostructured Materials: a new frontier", Chemistry Department, University of New Hampshire, Durham, New Hampshire, September 1996
281. "Mechanical Properties of Nanophase Materials", at the Eighth International Symposium on the Physics of Materials: Materials Science and Physics of Low Dimensional Structures and Cluster Assembly, Hangzhou, China, October 1996
282. "Nanostructured Materials: Opportunities and Recent Advances", at the Eighth International Symposium on the Physics of Materials: Materials Science and Physics of Low Dimensional Structures and Cluster Assembly, Hangzhou, China, October 1996

283. "Nanostructured Materials: A New Frontier", lecture series (5h) at the Institute of Nanostructured Materials, Shandong Engineering Research Center of Nanostructured Materials, and Department of Materials Science and Engineering, Qingdao Institute of Chemical Technology, Qingdao, China, October 1996
284. "Nanophase Materials: Structures, Defects, and Properties", at the ACT (Advanced Chemical Processing Technology) International Symposium, Tokyo, Japan, October 1996
285. "Nanostructured Materials: a new frontier", at the TMS Hudson-Mohawk Chapter Meeting, Rensselaer Polytechnic Institute, Troy, New York, November 1996
286. "Nanophase Materials", at the Symposium on Frontiers of Materials Research, Fall 1996 Materials Research Society Meeting, Boston, Massachusetts, December 1996
287. "Nanostructured Materials: a new frontier", at the American Chemical Society Eastern New York Section Meeting, Siena College, Loudonville, New York, February 1997
288. "Structure and Properties of Nanophase Materials", at the International Conference on Micro Materials (Micro Mat '97), Berlin, Germany, April 1997
289. "Nanomaterials", in the Chemical Engineering Colloquim Series on Materials Engineering: Opportunities for Chemical Engineers, Rensselaer Polytechnic Institute, Troy, New York, April 1997

Invited Presentations (continued):

290. "Nanostructured Materials: Recent Advances and New Opportunities", Max-Planck-Institut für Mikrostrukturphysik, Halle (Saale), Germany, June 1997
291. "The Exciting World of Nanophase Materials", Microdevices Laboratory, Jet Propulsion Laboratory, Pasadena, California, June 1997
292. "Nanostructured Materials: A New Frontier", at the Cambridge Healthtech Institute Conference on Nanotechnology: Materials, Manufacturing and Applications, San Francisco, California, June 1997
293. "Nanostructured Materials: 1. Structures and Properties; 2. Synthesis and Processing", lectures (3h) at the NATO Advanced Study Institute on Nanostructured Materials: Science and Technology, St. Petersburg, Russia, August 1997
294. "Research on Nanoparticles and Nanostructures in the U.S.", at the Review Workshop on Nanoparticles and Nanostructures, St. Petersburg, Russia, August 1997
295. "Strategic Nanoscale Materials Research", at the 1997 International Symposium on Metastable, Mechanically Alloyed and Nanocrystalline Materials (ISMANAM-97), Sitges (Barcelona), Spain, September 1997
296. "Structures of Nanomaterials", at the 7th International Conference on the Structure of Non-Crystalline Materials NCM7, Chia Laguna, Sardinia, Italy, September 1997
297. "Nanostructured Materials: Recent Advances and New Opportunities", Materials Science and Engineering Department, University of Illinois at Urbana-Champaign, Champaign, Illinois, October 1997

298. "Nanostructured Materials: A New Frontier", Department of Physics and Astronomy, Colgate University, Hamilton, New York, November 1997
299. "Nanostructuring Materials to Achieve Novel Properties", at the General Electric Research & Development Center, Schenectady, New York, November 1997
300. "Nanostructured Ceramic Materials in the 21st Century", at the First SANKEN International Symposium on Surface & Interface Science and its Application to 21st Century Frontier Materials, Institute of Scientific and Industrial Research (SANKEN), Osaka University, Osaka, Japan, February 1998
301. "Introduction, Executive Summary, and Conclusions - Global Assessment of Research and Development Status and Trends in Nanoparticles, Nanostructured Materials, and Nanodevices", at the World Technology Evaluation Center (WTEC) Workshop on Global Assessment of Research and Development in Nanoparticles, Nanostructured Materials, and Nanodevices, Arlington, Virginia, February 1998
302. "Nanostructured Materials: A New Frontier", at the American Society of Metals Eastern New York Chapter Meeting, Century House, Latham, New York, May 1998
303. "Closing Panel: Nanostructure Science and Technology - a Global View", at the Fourth International Conference on Nanostructured Materials (NANO'98), Royal Institute of Technology, Stockholm, Sweden, June 1998

Invited Presentations (continued):

304. "From Gas Condensation to Nanostructured Materials", at the Conference on Advanced Nanomaterials from Vapors (ANfV'98), Uppsala University, Uppsala, Sweden, June 1998
305. "Nanostructure Science and Technology: a Global View", at the Nanotechnology for the Soldier System Conference, Cambridge, Massachusetts, July 1998
306. "Nanostructure Science and Technology: a Global View", at the 1998 American Chemical Society National Meeting, Symposium on Nanostructures and Composites, Boston, Massachusetts, August 1998
307. "Nanostructured Materials: A New Frontier", Departments of Chemistry, Physics, and Engineering, Virginia Commonwealth University, Richmond, Virginia, September 1998
308. "Nanostructures: A New Frontier", at the Fall Meeting of the New England Section of the American Physical Society, University of New Hampshire, Durham, New Hampshire, October 1998
309. "Nanostructure Science and Technology: a Global View", at the 1998 International Symposium on Metastable, Mechanically Alloyed and Nanocrystalline Materials (ISMANAM-98), Wollongong (Sydney), Australia, December 1998
310. "Summary of the WTEC Study of Nanostructure Science & Technology", at the OSTP Committee on Technology Interagency Working Group on NanoScience, Engineering and Technology Workshop on Vision for Nanotechnology R&D in the Next Decade, National Science Foundation, Arlington, Virginia, January 1999
311. "Nanostructure Science and Technology: a Global View", at the 1999 National Textile Center Forum, Myrtle Beach, South Carolina, January 1999

312. "Nanostructured Materials: a New Frontier", Physics Department, Smith College, Northampton, Massachusetts, February 1999
313. "Nanostructured Materials: a New Frontier", NEC Research Institute, Princeton, New Jersey, March 1999
314. "From Nanoparticles to Nanocomposites", at the Engineering Foundation Conference on Nanocomposite Materials: Design and Applications, Girdwood (Anchorage), Alaska, March-April 1999
315. "Panel: Nanocomposites for Future Technology and the Marketplace - Issues of Vertical Integration", at the Engineering Foundation Conference on Nanocomposite Materials: Design and Applications, Girdwood (Anchorage), Alaska, March-April 1999
316. "Nanostructure Science and Technology: a global view and a look toward the future", Eastman Kodak Company, Rochester, New York, May 1999
317. "Nanostructure Science and Technology: a global view and a look toward the future", Materials Science and Technology Division, Los Alamos National Laboratory, Los Alamos, New Mexico, May 1999
318. "Future Nanostructure Applications in Transportation", Panel on Nanotechnology and Its Impact on Transportation at the Spirit of Innovation in Transportation Conference, Cambridge, Massachusetts, June 1999

Invited Presentations (continued):

319. "Nanostructured Composites", with P. M. Ajayan, R. H. Doremus, and L. S. Schadler, at the 44th Army Sagamore Materials Research Conference on Nanostructured Materials, Easton, Maryland, August 1999
320. "Nanostructure Science and Technology: a Global View or Why Do We Need Theorists?", at the Symposium on Theory and Computer Simulation of Materials – Matching of Length Scales in Materials Science: Electronic, Atomic and Continuum Properties of Materials, Cancun, México, August-September 1999
321. "Nanostructure Science and Technology: a global view and a look toward the future", at The Adhesive and Sealant Council 1999 Fall Convention, Pittsburgh, Pennsylvania, October 1999
322. "Mechanical Properties of Nanofilled-Polymer Composites", with L. S. Schadler and P. M. Ajayan, at The Adhesive and Sealant Council 1999 Fall Convention, Pittsburgh, Pennsylvania, October 1999
323. "Panel: Perspectives on Science and Technology - Nanocomposites", at the International Symposium on Clusters and Nanostructures, Richmond, Virginia, October 1999
324. "Mechanical Behavior of Nano-TiO₂ Filled Polymer Composites", with L. S. Schadler, C. B. Ng, R. Webber, P. Hess, and B. C. Benicewicz, at the TMS Fall Meeting, Cincinnati, Ohio, November 1999
325. "Nanostructure Science and Technology: a global view and a look toward the future", Department of Materials Science and Engineering, Cornell University, Ithaca, New York, November 1999

326. "Nanostructure Science and Technology: a global view and a look toward the future", Department of Physics, Morehouse College, Atlanta, Georgia, January 2000
327. "Nanotechnology – opportunities and challenges", Cargill Incorporated, Emerging Technologies Seminar, Minneapolis (Plymouth), Minnesota, March 2000
328. "Nanomaterials for Biomedical Applications", at the Conference on Biomedical Applications of Micro and Nano Devices, The Bioscience Centre, Newcastle upon Tyne, England, April 2000
329. "Panel: Catalysing Technology Transfer & Innovation – a perspective", at the Conference on Biomedical Applications of Micro and Nano Devices, The Bioscience Centre, Newcastle upon Tyne, England, April 2000
330. "Nanostructured Materials – present and future", at the Materials Congress 2000: Materials for the 21st Century, Cirencester, Gloucestershire, UK, April 2000
331. "New Developments in Nanomaterials", at the Micro Materials Conference "MicroMat 2000", Berlin, Germany, April 2000
332. "Nanomaterials in Biotechnology", at the University of Virginia-NASA Workshop on Nano-biotechnology, NASA Langley Research Center, Hampton, Virginia, June 2000

Invited Presentations (continued):

333. "Nanostructured Composites", with P. M. Ajayan, R. H. Doremus, and L. S. Schadler, at the Fifth International Conference on Nanostructured Materials (NANO 2000), Sendai, Japan, August 2000
334. "Nanophase Ceramics as the Future Orthopaedic/Dental Implant Material", with T. J. Webster and R. Bizios, at the Fifth International Conference on Nanostructured Materials (NANO 2000), Sendai, Japan, August 2000
335. "Nanostructured Materials – present and future", at the First US-Egypt Workshop on Advanced Materials, Cairo, Egypt, September 2000
336. "Nanotechnologies and Nanostructured Materials", at Micro.tec 2000 (VDE World Micro-technologies Congress), World Exposition "Expo 2000", Hannover, Germany, September 2000
337. "Nanocomposite Materials", at the U.S. Army Objective Force Warrior Independent Review Team Meeting, Washington, D.C., October 2000
338. "Nanotechnology – Opportunities from an Emerging Technology", at the TAPPI (Technical Association of the Pulp and Paper Industry) Research Management Committee Fall Symposium, Amelia Island, Florida, November 2000
339. "Commercializing Nanophase Materials", at the ASME International Workshop Beyond Micro Device Engineering: Nanotechnology, Washington, D.C., December 2000
340. "Nanotechnology and Nanostructured Materials", Department of Physics Colloquium, State University of New York at Buffalo, Buffalo, New York, January 2001

341. “Nanoparticle and Nanotube Filled Composites”, at the U.S. Army Asilomar Conference, Asilomar, California, February 2001
342. “From the Laboratory to the Marketplace ”, at the National Science Foundation Nanotechnology Experimentation and Testing Facility (NEXT) Workshop, Arlington, Virginia, February 2001
343. “New Opportunities in Nanoscience and Nanotechnology”, at the Sixth International Conference on Frontiers of Polymers and Advanced Materials, Recife, Brazil, March 2001
344. “Commercializing Nanotechnology: the Nanophase Experience”, at the Government-University-Industry Research Roundtable on Commercializing University Research: Aligning Incentives and Protecting the Research Enterprise, The National Academies, Washington, D.C., March 2001
345. “Nanostructured Materials and Nanotechnology”, Colloquium, Physics Department, Brandeis University, Waltham, Massachusetts, April 2001
346. “Nanostructured Materials and Nanotechnology”, Colloquium, Physics and Applied Physics Department and Institute for Nano Science Engineering and Technology (INSET), University of Massachusetts at Lowell, Lowell, Massachusetts, April 2001

Invited Presentations (continued):

347. “Nanotechnology and National Security”, at the Roundtable on Implications of Nanotechnology for Foreign Policy: Political, Economic and Security Aspects, U.S. Department of State - Bureau of Intelligence and Research and the National Intelligence Council, Washington, D.C., April 2001
348. “Nanotechnology and Nanostructured Materials”, at the PPG Glass Technology Center, Pittsburgh, Pennsylvania, May 2001
349. “Nanotechnology and Nanostructured Materials”, at Albany International Research Co., Mansfield, Massachusetts, May 2001
350. “Nanostructured Materials and Nanotechnology”, at the Second Chemical Engineering Conference for Collaborative Research in Eastern Mediterranean, Ankara, Turkey, May 2001
351. “Osteoblast Behavior on Nanophase Materials”, at the 7th Meeting and Seminar on Ceramics, Cells and Tissues: Biomimetic Engineering, a New Role for Ceramics, Faenza, Italy, June 2001
352. “Nanostructured Materials and Nanotechnology”, at Malden Mills Industries, Inc., Lawrence, Massachusetts, June 2001
353. “Nanocomposites of Polymers, Ceramics, and Nanotubes”, at the First World Congress Nanocomposites 2001: Delivering New Value to Plastics, Chicago, Illinois, June 2001

354. “Nanocomposites of Ceramics, Nanotubes, and Polymers”, at the International Symposium on Metastable, Mechanically Alloyed and Nanocrystalline Materials (ISMANAM 2001), University of Michigan, Ann Arbor, Michigan, June 2001
355. “Nanotechnology: Opportunities and Challenges”, at the International Seminar What Next? - Technological Transformation – Addressing Nanotechnology and Other Emerging Technologies in the 21st Century, Dag Hammarskjöld Foundation, Uppsala, Sweden, June 2001
356. “Nanostructured Materials and Nanotechnology”, HaeDong Seminar, Chemical Engineering and Materials Departments, Seoul National University, Seoul, South Korea, July 2001
357. “Nanostructured Materials and Nanotechnology”, Materials Science Department, Pohang University of Science and Technology (POSTECH), Pohang, South Korea, July 2001
358. “Nanostructured Materials and Nanotechnology”, Department of Polymer Science and Engineering, Pusan National University, Pusan, South Korea, July 2001
359. “Nanoparticles - Building Blocks for Nanotechnology”, at the International Symposium on Nanoparticles: Aerosols and Materials, Pusan, South Korea, July 2001
360. “Nanotechnology and Nanostructured Materials”, at General Electric Silicones Global Headquarters and Waterford Manufacturing Facility, Waterford, New York, July 2001
361. “Nanotechnology and Nanostructured Materials”, at General Electric Corporate Research and Development Laboratory, Niskayuna, New York, October 2001

Invited Presentations (continued):

362. “Nanostructured Materials and Nanotechnology”, at General Motors Research and Development Center, Warren, Michigan, October 2001
363. “Nanostructured Materials”, at the ICASE/USRA/LaRC Workshop on Revolutionary Aerospace Concepts for Human/Robotic Exploration of the Solar System, NASA Langley Research Center, Hampton, Virginia, November 2001
364. “Nanoceramics and Nanocomposites in Biotechnology”, with A. J. McManus, T. J. Webster, R. H. Doremus, and R. Bizios, at the 7th International Symposium on Advanced Physical Fields (APF-7): Fabrication and Characterization of Nanostructured Materials, Tsukuba, Japan, November 2001
365. “Nanostructured Materials for Bone Replacement and Repair – Mechanical Properties and Cellular Response”, with A. J. McManus, T. J. Webster, R. H. Doremus, and R. Bizios, at the Second Annual Conference on Regenerative Medicine, Washington, D.C., December 2001
366. “Nanostructured Materials and Nanotechnology”, at the URSI (International Union of Radio Science) 2002 National Radio Science Meeting, The University of Colorado at Boulder, Colorado, January 2002
367. “Multiscale Organization and Functionality in Nanocomposite Materials”, at the Conference on Local and Nanoscale Structure in Complex Systems – 2002, Santa Fe, New Mexico, January 2002

368. “Directed Assembly of Functional Nanostructures”, at the Mardi Gras Conference on Nanotechnology at the Interface of Information Technology, Baton Rouge, Louisiana, February 2002
369. “Nanostructured Materials and Nanotechnology”, at the New York State Department of Transportation, Albany, New York, February 2002
370. “Nanotechnology and Nanostructured Materials”, at RIKEN (The Institute of Physical and Chemical Research), Wako-shi, Saitama, Japan, March 2002
371. “Nanoscale Science and Technology in the USA.”, at the Inauguration Symposium, KAIST Nano Science & Technology Research Institute, Daejeon, South Korea, March 2002
372. “Nanotechnology: Societal Implications and Challenges”, Panel presentation at the DC Science Writers Association Meeting, National Press Club, Washington D.C., March 2002
373. “Nanostructured Materials: the substance of nanotechnology”, at the National Science Foundation Symposium on Small Wonders: Exploring the Vast Potential of Nanoscience, Washington, D.C., March 2002
374. “Nanomaterials and Nanotechnology”, at the International Workshop on Nanocomposites: Materials, Neutrons, and Data Interpretation, Argonne National Laboratory, Argonne, Illinois, March 2002
375. “Nanostructured Materials – The Substance of Nanotechnology”, at Perspectives on the Future of Nano-Science/Technology: A Dialogue with Scientists, Bureau of Intelligence and Research, US Department of State and The National Intelligence Council, Washington, D.C., April 2002

Invited Presentations (continued):

376. “Perspectives in Nanotechnology”, at the Center for Surface Biotechnology, Centrumdagen 2002, Uppsala Biomedical Center, Uppsala University, Uppsala, Sweden, April 2002
377. “Is Nanotechnology a Good Investment?”, at the Members Discussion Group, The Sky Club, New York, New York, April 2002
378. “Directed Assembly of Nanostructures - NSEC Research at Rensselaer Polytechnic Institute”, at the Infocast Conference on the National Nanotechnology Initiative – From Vision Towards Commercialization, Washington D.C., May 2002
379. “Nanostructured Materials and Nanotechnology”, at the Medtronic Forum, Medtronic, Inc., Minneapolis, Minnesota, May 2002
380. “Nanotechnology: from Atoms to Applications through Nanoscience”, at the Minnesota Microscopy Society Spring Symposium on Nanotechnology, Minnesota Science Museum, St. Paul, Minnesota, May 2002
381. “Nanomaterials: the Substance of Nanotechnology”, at the Centennial Meeting of the Electrochemical Society, Philadelphia, Pennsylvania, May 2002

382. “Nanotechnology: from Atoms to Applications through Nanoscience”, at the Trinity College Advanced Materials Symposium, Trinity Week, Trinity College, Dublin, Ireland, May 2002
383. “Nanotechnology and Nanostructured Materials”, at the Fifth ISTC (International Science and Technology Center) Scientific Advisory Committee Seminar: Nanotechnologies in the Area of Physics, Chemistry and Biotechnology, Ioffe Physico-Technical Institute, St. Petersburg, Russia, May 2002
384. “Nanostructured Materials in Biotechnology”, with R. Bizios, at the International Symposium on Novel Materials: From Clusters to Nanostructures, Jekyll Island, Georgia, June 2002
385. “Nanostructured Materials and Nanotechnology”, in the Distinguished Speaker Program, ChevronTexaco Energy Research and Technology Company, Richmond Technology Center, Richmond, California, July 2002
386. “Nanotechnology Research at Rensselaer”, at the Nanotechnology Seminar, United Technologies Research Center, East Hartford, Connecticut, July 2002
387. “Nanostructured Materials and Nanotechnology”, guest lecture in ‘Virtual Medicine’, an undergraduate course, Thayer School of Engineering, Dartmouth College, Hanover, New Hampshire, August 2002
388. “Nanostructured Materials: the Substance of Nanotechnology”, at the Materials Research Seminar, Thayer School of Engineering, Dartmouth College, Hanover, New Hampshire, August 2002
389. “Nanoscience and Nanotechnology”, at the U.S. National Science Foundation Workshop on Communication and Integration in Nanomaterials, Transylvania University, Brasov, Romania, September-October 2002

Invited Presentations (continued):

390. “Nanomaterials and Nanotechnology”, at the U.S. Army Materiel Command Conference on Nanotechnology: Status, Possibilities and Vision for Future Army Materiel”, U.S. Army Soldier Systems Center, Natick, Massachusetts, October 2002
391. “Nanostructured Materials: the Substance of Nanotechnology”, at the DuPont Chesapeake Conference on Nanotechnology, Chesapeake Farms, Eastern Shore, Maryland, October 2002
392. “Nanostructured Materials: the Substance of Nanotechnology”, at the Department of Chemical Engineering, University of Maryland, College Park, Maryland, October 2002
393. “Nanomaterials: the Substance of Nanotechnology”, at the Nanoscale Science and Engineering Seminar Series, sponsored by the Center for Nanoscale Science and Technology, the Micro and Nanotechnology Laboratory, the Frederick Seitz Materials Research Laboratory, the Coordinated Science Laboratory, the College of Engineering, and the Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign, Urbana, Illinois, November 2002
394. “Nanomaterials and Nanotechnology Research at Rensselaer”, at the U.S. National Science Foundation – European Commission Nanomaterials Workshop: From

- Nanomaterials to Nanotechnology, British Consulate-General, Cambridge, Massachusetts, December 2002
395. “NSEC Research on Directed Assembly of Nanostructures”, NSF Grantee Conference on Nanoscale Science and Technology, Arlington, Virginia, December 2002
 396. “Nanotechnology Research at Rensselaer”, at the University of Central Florida, UCF Nanocommission Meeting, Orlando, Florida, January 2003
 397. “Nanomaterials: the Substance of Nanotechnology”, at the Philip Morris Research Center, Richmond, Virginia, January 2003
 398. “Nanomaterials: the Substance of Nanotechnology”, at the Theoretical Division, Los Alamos National Laboratory, Los Alamos, New Mexico, January 2003
 399. “Commercializing Nanotechnology”, Panel presentation at the 2nd Annual Nanotechnology Investing Forum, The Lodge at Rancho Mirage, Palm Springs, California, February 2003
 400. “Nanomaterials: the Substance of Nanotechnology”, at the Department of Mechanical Engineering, IGERT for Nanoparticle Science and Engineering Interdisciplinary Seminar, University of Minnesota, Minneapolis, Minnesota, February 2003
 401. “Nanomaterials: the Substance of Nanotechnology”, briefing for the President’s Council of Advisors on Science and Technology (PCAST), Washington, D.C., March 2003
 402. “Nanomaterials: the Substance of Nanotechnology”, with K. S. Schweizer, at the Symposium on Nanoscience and Technology: Opportunities and Challenges, the March Meeting of the American Physical Society, Austin, Texas, March 2003
 403. “Nanotechnology: from Atoms to Applications through Nanoscience”, Opening Lecture at the Spring School 2003, Institut für Festkörperforschung, Forschungszentrum Jülich, Jülich, Germany, March 2003

Invited Presentations (continued):

404. “Nanomaterials: the Substance of Nanotechnology and an Opportunity for Microtechnology”, at the 1st International Conference on the Interface between Nano- and Microtechnology (NAMIX), Berlin, Germany, May 2003
405. “Nanocomposite Polymers and Oxide Ceramics”, at the U.S. Army Material Command Executive Roundtable on Nanotechnology, McKinney, Texas, June 2003
406. “Nanotechnology: from Atoms to Applications”, Lally School of Management Research Seminar, Rensselaer Polytechnic Institute, Troy, New York, September 2003
407. “Nanotechnology: from Atoms to Applications through Nanoscience”, Board of Trustees Weekend, Rensselaer Polytechnic Institute, Troy, New York, September 2003
408. “Assembling Nanomaterials”, at RIKEN (The Institute of Physical and Chemical Research), Nanomaterials Processing Laboratory, Wako-shi, Saitama, Japan, October 2003

409. “U.S. Nanotechnology Networks”, Panel presentation at the 2nd Workshop on Nanotechnology Networking and International Cooperation, International Union of Materials Research Societies International Conference on Advanced Materials (IUMRS-ICAM), Yokohama, Japan, October 2003
410. “Assembling Nanomaterials”, at the 1st Korea-U.S. NanoForum, Seoul, South Korea, October 2003
411. “Assembling Nanomaterials”, at the National Institute for Materials Science (NIMS), Tsukuba, Japan, October 2003
412. “Assembling Nanomaterials”, at the Research Laboratory for Nuclear Reactors, Tokyo Institute of Technology, O-okayama Campus, Tokyo, Japan, November 2003
413. “Nanotechnology at Rensselaer...from atoms to applications through nanoscience”, at the Philip Morris Research Center, Richmond, Virginia, November 2003
414. “Nanomaterials, Biomaterials, and Hierarchical Assembly”, Panel presentation at ISCANA, the International Symposium on Clusters and Nano-Assemblies: Physical and Biological Systems, Richmond, Virginia, November 2003
415. “Nanomaterials: the Substance of Nanotechnology”, at Nanomaterials – From Science to Industrial Application, Forschungszentrum Karlsruhe, Karlsruhe, Germany, November 2003
416. “Nanotechnology: from Atoms to Applications through Nanoscience”, in the Executive Masters of Business Administration (EMBA) Course on New Technology Management, Lally School of Management and Technology, Rensselaer Polytechnic Institute, Troy, New York, November 2003
417. “Nanomaterials: the Substance of Nanotechnology”, Dean’s Distinguished Lecture, College of Engineering and Applied Sciences, State University of New York at Stony Brook, Stony Brook, New York, December 2003
418. “NSEC Research on Directed Assembly of Nanostructures”, NSF Grantee Conference on Nanoscale Science and Technology, Arlington, Virginia, December 2003

Invited Presentations (continued):

419. “Nanostructured Materials for Orthopaedic/Dental Applications”, with R. Bizios, P. M. Ajayan, and L. S. Schadler, at the Symposium on Nanostructured Materials for Biomedical Applications, 133rd TMS Annual Meeting, Charlotte, North Carolina, March 2004
420. “Assembling Materials from Nanoscale Building Blocks”, at the Center for Interdisciplinary Research, Tohoku University, Sendai, Japan, March 2004
421. “Assembling Materials from Nanoscale Building Blocks”, at the Japan Institute of Metals Spring Meeting, Tokyo Institute of Technology, O-okayama Campus, Tokyo, Japan, March 2004
422. “Hierarchical Assembly of Materials from Nanoscale Building Blocks”, at the France-U.S. Workshop on the Intersection between Biology, Chemistry, and Physics for Creating Materials with Nanoscale Architectures, Honfleur, France, May 2004

423. “Nanotechnology and its Implications for Society”, Opening Lecture at FORUM 2004 of the World Academy of Ceramics, Faenza and Cesenatico, Italy, May 2004
424. “Nanotechnology at Rensselaer...from atoms to applications through nanoscience”, at the ABB Swedish Corporate Research Center, Västerås, Sweden, May 2004
425. “Nanomaterials: the Substance of Nanotechnology”, Opening Lecture at the Conference on Military Applications of Nanotechnology, The MITRE Corporation, McLean, Virginia, July 2004
426. “Assembling Materials from Nanoscale Building Blocks”, Plenary Lecture at the 3rd European Materials Research Society Fall Meeting, Warsaw, Poland, September 2004
427. “Assembling Materials from Nanoscale Building Blocks”, Seminar at Delft University of Technology (TUDelft), Delft, The Netherlands, September 2004
428. “Nanotechnology at Rensselaer...from atoms to applications through nanoscience”, at the Optical Display Forum, Eastman Kodak Research Center, Rochester, New York, September 2004
429. “Nanotechnology Research at Rensselaer”, at the Philip Morris USA Research Center, Richmond, Virginia, September 2004
430. “Nanoscale Ceramics, Proteins, and Cells: Building Blocks for Hard Tissues”, Key Lecture at the 9th CCT (Ceramics, Cells and Tissues) Meeting, Materials for Tissue Engineering – Chemistry and Microstructure: the Role for Ceramics, Faenza, Italy, September 2004
431. “Some Recent Advances in Nanocomposites”, at the CANEUS 2004 Conference on Micro-Nano-Technologies for Aerospace Applications, Monterey, California, November 2004
432. “Nanocomposites – they’re all interfaces”, with L. S. Schadler, S. Kumar, B. C. Benicewicz, et al., at the American Chemical Society 33rd Northeast Regional Meeting, Rochester, New York, November 2004
433. “Assembling Advanced Materials and Devices from Nanoscale Building Blocks”, at the Institute for Advanced Materials and Devices, Rutgers – The State University of New Jersey, Piscataway, New Jersey, November 2004

Invited Presentations (continued):

434. “Nanomaterials Research in the USA”, at the GENNESYS (Grand European Initiative on Nanoscience and Nanotechnology using Neutron and Synchrotron Sources) Conference, Stuttgart, Germany, November 2004
435. “Nanotechnology at Rensselaer...from atoms to applications through nanoscience”, at Nanotechnology: Innovation, Opportunity, and Commercialization, Rensselaer Polytechnic Institute, Troy, New York, November 2004
436. “Directed Assembly of Materials from Nanoscale Building Blocks”, at the Symposium on Mesoscale Architectures from Nanounits: Assembly, Fabrication and Properties, Materials Research Society Fall Meeting, Boston, Massachusetts, November-December 2004

437. “Nanotechnology: from Atoms to Applications through Nanoscience”, in the Executive Masters of Business Administration (EMBA) Course on New Technology Management, Lally School of Management and Technology, Rensselaer Polytechnic Institute, Troy, New York, December 2004
438. “Nanotechnology Research, Education and Outreach at Rensselaer Polytechnic Institute”, at the 2nd MEMS Iberoamerican Meeting, Boca del Rio, Veracruz, México, March 2005
439. “Nanotechnology and its Implications for Society”, Keynote Lecture at the National Science and Technology Development Agency Annual Conference, Bangkok, Thailand, March 2005
440. “Assembling Materials from Nanoscale Building Blocks: Research at Rensselaer”, at the IBM T. J. Watson Research Center, Yorktown Heights, New York, April 2005
441. “Assembling Materials from Nanoscale Building Blocks”, at the Otto H. York Department of Chemical Engineering, New Jersey Institute of Technology, Newark, New Jersey, April 2005
442. “Assembling Materials from Nanoscale Building Blocks”, at the Institut National de la Recherche Scientifique (INRS) - Énergie, Matériaux & Télécommunications (EMT), Université du Québec, Varennes, Québec, Canada, May 2005
443. “Nanostructure Properties and Interactions with Biomolecules”, at the Symposium on Molecular Characterization and Imaging, Université de Montréal, Montréal, Québec, Canada, May 2005
444. “Assembling Materials and Devices from Nanoscale Building Blocks”, at the XVI Undergraduate Research Symposium, Universidad Metropolitana, San Juan, Puerto Rico, September 2005
445. “Crossroads of Nanotechnology and Biotechnology: Sustainability and Research Needs for 2050 with a World Population of 9 Billion”, Keynote Lecture at the NSF Workshop on Defining the Opportunities, Challenges, and Research Needs for NanoBiomaterials Derived from Ligno-cellulosics, Institute of Paper Science and Technology, Georgia Institute of Technology, Atlanta, Georgia, September 2005
446. “Nanostructure Interactions with Biomolecules”, Plenary talk at the Conference on Nanomedicine: Commercializing Drug Discovery, Delivery and Diagnostics, Cambridge, Massachusetts, October 2005

Invited Presentations (continued):

447. “Assembling Materials and Devices from Nanoscale Building Blocks”, at the Symposium on Nanoscale Science & Engineering: Convergence of the Top Down and Bottom Up Approaches, University of North Carolina, Charlotte, NC, October 2005
448. “Surviving and Prospering from an Interesting Career in Science: a Personal View”, at the Institut National de la Recherche Scientifique (INRS) - Énergie, Matériaux & Télécommunications (EMT), Université du Québec, Varennes, Québec, Canada, October 2005
449. “Assembling Materials from Nanoscale Building Blocks – Research at Rensselaer”, at the Technology Identification Process Meeting, Sealed Air Corporation, Greenville, South Carolina, December 2005

450. “Nanotechnology: from Atoms to Applications through Nanoscience”, in the Executive Masters of Business Administration (EMBA) Course on New Technology Management, Lally School of Management and Technology, Rensselaer Polytechnic Institute, Troy, New York, May 2006
451. “Assembling Materials from Nanoscale Building Blocks”, at the Second International Nanotechnology Conference on Communications and Cooperation, Hyatt Crystal City Hotel, Arlington, Virginia, May 2006
452. “Assembling Materials and Devices from Nanoscale Building Blocks”, Plenary Lecture at the 7th International Aerosol Conference, St. Paul, Minnesota, September 2006
453. “Assembling Materials from Nanoscale Building Blocks”, at the Center for Hierarchical Manufacturing, MassNanoTech Institute, University of Massachusetts Amherst, October 2006
454. “Manufacturing Nanoparticles for Applications in Society”, American Institute of Physics 2006 Industrial Physics Forum, AVS International Symposium, San Francisco, California, November 2006
455. “Nanostructured Materials – the new composites”, at the Symposium on Mechanics of Composites in the Era of Energy and Nanotechnology (in honor of George Dvorak), Rensselaer Polytechnic Institute, Troy, New York, May 2007
456. “Nanostructured Materials – Research at Rensselaer”, at Nanoscale Science and Engineering: A Short Course for High School Teachers, Rensselaer Polytechnic Institute, Troy, New York, July 2007
457. “Nanostructured Materials – Research at Rensselaer”, at the Rensselaer Retirees Forum and Friends of Folsom Library Meeting, Rensselaer Polytechnic Institute, Troy, New York, October 2007
458. “NSEC Collaboration with Industry – Partnership in Nanotechnology”, at the 2007 National Science Foundation Nanoscale Science and Engineering Grantees Conference, Arlington, Virginia, December 2007
459. “Future and Legacy of the NSEC Program”, at the 2007 National Science Foundation Nanoscale Science and Engineering Grantees Conference, Arlington, Virginia, December 2007

Invited Presentations (continued):

460. “Assembling Materials from Nanoscale Building Blocks”, Department of Chemistry, Indian Institute of Technology – Guwahti, Guwahti, India, January 2008
461. “Assembling Materials and Devices from Nanoscale Building Blocks”, First US–India Nanoscale Science and Engineering Institute, Chennai, India, January 2008
462. “Assembling Materials from Nanoscale Building Blocks”, National Centre for Nanoscience and Nanotechnology, University of Madras, Guindy Campus, Chennai, India, January 2008

463. “Nanostructure-Biomolecule Interactions: Implications for Tissue Regeneration”, at the Workshop on Priority Setting in Translational Nanoscience, University of Southern California, Los Angeles, California, March 2008
464. “Nanostructure-Biomolecule Interactions: Implications for Tissue Regeneration”, at the Conference on Re-Engineering Basic and Clinical Research to Catalyze Translational Nanoscience, Radisson Hotel-Midtown, University of Southern California, Los Angeles, California, March 2008
465. “Nanoscale Science and Technology: Nanostructured Materials Research at Rensselaer”, Keynote Lecture at the Nanotechnology Curriculum Development Summer 2008 Institute for High School Teachers, Rensselaer Polytechnic Institute, Troy, New York, July 2008
466. “Assembling Materials from Nanoscale Building Blocks”, School of Forest Resources, University of Maine, Orono, Maine, July 2008
467. “Assembling Materials from Nanoscale Building Blocks”, in the Fall 2008 Materials Science and Engineering Seminar Series, University of Connecticut, Storrs, Connecticut, October 2008
468. “A Look at Nanotechnology: Past, Present and Future”, at the National Council of University Research Administrators (NCURA) 50th Annual Meeting, Washington, DC, November 2008
469. “Nanoscale Science and Technology: Future Impact of New Materials on Personal Protective Equipment”, at the International Safety Equipment Association (ISEA) Symposium: *Protecting Workers in the Next 25 Years*, Washington, DC, November 2008
470. “NanoCenters – Present and Future: Technological Development Legacy and Future”, at the 2008 National Science Foundation Nanoscale Science and Engineering Grantees Conference, Arlington, Virginia, December 2008
471. “NS&E Centers in Society: Collaboration with Industry”, at the 2008 National Science Foundation Nanoscale Science and Engineering Grantees Conference, Arlington, Virginia, December 2008
472. “Nanostructure-Biomolecule Interactions: Implications for Tissue Regeneration”, at NANOBIO-2009, the First International Conference on Tissue Engineering and Stem Cell Research using Nanomaterials, Amrita Institute of Medical Sciences, Kochi, India, February 2009
473. “Nanoscale Science and Technology: Past, Present, and Future”, Handong Global University, Pohang, Kyungbuk, South Korea, May 2009

Invited Presentations (continued):

474. “Nanostructure-Biomolecule Interactions: Implications for Tissue Regeneration and Nanomedicine”, at the 12th CCT (Ceramics, Cells and Tissues) Meeting, Surface-Reactive Biomaterials as Scaffolds and Coatings: Interactions with Cells and Tissues, Faenza, Italy, May 2009
475. “Directed Synthesis and Assembly of Hierarchical Materials from Nanoscale Building Blocks”, with G. Ramanath, at the 2009 Nanoelectronic Devices for Defense and Security (NANO-DDS) Conference, Fort Lauderdale, Florida, September – October 2009

476. “Nanostructure-Biomolecule Interactions: Implications for Nanomedicine and New Materials”, at the Department of Mechanical Engineering and Materials Science, Rice University, Houston, Texas, November 2009
477. “NSE Centers – Present and Future”, at the 2009 National Science Foundation Nanoscale Science and Engineering Grantees Conference, Arlington, Virginia, December 2009
478. “Nanomaterials: Past, Present and Future”, at the Institut National de la Recherche Scientifique (INRS) - Énergie, Matériaux & Télécommunications (EMT), Université du Québec, Varennes, Québec, Canada, January 2010
479. “Surviving and Prospering from a Career in Science – a personal view”, at the Institut National de la Recherche Scientifique (INRS) - Énergie, Matériaux & Télécommunications (EMT), Université du Québec, Varennes, Québec, Canada, January 2010
480. “Making *Molecules to the MAX!* – a Science Literacy Vehicle”, at the McWane Science Center, Birmingham, Alabama, January 2010
481. “Nanotechnology: Past, Present, and Future”, at a Chemistry Seminar sponsored by the Chemistry Department and *Sistahs in Science*, Mount Holyoke College, South Hadley, Massachusetts, March 2010
482. “High-performance Materials based on Nanotechnology”, at nano2 – Kickoff Meeting of the NSF-WTEC International Study of the Long-term Impacts and Future Opportunities for Nanoscale Science and Engineering, Evanston, Illinois, March 2010
483. “A Look at Nanotechnology: Past, Present, Future”, at the 12th Annual MRS-Serbia Conference YUCOMAT 2010, Herceg Novi, Montenegro, September 2010
484. “Nanomaterials: the Substance and Promise of Nanotechnology”, at the University of Montenegro, Podgorica, Montenegro, September 2010
485. “Research Outcomes 2001-2010: Nanoscale Science and Engineering Center for Directed Assembly of Nanostructures”, at the 2010 National Science Foundation Nanoscale Science and Engineering Grantees Conference, Arlington, Virginia, December 2010
486. “Generation of Nanobiomaterials for Regeneration”, at the 13th Ceramics, Cells and Tissues (13 CCT) Seminar and Meeting, Regenerative Nanomedicine, Tissue and Genetic Engineering: the Role of Ceramics, Faenza, Italy, May 2011

Invited Presentations (continued):

487. “Nanostructure-Biomolecule Interactions: Implications for Nanomedicine and New Materials”, at the 2011 Acta Materialia Gold Medal Symposium on Advances in Nanostructured Materials and Applications, MS&T Meeting, Columbus Ohio, October 2011
488. “Nanostructure-Biomolecule Interactions and their Implications for Nanomedicine and New Materials”, at the International Symposium on Clusters and Nanostructures (ISCAN), Richmond, Virginia, November 2011

489. “Nanotechnology and Nanomaterials”, at the Delhi Public School, R. K. Puram, New Delhi, India, December 2011
490. “Hierarchical Hybrid Nanomaterials”, at the Nurturance Programme for National Talent Search Awardees, Department of Physics, Indian Institute of Technology Roorkee, Roorkee, India, December 2011
491. “Nanostructured Biomaterials”, at the International Workshop on Functional Materials (IWFM-2011), National Institute of Science and Technology, Berhampur, Odisha, India, December 2011
492. “New Materials and Technologies for the Infrastructure”, at the Governors Meeting for Infrastructure, Urban Development and Chemicals Industries, World Economic Forum Annual Meeting, Davos-Klosters, Switzerland, January 2012
493. “Assembling Smart and Adaptive Nanosystems”, at the Rensselaer “IdeasLab”, World Economic Forum Annual Meeting, Davos-Klosters, Switzerland, January 2012
494. “Nanostructure-Biomolecule Interactions and their Implications for New Materials and Healthcare”, at the International Workshop on Advanced Materials – IWAM 2012, Ras Al Khaimah, United Arab Emirates, February 2012
495. “Nanomaterials – a Playground and Challenge for Microscopy”, at the Colloquium Honouring Knut Urban, Opening Ceremony and Reception for PICO 2012, Ernst Ruska Centre, Forschungszentrum Jülich, Germany, February 2012
496. “Nanomaterials and Nanotechnology”, at the NanoQuébec Conference on Nanotechnology, Montréal, Québec, Canada, March 2012
497. “Assembling Smart and Adaptive Nanosystems”, at the Rensselaer World Economic Forum “IdeasLab” Redux, EMPAC, Rensselaer Polytechnic Institute, Troy, New York, March 2012
498. “From AntiMatter to NanoMatter”, at the INT Nanomaterials Days 2012, and Colloquium Honoring Horst Hahn, Institute for Nanotechnology, Karlsruhe Institute of Technology, Karlsruhe, Germany, August 2012
499. “Nanostructured Materials 20 Years Later”, at the XI International Conference in Nanostructured Materials (NANO 2012), Rhodes, Greece, August 2012
500. “Nanostructure-Biomolecule Interactions and their Implications for New Materials and Healthcare”, at the 14th Annual MRS-Serbia Conference YUCOMAT 2012, Herceg Novi, Montenegro, September 2012

Invited Presentations (continued):

501. “Nanomaterials and Nanotechnology”, at the Arup Group Annual Meeting, London Heathrow Airport, Middlesex, England, September 2012
502. “The Molecularium Project – *fun with atoms and molecules*”, to Ms. Laurie Brennan’s 4th Grade Class, Lester School, District 58, Downers Grove, Illinois, September 2012
503. “*State of the Art of Nanomaterials and Nanotechnology*”, to a Collegium for Lifelong Learning class at Westchester Community College, Valhalla, New York, November 2012

504. “Nanostructure-Biomolecule Interactions: the Keys to Improved NanoBioMaterials”, at the BioMed Workshop, Institut National de la Recherche Scientifique (INRS) - Énergie, Matériaux & Télécommunications (EMT), Université du Québec, Varennes, Québec, Canada, November 2012
505. “The Molecularium Project – *fun with atoms and molecules*”, to Ms. Jill Henry’s 7th Grade Science Class, Herrick Middle School, District 58, Downers Grove, Illinois, February 2013
506. “Nanostructure-Biomolecule Interactions: the Keys to Improved NanoBioMaterials”, at the Zing Nanobiomaterials Conference, Lanzarote, Canary Islands, Spain, February 2013
507. “Nanostructured Materials – a Retrospective”, at the Awards Night Dinner Meeting of the Eastern NY Chapter of ASM, Century House, Latham, New York, April 2013
508. “Clusters and Nanostructured Materials – a Retrospective with Some New Results”, Honoring Puru Jena at the 5th Jekyll Island Conference, Jekyll Island, Georgia, April 2013
509. “Modulating Cell Behavior through Nanostructures”, at the Conference TERM STEM 2013 Nanotechnology as a Tool for Improving Tissue Engineering and Regenerative Medicine, Porto, Portugal, October 2013
510. “Characterizing NanoBio Conjugates”, at the Symposium: Synthesis and Structural and Functional Characterization of Thin Films and Self-assembled Nanostructures, MS&T’13 Conference, Montréal, Québec, Canada, October 2013
511. “The Molecularium[®] Project – *creating media for stealth education*”, at the Symposium: Educating and Mentoring Young Materials Scientists for Career Development, Materials Research Society Spring Meeting, San Francisco, California, April 2014
512. “Surviving, Learning and Prospering from a Career in Science – from science to technology and back”, Opening Lecture at the Survival Skills for Scientists Workshop 2014, McGill University, Montreal, Québec, Canada, May 2014
513. “Nanostructured Materials: *Enabling Nanotechnology to Benefit Society*”, at the School of Materials Science and Engineering, Shanghai Jiao Tung University, Shanghai, China, May 2014
514. “Nanostructured Materials: *Enabling Nanotechnology to Benefit Society*”, at the Department of Materials Science, Fudan University, Shanghai, China, May 2014
515. "Advanced Materials Research at Rensselaer", at the NYState RPI Research Showcase, Rensselaer Polytechnic Institute, August 2014

Invited Presentations (continued):

516. “Characterizing NanoBio Conjugates”, at the 16th Annual Conference YUCOMAT 2014, Herceg Novi, Montenegro, September 2014
517. “Surviving, Learning and Prospering from a Career in Science – *from science to technology and back*”, Opening Lecture at the Survival Skills for Scientists Workshop 2015, McGill University, Montreal, Québec, Canada, May 2015

518. “From Nanoscale to Macroscale – *creating new hierarchical materials for the benefit of society*”, at Rensselaer TALKS, Rensselaer Polytechnic Institute, May 2015
519. “20 Years of Nanostructured Materials: *Enabling Nanotechnology to Benefit Society*”, at the 20th Anniversary YUCOMAT 2015, Herceg Novi, Montenegro, August–September 2015
520. “Fundamentals of Nanoscale Materials and Technology”, Opening Lecture, in the Henry Stewart Talk Series on *Nanomedicine 2015*, Worldwide Web Distribution from October 2015 (online at <http://hstalks.com/?t=BL1953959-Siegel>)
521. “30 Years of Nanostructured Materials: *Enabling Nanotechnology to Benefit Society*”, Nanoscale Science Seminar, Department of Physics, School of Molecular Sciences, and The LeRoy Eyring Center for Solid State Science, Arizona State University, Tempe, Arizona, March 2016
522. “30 Years of Nanostructured Materials: *Enabling Nanotechnology to Benefit Society*”, at NANO 2016, the XIII International Conference on Nanostructured Materials (Congres international sur les matériaux nanostructures), Québec City, Canada, August 2016
523. “Nanostructure-Biomolecule Interactions: the *Keys to Understanding NanoBioMaterials for Healthcare*”, at Biomaterials for Healthcare, the 1st Biennial Conference BioMaH on Biomaterials for Tissues and Genetic Engineering and the Role of Nanotechnology, Rome, Italy, October 2016
524. “Nanoparticles as Delivery Vehicles: *Enabling Nanocomposites and Healthcare*”, at YUCOMAT 2017, Herceg Novi, Montenegro, September 2017
525. “Protein-Nanostructure Interactions” and Roundtable on “Nanotechnology and genetics: cells and advanced technology for tissue engineering”, at the 1st Seminar and Meeting on Tissue Regeneration: Advanced Ceramics and Composites (TRACE), Department of Surgical Sciences and Integrated Diagnostics, Università degli Studi di Genova, Genoa, Italy, October 2017
526. “Ultimate Atom Resolution”, at the 20th Annual Conference YUCOMAT 2018, Herceg Novi, Montenegro, September 2018
527. “30 Years of Nanostructured Materials”, at ICONN-2019, the 5th International Conference on Nanoscience and Nanotechnology, SRM Institute of Science and Technology, Chennai, Tamil Nadu, India, January 2019
528. “Nanomaterials for Biomedical Applications: *Protein-Nanostructure Interactions*”, at the Centre of Excellence for Nanotechnology Research, AVIT, Aarupadai Veedu Institute of Technology, Chennai, Tamil Nadu, India, January 2019

Invited Presentations (continued):

529. “From Positrons to Proteins *via* India: The Bulbul Connection”, at *BulbulFest*, a symposium to celebrate the 65th birthday of Prof. Bulbul Chakraborty, Brandeis University, Waltham, Massachusetts, March 2019
530. “The Modern World of Materials: *Creating Nanomaterials to Benefit Society*”, Distinguished Lecture at the Guangdong Technion-Israel Institute of Technology (GTIIT) Masterclass Series, GTIIT, Shantou, China, October 2019