

Curriculum Vitae

Vinayak P. Dravid

NU President Abraham Harris Chaired Professor
Materials Science & Engineering, McCormick
School of Engineering and Applied Science

Director, NUANCE Center

Director, Global McCormick Initiative (GMI)

[Northwestern University | Global McCormick](http://www.nuance.northwestern.edu)

Founding Member, International Institute for
Nanotechnology



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Research and Scholarly Interests

Nanoscale Phenomena in Materials

- Development, implementation and application of novel electron, ion, photon and probe microscopy
- Predictive structure-property relationships for interfaces and defects
- Novel synthesis and characterization approaches to “soft” and “hybrid” materials
- Nanopatterning and nanostructures for applications in biomedicine, energy and environment

Education and Employment

2012 - present	Director, Global McCormick Initiative (GMI)
2009 - 2010	Kellogg School of Management: Executive Development; <i>“Management Skills for Innovative University Leaders”</i>
2000 - present	Professor, Department of MS & E, Northwestern University
2001 - present	Director, NUANCE (NU Atomic-and-Nanoscale Characterization Experimental) Center
1995 - present	Director, Electron Probe Instrumentation Center (EPIC)
1995 - 2000	Associate Professor, Department of MS & E, Northwestern University
1990 - 1995	Assistant Professor, Department of MS & E, Northwestern University
1985 - 1990	Graduate Research Assistant, Lehigh University, PhD in MS & E, <i>Advisors: Profs. Michael R. Notis and Charles E. Lyman</i>
1984 - 1985	Research Engineer, Morris Electronics, India - Development of low-loss magnetic ferrites
1979 - 1984	B.S. Tech., Metallurgical Engineering Indian Institute of Technology (IIT), Bombay, India

Honors and Awards

2015	Outstanding Core Facility Award: Gold Star Award
2014	Elected Honorary Member: The Indian Institute of Metals
2014	Outstanding Core Facility Award
2012	Outstanding Core Facility Award: Office of Research, Northwestern University
2012	Lee Hsun Research Fellowship: Chinese Academy of Sciences
2012	IIT Bombay Distinguished Alumnus Award
2011	Elected Faculty Honor Roll for Excellence in Teaching: Northwestern University; <i>Selected by voting UG students</i>
2011	Elected Honorary Member: Materials Research Society of India (MRSI)
2010	Elected Fellow: American Assoc. for Advancement of Science (AAAS)
2010	Elected Fellow: Materials Research Society (MRS)
2010	Elected Fellow: American Physical Society (APS)
2010	Elected Faculty Honor Roll for Excellence in Teaching: Northwestern University; <i>Selected by voting UG students</i>
2009	Inauguration Class of Fellows: Microscopy Society of America (MSA)
2009	Elected Faculty Honor Roll for Excellence in Teaching: Northwestern University; <i>Selected by voting UG students</i>
2008	Richard M. Fulrath Award: American and Japanese Ceramics Society
2007	6 th McBain Memorial Award: NCL, India
2006	First McCormick Faculty Excellence Award: Northwestern University
2005	Outstanding Mentor Award: Westinghouse High School Mentor Program
2003	Elected Fellow: American Ceramic Society
2001 - 2002	Teacher of the Year: MSE Department, Northwestern University
2001 - 2002	Visiting Faculty Fellow: ASM-IIM
2001 - 2002	NIH: Sabbatical Faculty Fellowship
2001	Distinguished Alumnus Service Award: IIT Bombay, India
1999 - 2000	Speaker of the Year: Microbeam Analysis Society (MAS)
1998	TMS: Award in Educational Development
1998	Kurt F.J. Heinrich Award: Microbeam Analysis Society (MAS)
1997	Robert L. Coble Award: American Ceramic Society (ACerS)
1996	Burton Medal: Microscopy Society of America (MSA)
1995	IBM: Faculty Development Award
1994	Faculty Fellow: Exxon Foundation
1994	Faculty Fellowship: Oak Ridge National Laboratory's HTML
1993 - 1998	NSF: Young Investigator Award

Leadership Activities

Organization and Management

- Director, NUANCE Center: conceived and implemented a diverse yet integrated characterization instrumentation center, comprising EPIC (electron microscopy), Keck-II

(surface science), and NIFTI (scanning probe microscopy), with 20+ major instruments worth \$15+ million.

- *Lead the growth of NUANCE Center from two instruments and <30 users to over 20+ major instruments, 100+ faculty affiliates and 600+ users. (<http://www.nuance.northwestern.edu>)*
- Director, Global McCormick Initiative: conceived, formulated and executed Global McCormick Initiative.
 - *An integrated school-wide initiative for global engagement and program development in every continent, with over 70 global programs and interactions during 2007-2009. (<http://global.mccormick.northwestern.edu>)*
- Conceived and executed sustainable MoU and funded scholarly exchange programs with IIT Bombay.
- Dean and Provost Advisor: International and Global Outreach.
- Member: NU Strategic Planning Globalization Workgroup, 2010.
- Member: Center for Advanced Molecular Imaging (CAMI) Advisory Board, 2010.
- Member: McCormick Areas of Distinction Committee, 2010.
- Member: NOW McCormick New Opportunities Workshops.
- Member: Materials Science & Engineering School Advisory Committee, Nanyang Technological University (NTU) Singapore, 2007 – present.
- Member: Editorial Advisory Board of the Bulletin of Materials Science, Bangalore, India, 2010.
- Co-Chair: NSEC REU Program and Symposium, 2010.
- Member: INVO Innovation & New Ventures Faculty Board, 2010.
- Member: College of Engineering Advisory Committee: Nanyang Technological University (NTU) Singapore, 2010.
- Board Member: Joint Niles University (Egypt) and NU Global Collaborative Center.
- Member: Steering Committee, Provost Taskforce on Global Engagement.
- Member: MSE Long Range Planning Committee, 2005 – present.
- Member: Presidential Circle, Chicago Council on Global Affairs (CCGA).
- Member: India Biodesign Initiative.
- Member: International Advisory Committee for the International Conference on Nano Science and Technology, (ICONSAT), I.I.T. Bombay, India, February 2010.
- Member: External Advisory Board: IIT Bombay, India, 2003 – present.
- Member: External Advisory Board: Nanyang Technological University (NTU) Singapore, 2007 – present.
- Member: External Advisory Committee, University of Toronto, 2008-present.
- Board of Directors, IIT Bombay Heritage Fund (IITBHF – US Alumni Association of IIT Bombay, India), 2003 – present.
- Co-founder and Organizer: ASME Nano Bootcamp, ASME-NU Initiative, 2003 - present.
- Board Member: NanoInk Scientific Advisory Board, 2004 - present.
- Board Member: Joint Research Center between Niles University, Egypt and Northwestern, 2008 - present.
- Member: Robert H. Lurie Comprehensive Cancer Center, 2008 - present.

- Founder, Board Member and Chair Scientific Advisory Committee: NanoSonix, Inc., a hi-tech start-up, founded in Spring 2008 - present.
- Member: CLP Corporate & International Outreach/Entrepreneurial Activities Committee, 2009 - present.
- Member: NU Imaging Advisory Committee, 2009 - present.
- Co-Chair: NSEC Annual Meeting, 2009 - present.
- International Advisory Committee: Global Indian Scientists and Technocrats Convention (GIST), 2008-9.

Scientific and Technical Leadership:

- International Institute for Nanotechnology (IIN): Co-Founder and steering committee member.
- NSF-NSEC: Founding member and Co-PI on original proposal.
- Group Leader: Interdisciplinary Research Group (IRG) of NU NSF-MRSEC (successfully defended the IRG and MRSEC renewal in 2005, mid-term review in 2007).
- Scientific/Technical Advisor and Consultant: Art Institute and Museum of Science and Industry, Chicago, Illinois.
- Technical Advisor and Committee Member: Chemistry of Life Processes Institute.
- Initiated and Taught: New Course/Curriculum for Kellogg School of Management (KSM) related to Emerging Technologies.
- Initiated Integration: Journalism, (Medill School), Communication (School of Communication) and Business (Kellogg School of Management) in Engineering and Technology Education.
- Scientific Advisor: Reliance Industries (RIL) and RIL Chairman, Mr. Mukesh Ambani, global conglomerate with largest market capitalization in India (> \$30b).
- Chairman of Scientific Advisory Board: NanoSonix, Inc., a hi-tech start-up, Spring 2008.
- Member: AMMRF Australian Microscopy and Microanalysis, Research Facility International Technical and User Advisory Group, 2009.
- NIH Biomedical Technology Review Committee.

Recent Professional Activities

2015-present	Air Force Center Thrust Group: Statics and Dynamics of Soft/Biological Structures and Hybrid Soft-Hard Assemblies; Leader: Thrust 1 - Materials and Methods Development
2015	Micro- and Nano-Fabrication/Characterization Task Force
2014-2015	Member: MRS 2015 Fall Meeting Symposium Organizer
2014-present	Editorial Board: Current Opinion in Solid State & Materials Science
2009 - present	DOE Reviewer: Basic Energy Sciences (BES) Early Career Research Program
2003 - present	Co-Founder and Instructor: ASME Nano Training Bootcamp
1999 - present	Board of Directors: IIT Bombay Heritage Fund (IITBHF)
1995 - present	Editorial Board: <i>Journal of Microscopy</i> (Royal Microscopical Society, UK)

Affiliated Societies: Microscopy Society of America (MSA), Microbeam Analysis Society (MAS), ASM/TMS, American Ceramic Society (ACerS), Materials Research Society (MRS), AAAS, ACS, APS, IEEE, ASME, ASEE.

Professional/Consultancy: Consultant to several global companies. Expert technical advisor to the Art Institute of Chicago (AIC), and the Chicago Museum of Science and Industry (MSI). Expert scientific consultant in patent litigation for Fortune 500 companies and start-up enterprises. Member of scientific advisory board of three start-up companies. Advisor and consultant to NGOs and overseas corporations.

Educational and Mentoring Activities

Philosophy

Emphasis on Bloom's taxonomies of higher levels of learning and teaching: *creativity, synthesis, analysis and dissemination.*

- Multidisciplinary approach to materials education.
- Attaining excellence in education via integrating research and teaching, as well as communication and IT in the global context.
- Inculcation of societal appreciation for science and technology via community, national and international outreach activities.

Teaching Interests and Course/Curricula Development

Introduction to Materials Science & Engineering, Interface and Defect Phenomena in Materials, Introduction to SEM and TEM, Advanced Analytical Electron Microscopy, Physical Ceramics, Symmetry and Physical Properties, Hierarchy of Structures in Biological and Physical Sciences, Nanopatterning of Functional Structures, Business of Nanotechnology, Energy Strategy and Policy.

Advisor to several high school students, as well as REU, MIN, REST and teacher/student interns:

- Prudent use of modern technology in classroom and in distance learning.
- Development of multi-media approach to UG education.
- Emphasis on concept development and hands-on experimental training.
- Faculty Honor Roll voted by UG students: 2009.
- Teacher of the Year award from MSE department students: 2001-2.
- Consistently in top tier of student reviews in courses taught: CTEC (Course and Teacher Evaluation Council). In all categories, typically score in excess of 5 out of 6.

List of Graduated Students/Postdoctoral Scholars and Their Current Affiliation

V. Ravikumar	PhD	1996	Senior Manager, GE, Global R&D, NY
Michelle St. Louis-Weber	PhD	1997	Senior Manager, Intel Corp, CA
Elizabeth C. Dickey	PhD	1997	Professor, MSE, Penn State Univ., PA
Jonathan J. Host	PhD	1997	Scientist, Hemlock Corp., MI

Thomas Isabell	PhD	1998	Director TEM Products, JEOL, MA
Henry Lippard	PhD	1998	Senior Engineer, AllVac, Inc., NC
Steven Kim	PhD	1999	Senior Scientist, EmiSpec Inc., AZ
Richard Rodriguez	PhD	1999	Senior Scientist, Intel Corp., CA
Kevin Johnson	PhD	2000	Manager, Intel Corp., OR
Conal Murray	PhD	2001	Staff Scientist, IBM Watson Res. Ctr., NY
Xiwei Lin	PhD	2001	Engineer, Intel Corp., OR
Luke N. Brewer	PhD	2002	Staff Scientist, Sandia National Labs, NM
Kevin L. Klug	PhD	2002	Scientist, CTC Corp., PA
Murat Guruz	PhD	2002	Scientist, Hitachi-IBM Alliance, CA
Ming Su	PhD	2004	Assoc. Prof., Worcester Polytechnic Inst., MA
Pradyumna Prabhumirashi	PhD	2006	Intel Corp., Santa Clara, CA
Nasim Alem	PhD	2007	Professor, Penn State, PA
Suresh Donthu	PhD	2007	Exponent Consulting, Menlo Park, CA
Zixiao Pan	PhD	2008	Exponent Consulting, Menlo Park, CA
Tao Sun	PhD	2009	Argonne National Laboratory, IL
Soo-Hyun Tark	PhD	2010	Intel Corporation, OR
Mengchun Pan	PhD	2012	Intel Corporation, OR
Bin Liu	PhD	2012	Intel Corporation, CA
Aiming Yan	PhD	2013	Zettl Group, UC-Berkeley, CA
Stan Shihyao Chou	PhD	2013	Sandia National Lab, Albuquerque, NM
Shraddha Avasthy	PhD	2013	Intel Corporation, OR
Yi-Kai Huang	PhD	2014	Intel Corporation, OR
Shihhan Lo	PhD	2014	Intel Corporation, OR
Nathan Wilcox	MS	1994	Senior Manager, Intel Corp., CA
Jinha Hwang	MS	1994	Professor, Hongik University, S. Korea
Balaji Chandrasekaran	MS	1999	Engineer, Applied Materials, CA
Nazir Poonawala	MS	1999	Engineer, Intel Corp., OR
Ethan Young	MS	2006	Samsung Corp., S. Korea
Michael Miller	MS	2006	Gas Research Institute, IL
Feng Qu	MS	2005	Private Consultant
Ben Murphy	MS	2009	Triton Systems, Boston, MA
Shanwei Fan	MS	2009	Taiwan Semiconductor Manufacturing Co.
James Sbarboro	MS	2011	Neuroquest, Inc., Chicago, IL
Hong Zhang	Postdoc	1994	Senior Manager, Applied Materials, CA
Yun-Yu Wang	Postdoc	1997	Senior Scientist, IBM Corp., NY
S.C. Cheng	Postdoc	1998	Staff Scientist, Corning Corp., NY
Weida Qian	Postdoc	1998	Senior Scientist, Intel Corp., OR
Zhen Liu	Postdoc	1999	Research Staff, ASU., AZ

Yanguo Wang	Postdoc	1999	Professor, Beijing University., China
Sylvie Malo	Postdoc	2000	Professor, CRSIMAT, CNRS, France
Jinha Hwang	Postdoc	2001	Professor, Hongik University, S. Korea
Lei Fu	Postdoc	2002	Photronics, TX
Shu-You Li	Postdoc	2003	NUANCE Center, IL
Hao Hu	Postdoc	2007	PriceWaterhouseCoopers, New York, NY
Mohammed Aslam	Postdoc	2007	Assistant Professor, IIT Bombay
Arvind Srivastava	Postdoc	2009	Senior Scientist, NanoSonix, Inc., IL
Soo-Hyun Tark	Postdoc	2011	Intel Corporation, OR
Mirela Mustata	Postdoc	2011	Postdoc, Northeastern University, MA
Mrinmoy De	Postdoc	2012	Postdoc, VPD Group, Northwestern, IL
Saurabh Sharma	Postdoc	2012	Postdoc, NUANCE, Northwestern, IL
Changqiang Chen	Postdoc	2012	Senior Scientist, University of Iowa, IA
Langli Luo	Postdoc	2013	Research Associate, Pacific Northwest Lab, WA
Xin Wang	Postdoc	2013	Postdoc, VPD Group, Northwestern, IL
Fengyuan Shi	Postdoc	2013	Research Specialist, UIC, IL
Vikas Nandwana	Postdoc	2014	Postdoc, VPD Group, Northwestern, IL
Shanthi Kanthala	Postdoc	2014	Sr. Scientist I, Kashiv Pharma LLC Bridgewater, NJ
Qianqian Li	Postdoc	2015	Postdoc, NUANCE, Northwestern, IL
Soo-Ryoon Ryoo	Postdoc	2015	Postdoc, VPD Group, Northwestern, IL
Yuan Li	Postdoc	2015	Postdoc, VPD Group, Northwestern, IL
Dhruv Aggarawal	BS	1994	Senior Officer, GE, CT
Jason Ross	BS	1997	Engineer, Timken Steels, OH
Cyndi Batson	BS	1998	Graduate Student, UCSB, CA
April Hixon	BS	1998	Engineer, Containerless Corp., IL
Howard Gholston	BS/MS	2000	Intel Corp., AZ
Nora Colligan	BS	2002	Samsung Corp., TX
Ethan Chang	BS/MS	2006	Samsung Corp., Korea
Yen Po Lin	BS	2008	MS at Harvard University
Ken D'Aquila	BS	2008	PhD at Northwestern University
Felix Richter	BS	2013	MD/PhD at Mt. Sinai, NY
Dan Charles	BS	2014	MS at Northwestern University
Conner Dykstra	BS	2014	Sandia National Lab, Albuquerque, NM
Shaleen Vasavada	BS	2014	University of Illinois College of Medicine

Recent Visiting Scientists

Domestic

Prof. Alexei Tkachenko	Visiting Faculty	Brookhaven National Laboratory
Dr. Arun Majumdar	Visiting Scientist	Google
Prof. David A. Vorp	Visiting Faculty	University of Pittsburgh
Dr. David Giljohann	Visiting Scientist	AuraSense Therapeutics
Prof. David Wei	Visiting Faculty	University of Florida
Prof. G. Jeffrey Snyder	Visiting Faculty	Caltech
Prof. Harry Atwater	Visiting Faculty	Caltech
Prof. Izabela Szlufarsk	Visiting Faculty	University of Wisconsin - Madison
Prof. Jeffrey Moore	Visiting Faculty	University of Illinois at Urbana-Champaign
Prof. Leonard Rome	Visiting Faculty	University of California, Los Angeles
Dr. Philipp Heck	Visiting Scientist	Field Museum of Natural History
Prof. Rolland Pellenq	Visiting Faculty	Massachusetts Institute of Technology
Prof. Todd Hufnagel	Visiting Faculty	Johns Hopkins University
Prof. Sandip Tiwari	Visiting Faculty	Cornell University
Dr. Omkaram (Om) Nalamasu	Visiting Scientist	Applied Materials

International

Prof. Jipeng Cheng	Visiting Faculty	Zhejiang University
Prof. Sagar Mitra	Visiting Faculty	Indian Institute of Technology Bombay
Prof. Aslam Mohammed	Visiting Faculty	Indian Institute of Technology Bombay
Prof. Yugeng Zhao	Visiting Faculty	Yanshan University, China
Prof. Alexander Stegh	Visiting Faculty	Nanyang Technological Univ, Singapore
Prof. Freddy Boey	Visiting Faculty	Nanyang Technological Univ, Singapore
Dr. Nishritha Bopana	Visiting Scientist	INDO-US SCIENCE & TECHNOLOGY FORUM
Prof. Jian Lu	Visiting Faculty	City University of Hong Kong
Prof. Milan K. Sanyal	Visiting Faculty	Saha Institute of Nuclear Physics, Kolkata
Prof. Nripan Matthews	Visiting Faculty	Nanyang Technological Univ, Singapore
Prof. S M Shivaprasad	Visiting Faculty	JNCASR Jakkur
Prof. Sierin Lim	Visiting Faculty	Nanyang Technological Univ, Singapore
Prof. Subbu Venkatraman	Visiting Faculty	Nanyang Technological Univ, Singapore
Dr. T.K. Chandrashekar	Visiting Scientist	Science and Engineering Research Board

Current Research Projects & Funding Support: \$5,000,000+/year

Support Agencies

NSF	AFOSR
NSF-MRSEC-CEMRI	DOE-MSU-EFRC
NIH-NCI	Hitachi High-Technology America
NIH-National Institute on Aging	Argonne
Nanyang Technological University	Air Force Center of Excellence
DOE	C-ABN Air Force Center of Excellence

Recent Representative Service

MSE Department

Facility or Center Directors Committee	2015
Search Committee for Materials Science and Engineering with the IIN	2015
Tenure-Track Assistant Professor	
Advisor: Materials Science Student Association (MSSA Grad)	2011 - 2013
Member: Long Range Planning Committee	2005 - present
Member: Colloquium & Named Lectures Committee	2005 - present

McCormick School of Engineering

Member: BME-ME Faculty Search Committee	2013
Director: Global McCormick Initiatives (GMI)	2011 - present
Member: Advisory Board: NU-Niles University, Egypt	2009 - present
Member: New Initiatives Committee	2009 - present
Member: Cancer Center, Program in Engineering and Nanotechnology in Cancer Research	2008 - present
Member: MRSEC Steering Committee	2007- present
Chair, Ad-Hoc Committees	2005 - present
Advisor to the Dean: Global Outreach	2005 - present
Faculty Advisor: Local MRS Chapter	1991 - present

University

Member: Buffett Institute Leadership Search Committee	2015 - present
Member: Ryan Fellowship Award Committee	2015 - present
Member: Advisory Board for the Tumor Biology Core	2011 - present
Member: Nanoscale Science & Engineering Center (NSEC); Leader, Integrated Biodetection Chip	2011 - present
Member: Northwestern University Imaging Advisory Committee	2009 - present
Member: NU Advisory Committee on Imaging	2009 - present
Member: CLP Corporate & International Outreach & Entrepreneurial Activities Committee	2009 - present
Member: Global NU Committee	2009 - present
Member: Program Review Panel: Core Facilities	2009 - present
Member: Robert H. Lurie Comprehensive Cancer Center Translational Working Group	2009 - present

Member: IIN Steering Committee	2009 - present
Member: One Northwestern Committee	2007 - present
Member: Provost Committee on NU Globalization Strategy	2006 - present
Member: Program Review of Office of VP Research	2006 - present
Member: Vice President of Research Committee on Nanoscience and Nanotechnology	2005 - present
Member: Minority Outreach Initiative Committee	2005 - present
Director: CCNE Nanofabrication Core	2005 - present
Member: IBNAM; Co-PI Baxter Incubator Grant	2005 - present
Director: NUANCE Center	2001 - present
Member: Intellectual Property Committee	1998 - present

Outside NU

Chair: Scientific Advisory Committee (SAC), at the Center for Nanoscale Materials (CNM) at Argonne National Laboratory (ANL)	2016
Member: Scientific Advisory Committee (SAC), at the Center for Nanoscale Materials (CNM) at Argonne National Laboratory (ANL)	2015
Member: Distinguished Alumni Awards and Young Alumni Achievers Awards Selection Committee, IIT Bombay	2014 - 2017
Member: Science Advisory Committee (SAC): Center for Functional Nanomaterials (CFN), Brookhaven National Laboratory (BNL)	2010 - present
Member: Government Affairs Committee (GAC); Materials Research Society	2010 – present
Member: Advisory Committee, School of Materials Science & Engineering, Nanyang Technological University (NTU), Singapore	2010 - present
Member: Board, IIT Bombay Heritage Fund (IITBHF), US organization of IITB alumni	2010 – present
Member: Presidential Circle Chicago Council on Global Affairs	2009 - present
Member: India Biodesign	2009 - present
Founder and Member: Faculty Academic Network (FAN) Indian Institute of Technology Bombay (IITB) India	2006 - present
Member: External Advisory Board, IIT Bombay, INDIA	2003 - present

Facility Leadership

Director, NUANCE Center	2001 - present
Director, Global McCormick	2012 - present

Journal Publications/Book Chapters

(405+ archival publications, “h” index of 59 as of March 2016)

1987

1. V. P. Dravid, M. R. Notis, C. E. Lyman, ELECTRON-MICROSCOPY OF BOUNDARY STRUCTURE IN CALCIUM ZIRCONATE. *Journal of Materials Science* 22, 4546-4549 (1987); (10.1007/bf01132061).

1988

2. V. P. Dravid, C. E. Lyman, M. R. Notis, CRYSTALLOGRAPHY OF PHASE-TRANSITION OF YBA₂CU₃O₇-DELTA. *Applied Physics Letters* 52, 933-934 (1988); (10.1063/1.99225).

3. V. P. Dravid, M. R. Notis, C. E. Lyman, TWINNING AND MICROCRACKING ASSOCIATED WITH MONOCLINIC ZIRCONIA IN THE EUTECTIC SYSTEM ZIRCONIA-MULLITE. *Journal of the American Ceramic Society* 71, C219-C221 (1988).

1989

4. V. P. Dravid, C. E. Lyman, M. R. Notis, A. Revcolevschi, HIGH-RESOLUTION TRANSMISSION ELECTRON-MICROSCOPY OF INTERPHASE INTERFACES IN NIO-ZRO₂(CAO). *Ultramicroscopy* 29, 60-70 (1989); (10.1016/0304-3991(89)90231-3).

5. V. P. Dravid, C. M. Sung, M. R. Notis, C. E. Lyman, CRYSTAL SYMMETRY AND COHERENT TWIN STRUCTURE OF CALCIUM ZIRCONATE. *Acta Crystallographica Section B-Structural Science* 45, 218-227 (1989); (10.1107/s0108768189000856).

1990

6. V. P. Dravid, C. E. Lyman, M. R. Notis, A. Revcolevschi, LOW-ENERGY INTERFACES IN NIO-ZRO₂(CAO) EUTECTIC. *Metallurgical Transactions a-Physical Metallurgy and Materials Science* 21, 2309-2315 (1990); (10.1007/bf02646977).

7. V. P. Dravid, M. R. Notis, C. E. Lyman, A. Revcolevschi, PLAN-VIEW CBED STUDIES OF NIO-ZRO₂(CAO) INTERFACES. R. D. Bringans, R. M. Feenstra, J. M. Gibson, Eds., *Atomic Scale Structure of Interfaces* (1990), vol. 159, pp. 95-100.

8. V. P. Dravid, J. A. Sutliff, A. D. Westwood, M. R. Notis, C. E. Lyman, ON THE SPACE GROUP OF ALUMINUM OXYNITRIDE SPINEL. *Philosophical Magazine a-Physics of Condensed Matter Structure Defects and Mechanical Properties* 61, 417-434 (1990).

9. M. R. Notis, V. P. Dravid, C. E. Lyman, AEM AND HRTEM STUDIES OF THE EUTECTIC SYSTEM ZIRCONIA-MULLITE. S. Somiya, R. F. Davis, J. A. Pask, Eds., *Mullite and Mullite Matrix Composites* (1990), vol. 6, pp. 528-539.

1991

10. V. P. Dravid, S. Z. Liu, M. M. Kappes, TRANSMISSION ELECTRON-MICROSCOPY OF CHROMATOGRAPHICALLY PURIFIED SOLID-STATE C60 AND C70. *Chemical Physics Letters* 185, 75-81 (1991); (10.1016/0009-2614(91)80143-l).

1992

11. M. Y. Chen, X. Lin, V. P. Dravid, Y. W. Chung, M. S. Wong, W. D. Sproul, GROWTH AND CHARACTERIZATION OF C-N THIN-FILMS. *Surface & Coatings Technology* 55, 360-364 (1992).
12. V. P. Dravid, X. W. Lin, H. Zhang, S. Z. Liu, M. M. Kappes, TRANSMISSION ELECTRON-MICROSCOPY OF C-70 SINGLE-CRYSTALS AT ROOM-TEMPERATURE. *Journal of Materials Research* 7, 2440-2446 (1992); (10.1557/jmr.1992.2440).
13. V. P. Dravid, V. Ravikumar, G. Dhalenne, A. Revcolevschi, EXPERIMENTAL-DETERMINATION OF RELAXATION OF INTERPHASE INTERFACES IN OXIDE EUTECTICS. W. A. T. Clark, U. Dahmen, C. L. Briant, Eds., *Structure and Properties of Interfaces in Materials* (1992), vol. 238, pp. 815-821.
14. V. P. Dravid, H. Zhang, HOLE FORMATION AND CHARGE-TRANSFER IN Y1-XCAXSR2CU2GAO7 A NEW OXIDE SUPERCONDUCTOR. *Physica C* 200, 349-358 (1992); (10.1016/0921-4534(92)90388-s).
15. V. P. Dravid, H. Zhang, L. D. Marks, J. P. Zhang, COMBINED HRTEM, X-RAY MICROCHEMICAL AND EELS FINE-STRUCTURE ANALYSIS OF PLANAR DEFECTS IN YBA2CU3O7-DELTA. *Physica C* 192, 31-34 (1992); (10.1016/0921-4534(92)90739-y).
16. B. Han, D. Neumayer, D. L. Schulz, T. J. Marks, H. Zhang, V. P. Dravid, METALORGANIC CHEMICAL VAPOR-DEPOSITION ROUTE TO EPITAXIAL NEODYMIUM GALLATE THIN-FILMS. *Applied Physics Letters* 61, 3047-3049 (1992); (10.1063/1.108005).
17. C. E. Platt, M. R. Teepe, C. Ciofi, H. Zhang, V. P. Dravid, R. A. Schweinfurth, D. J. Vanharlingen, J. A. Eades, C. H. Lin, D. Strother, R. Hammond, PULSED LASER DEPOSITION AND CHARACTERIZATION OF SUPERCONDUCTING BA1-XKXBIO3 THIN-FILMS. D. T. Shaw, C. C. Tsuei, T. R. Schneider, Y. Shiohara, Eds., *Layered Superconductors : Fabrication, Properties and Applications* (1992), vol. 275, pp. 807-812.
18. J. P. Zhang, D. A. Groenke, H. Zhang, D. I. DeLoach, B. Dabrowski, K. R. Poeppelmeier, V. P. Dravid, L. D. Marks, LOCAL-STRUCTURE OF Y1-XCAXSR2CU2GAO7 SUPERCONDUCTORS. *Physica C* 202, 51-60 (1992); (10.1016/0921-4534(92)90295-n).

1993

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Patents

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Inventions

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2. Wu, Jinsong, Dravid, Vinayak, Xu, Junming. "Co3O4 nanocubes homogenously assembled on few-layer graphene as anode materials for high energy density lithium-ion battery." Invention Disclosure NU2014-158. Filed 9 October 2014.
3. Shekhawat, Gajendra and Dravid, Vinayak P. "Scanning Near Field Thermoelastic Acoustic Holography (SNFTAH)." Invention Disclosure #NU2010-051. Filed: 20 April 2010.
4. Dravid, Vinayak, Sharma, Saurabh, Tomita, Tadanori. "Magnetic Nanostructures as Potent Selective Theranostic Agent for Medulloblastoma (A Pediatric Brain Tumor) and Related Central Nervous System (CNS) Cancer." Invention Disclosure #NU29172. Filed: 22 October 2009.
5. Dravid, Vinayak, Sharma, Saurabh, Klein, William L, Viola, Kristen L. "Magnetic Nanostructure for the Diagnosis and Therapy of Alzheimer's and Related Diseases." Invention Disclosure #NU29169. Filed: 9 October 2009.
6. Meade, Thomas, Dravid, Vinayak, Aslam, Mohammed, Sikma, Elise Schultz. "Novel T1-T2 Multimodal Contrast Agents for Magnetic Resonance Imaging." Invention Disclosure NU27101. Filed 18 July 2007.

7. Stoddart, James Fraser, Prokofjevs, Aleksandr, Owczarek, Magdalena, Ferris, Daniel, Hujsak, Karl, Dravid, Vinayak. "Flexible Piezoelectric and Antiferroelectric Haloimidazole Crystals." Invention Disclosure NU2015-177. Filed 24 November 2015.

Talks/Presentations (Invited)

2016

1. "Emerging Opportunities in Nanotechnology: Hip, Hope or Hype?!", Glenbrook South High School, Glenview, IL, February, 2016.
2. "NU-JNC Joint Center on Advanced Materials Research", Indo-US S&T Forum (IUSSTF), New Delhi, India, January, 2016.

2015

3. "Combinatorial Screening of Emergent Nanophotonic Behavior through Biomolecule-Encoded Superlattice Formation", Air Force Office of Scientific Research Review: De Long Annual Natural Materials and Systems Program Review, Doolittle Institute, Fort Walton Beach, FL, December, 2015.
4. "Soft and Hybrid Nanotechnology Experimental (SHyNE) Resource; National Nanotechnology Initiative - II", 2015 NSE Grantees Conference, NSF, Arlington, VA, December, 2015.
5. "Advanced Electron Microscopy in Materials Research", Hitachi Naka Works, Mito, Japan, December, 2015.
6. "Science, Technology and Globalization", MRSEC REU/RET Lecture, Northwestern University, Evanston, IL, July, 2015.
7. "In-Situ Microscopy of Energy Materials", University of Texas at Austin, Austin, TX, July, 2015.
8. "Facility Infrastructure Strategies", University of Texas at Austin, Austin, TX, July, 2015.
9. "From Atoms to Animals: Multimodal Imaging in Cancer Diagnostics and Therapeutics", Cancer Center Symposium Talk, Northwestern University, Evanston, IL, April, 2015.
10. "Advanced Materials for Energy", JNCASR, Bangalore, India, March, 2015.
11. "Advanced Materials Research – A global collaboration model"; Indian Institute of Science (IISc), Bangalore, India, March, 2015.
12. "Advances in Electron Microscopy in Materials Science", Nanyang Technological University (NTU), Singapore; February, 2015.
13. "In-situ Microscopy of Electrochemical Reactions", IIT Bombay, India, January, 2015.

14. "Future Global Collaborations in Energy-related Materials", Faculty Academic Network (FAN) Workshop, Goa, India, January, 2015.

2014

15. "Correlative Microscopy and Characterization Towards Form-Function Relationship in Biological Systems", MRS Fall Meeting, Boston, MA, December, 2014.
16. "Combinatorial Screening of Emergent Nanophotonic Behavior through Biomolecule-Encoded Superlattice Formation", Air Force Office of Scientific Research Review: De Long Annual Natural Materials and Systems Program Review, Doolittle Institute, Fort Walton Beach, FL, December, 2014.
17. "In-situ and Ex-situ Electron Microscopy of Energy Materials", Fall Seminar Series, Department of Materials Science and Engineering, University of Connecticut, Storrs, CT, October, 2014.
18. "Emerging Nanotechnology", NSERVE, Summer Career Exploration Program, Oakton Community College, Skokie, IL, August, 2014.
19. 'Strain Mediated Phenomena in Nanostructured Oxides and Chalcogenides', MRS On Demand Webinar Series, Elastic Strain Engineering Live Broadcast, Evanston, IL, May, 2014.
20. "Materials for Emerging Energy Paradigm", National Chemical Laboratory (NCL), Pune, India, March, 2014.
21. "Advanced Materials Research: Case for Indo-US Collaborative Program", Indo-US forum executive director, team, New Delhi, India, March 2014.
22. "Nano-Bio-Technology in Emerging Biomedicine", ETH Zurich, Zurich, Switzerland, February, 2014.
23. "Nano-Bio-Technology in Emerging Biomedicine", University of Basel, Basel, Switzerland, February, 2014.
24. "Hierarchical Microstructural Architecture for High-performance Thermoelectrics", 2014 TMS RF Mehl Medal Symposium on Frontiers in Nanostructured Materials and Their Applications, Keynote Session on Nanomaterials and Applications, 2014 TMS Annual Meeting & Exhibition, San Diego, CA, February, 2014.
25. "Magnetic Nanostructure (MNS) Complexes as Theranostic Carriers", IIN - Nanomedicine Workshop, Evanston, IL, February, 2014.
26. "Nanotechnology for Energy Conversion and Storage", PREM-MRSEC, UTSA, San Antonio, TX, February, 2014.
27. "Nanotechnology for Energy", National Chemical Laboratory (NCL), Pune, India. January, 2014.

28. "Global McCormick and Indo-US Collaborative Initiatives", JNCASR, Jakkur, India, January, 2014.
29. "Commercial and Business Opportunities in Emerging Nanotechnology", Kothari Group, Chennai, India, January, 2014.
30. "Advances in Nano-Bio-Technology", Piramal Life Sciences, Mumbai, India, January, 2014.

2013

31. "Strain Mediated Phenomena in Nanostructured Oxides and Chalcogenides", MRS Fall Meeting, Boston, MA, December, 2013.
32. "Combinatorial Screening of Emergent Nanophotonic Behavior through Biomolecule-Encoded Superlattice Formation", Air Force Office of Scientific Research Review: De Long Annual Natural Materials and Systems Program Review, U of FL, Shalimar, FL, December, 2013.
33. "Converting Waste Heat into Electricity: Emergence of High Performance Tailored Nanostructured Thermoelectrics", Texas Materials Institute - Center for Nano- and Molecular Science Seminar Series, University of Texas at Austin, November 2013.
34. "Theranostic Magnetic Nanostructures (TX-MNS): Combining Non- Invasive Diagnostic Imaging with Targeted and Timed Therapeutic Delivery", Workshop on "Targeting and Triggering from Molecules to Materials", University of Massachusetts Amherst, sponsored by the Army Research Office, October, 2013.
35. "Nanostructured Thermoelectrics", Student Advisory Committee Meeting, Nanyang Technical University, Singapore, August, 2013.
36. "Bio-Nano-Sensors", Student Advisory Committee Meeting, Nanyang Technical University, Singapore, August, 2013.
37. "Materials and Energy", Indian Institute of Science Global Alumni Meeting, Chicago, July, 2013.
38. "Teaching "Old" Materials "New" Tricks: Nanopatterning and Microscopy of Multifunctional Materials", EMSI: Electron Microscopy Society of India (xxxiv annual meeting), Kolkata, India, July, 2013.
39. "Nanotechnology", National Chemical Laboratory, Pune, India, June, 2013.
40. "Science, Technology, Education & Policy (S.T.E.P.) in the Right Direction for Energy, Environment and Sustainability: Role of Nanoscience and Nanotechnology", 3rd International Workshop on Cleanroom Training for Critical and Sustainable Technologies: "Renewable Energy", Bilkent University, Ankara, Turkey, June, 2013.
41. "Hierarchical Length-scale Influence in Bulk Nanostructured Thermoelectrics", MRS Spring Meeting, San Francisco, CA, April, 2013.

42. "Atomically-layered Structures: Direct assembly, Defect Structure and Transport Phenomena", MRS Spring Meeting, San Francisco, CA, April, 2013.
43. "Emerging Approaches for Nanopatterning of Soft, Hard and Hybrid Structures", Keynote, SPIE DSS13 Micro-Nanotechnology Sensors, Systems, and Applications Conference, Baltimore, MD, April 2013.
44. "Combinatorial Screening of Emergent Nanophotonic Behavior through Biomolecule-Encoded Superlattice Formation", Air Force Office of Scientific Research, Natural Materials, Systems and Extremophiles Program Review, Washington D.C., January 2013.
45. "Emerging Nanotechnology for Biomedicine and Quality of Life: Will 75 Become the New 35?", North Shore Senior Center's Annual Meeting, Northfield, IL January 2013.

2012

46. "Microstructure" of "Nanostructured" Thermoelectrics, EFRC Scientific Review, Baltimore, MD, January, 2012.
47. "Science, technology, education and policy STEP in the right direction for energy, environment and sustainability: the role of nanoscience and nanotechnology", ICONSAT Hyderabad, India, January, 2012.
48. "Business of Energy", Reliance Industry Limited, RIL, India, March, 2012.
49. "Business of Energy: Energy, Environment and sustainability: A S.T.E.E.P. Challenge", DOE-COV, Germantown, MD May, 2012.
50. "Hard" Nanostructures for "Soft" Biomedicine, Singapore, May, 2012.
51. "Nanotechnology: A Decade Later", Singapore, May, 2012.
52. "High-end Facility Infrastructure for Emerging Materials Research", Bangalore, India, July, 2012.
53. "Magnetic Nanostructures in Biomedicine", India, August, 2012
54. "Teaching "Old Materials "New" Tricks: Nanopatterning & Microscopy of Multifunctional Materials", Hsuen Lee Award Lecture, Institute for Metals Research (IMR), Shenyang, PRC, September, 2012.
55. "Emerging Electron Microscopy in Nanotechnology Research", Tsinghua University, Beijing, PRC, September, 2012.

2011

56. "Bio-Cryo-Microscopy in Medicine", Keck Foundation Review, Chicago, IL, January 2011
57. "Magnetic Nanostructures in Biomedicine", IIT Bombay, India, February 2011.
58. "Soft Epitaxy of Multifunctional Oxides", Lawrence Workshop, ASU, AZ, February 2011.
59. "Materials for Energy", ASU Seminar, AZ, February 2011.

60. "Nanopatterning of Multifunctional Oxides", U. Texas Colloquium, San Antonio, TX, March 2011.
61. "Teaching Old Materials New Tricks: Nanopatterning of Multifunctional Oxides", University of Central Florida, Nanotech Center Colloquium, FL, March 2011.
62. "Opportunities for Tri-Lateral US-India-Israel Global Initiative", Evanston, IL, March 2011.
63. "Magnetic Nanostructures for Theranostics Administration of Cancer", Annual ACS Meeting, Anaheim, CA, March 2011.
64. "Hierarchical Length-scale Influence in Nanostructured Thermoelectrics", USC-DOE Workshop on Energy, Los Angeles, CA, April 2011.
65. Hierarchical Length-scale Influence in Nanostructured Thermoelectrics", MRS Spring Meeting and Exhibit, San Francisco, CA, April 2011.
66. "Nanostructured Thermoelectric Materials", EFRC Annual Summer Meeting, Washington, D.C., May 2011.
67. "Introduction to the NUANCE Center", NTU Singapore, June, 2011
68. "Teaching "Old" Materials "New" Tricks: Nanopatterning and Microscopy of Multifunctional Materials", International workshop on Advanced Electron Microscopy and Applications in Materials Science, China, June, 2011
69. "Nanopatterned Multifunctional Oxides: From Basic Science to Applied Technologies (Oxford); Collaborative opportunities with the NU NUANCE Center", Oxford University, London Center for Nanotech (LCN), London, August, 2011.
70. "Nanopatterning of functional oxides; Collaborative Opportunities with the NUANCE Center", JNCASR-NU, India, September, 2011.
71. "Making a Mountain out of Mole Hill: Electron Microscopy of Nanostructured Thermoelectrics", EFRC, Michigan State University, East Lansing, MI, October, 2011.
72. "MRSEC Shared Facilities Management Workshop", NUANCE Center, November, 2011.
73. "Seeing is Believing: Nanostructures in Alkali Metal Doped Lead Telluride", MRS Fall Meeting & Exhibit, Boston, December, 2011.
74. "Promise of Nanotechnology for Society", London Olympia Convention, London, December, 2011.
75. "Emerging Alternative Energy Sources and Policy Considerations", Imperial College London, December, 2011.

2010

76. "Corollary to Archimedes' Levers: Nano-and Microscale Levers for Seeing and Sensing the Invisible," ICONSTAT 2010, Mumbai, India, February 2010.

77. "Emerging Microscopy and Spectroscopy: A Window to the Nanoworld," ICONSTAT 2010, Mumbai, India, February 2010.
78. "Magnetic Nanostructures (MNS) in Biomedicine: Role of Size, Shape and Composition," POLY Symposium "Engineering the Biology-Materials Interface", ACS Meeting, San Francisco, CA, March 2010.
79. "Teaching "Old" Materials "New" Tricks: Site- and Shape-specific Nanopatterning of Multifunctional Materials," CNST Annual Nanotechnology Workshop, University of Illinois, Urbana, IL , May 2010.
80. "Emerging Magnetic Nanostructures for Theranostics," Molecular Imaging & Cancer Symposium, Northwestern University, Evanston, IL, May 2010.
81. "Advanced Characterization for Nanostructures," Nanyang technological University (NTU), Singapore, June 2010.
82. "Emerging Magnetic Nanostructures (MNS) as Theranostic Agents in Biomedicine," Nanotechnology Characterization Laboratory, National Cancer Institute, Frederick, MD, September 2010.
83. "Nanopatterning of Multifunctional Oxides", Osaka University Workshop, October 2010.
84. "Advanced Characterization of Bio-Nano-structures in Medicine", NCI-CCNE workshop, Bethesda, MD, November 2010.
85. "Research Universities as Innovation Hubs in 21st Century", NSF-Nano2 workshop, Arlington, VA, December 2010
86. "Emerging Theranostic Nanostructures in Biomedicine", Nano-Bio Workshop, University of Miami, December 2010.
87. "National Nanotechnology Initiative: A Decade Later", London Center for Nanotechnology, London, December 2010.

2009

88. "Science, Technology, Education and Policy (STEP)," Vibrant Gujarat Global Investor's Summit, Gujarat, India, January 2009.
89. "Nanotechnology a Decade Later: Prospective and Prospects," Nanotech Conference: Sanken International Symposium, Osaka, Japan, January 2009.
90. "Teaching "Old" Dogs "New" Tricks: Synthesis and Nanopatterning of Multifunctional Oxides," JNCASR (Jawaharlal Nehru Centre for Advanced Scientific Research), Bangalore, India, April 2009.
91. "Nanotechnology: Hip, Hope or Hype?" Nanotechnology Town Hall Meeting V, Evanston, IL, May 2009.

92. "Teaching Old Materials New Tricks: Nanopatterning and Localized Properties of Multifunctional Oxides," CNM Nanoscience Colloquium, Argonne National Laboratory, June 2009.
93. "Synthesis, Patterning and Properties of Nanostructured Oxides," INDO-US Joint Conference on Advanced Materials, Bangalore, India, September 2009.
94. "Development of a Scanning Near-Field Ultrasound Holography (SNFUH) System as a Nano-Metrology Toolset for Buried Defects and Sub-Surface Pattern Recognition," Metrology Webinar, Semiconductor Research Corporation, September 2009.
95. "Towards Targeted In-Vivo Theranostics with Magnetic Nanostructures," 11th International Conference on Advanced Materials (ICAM), Rio de Janeiro, Brazil, September 2009.
96. "Corollary to Archimedes' Levers: Nano- and Microscale Levers for Seeing and Sensing the Invisible," Center for Nanoscale Materials Users Meeting, Materials & Fabrication for Nanoelectromechanical Systems (NEMS) Focus Session, Argonne National Laboratory, Aurora, IL, October 2009.
97. "Nanopatterning of Multifunctional Oxides: Teaching Old Materials New Tricks," DFG-NSF Conference, New York, New York, October 2009.
98. "Nanotechnology and Business: Hype, Hope or Hip?" Brinks Hofer Gilson & Lione and the NanoBusiness Alliance (NBA) Nanotechnology Seminar, Chicago, IL, December 2009.

2008

99. "Nanopatterning of Ceramics," (Also, Symposium Chair) American Ceramics Society, Daytona Beach, FL., January 2008.
100. "Nanotechnology in Petrochemicals," Reliance Industries Ltd., Mumbai, India, February 2008.
101. "Emerging Bio-Chem Sensor Platform," Baxter Corporation, Round Lake, IL, April 2008.
102. "Seeing the Invisible: Nanoscale Ultrasound Holography," DARPA meeting, Washington DC, April 2008.
103. "Teaching "Old" Materials "New" Tricks: Site- and Shape-Specific Nanopatterning of Multifunctional Oxides," NSTI 2008, Boston, MA, June 2008.
104. "Emerging Microscopy Techniques for Catalyst Characterization," CCSS Annual Meeting, Evanston, IL, August 2008.
105. "Nanotechnology in Petrochemical Industries: Hip, Hype or Horrible?!" Indian Petrochem, Mumbai, India, November 2008.

2007

106. "Interdisciplinary Nanomechanics: From Acoustic Imaging to Microcantilever-based BioChemSensing," PittCon 2007 Waters Symposium, Chicago, IL, February 2007.
107. "Nanotechnology and Business: Hip, Hype or Horrible," Reliance Industries, Mumbai, India, February 2007.
108. "Disruptive Technology Opportunities in Nanotechnology," Reliance Industries, Mumbai, India, February 2007.
109. "Emerging Nanostructures and Devices for Nano-Bio-Medicine," Children's Memorial Research Center Academic Day, Chicago, IL April 2007.
110. "Overview of the NUANCE Center," Centerpiece Live, Evanston, IL, May 2007.
111. "Development of Scanning Near Field Ultrasound Holography (SNFUH) System as a Nano-Metrology Toolset for Buried Defects and Sub-Surface Pattern Recognition," SRC Nanolithography Review, Madison, WI, May 2007.
112. "Teaching Old Materials New Tricks: Site -Shape- Specific Patterning of Functional Nanostructures," University of Albany MSE Colloquium Series, Albany, NY, May 2007.
113. "Emerging Nanostructures and Devices for Imaging and Therapeutics," Pfizer meeting, Evanston, IL, June 2007.
114. "Some Assembly Required: Patterning, Lithography and Functional Identity of Nanostructures," McBain Memorial Lecture, NCL, Pune, India, July 2007.
115. "Variable Pressure Soft Electron Beam Lithography (VP-e BL)," Microscopy and Microanalysis 2007, Fort Lauderdale, FL, August 2007.
116. "Some Assembly Required: Self-, Directed- and Hierarchical Patterning and Assembly of Functional Nanostructures," South Africa, University of Zululand, August 2007.
117. "Appropriate Microscopy at Appropriate Resolution (AMAR)," University of California, Berkeley, September 2007.
118. "Nanotechnology: Hip, Hype or Horrible?!" Illinois Engineering Council - Key Note Speaker, Chicago, IL, October 2007.
119. "Emerging Nanostructures and Devices for Biomedicine," IEEE Sensor Council Symposium (Chaired by Larry Nakahara, NCI): Atlanta, GA, October 29, 2007.
120. "Seeing the Invisible: Holography and Interference Scanning Probe Microscopy in the Nonlinear Regime," DSRC -DARPA Workshop, Arlington, VA, November 7-8, 2007.
121. "Seeing and Sensing the Invisible: Emerging Nanostructures and Devices for Biochemical Imaging, Diagnostics and Therapeutics," University of Washington Seattle, WA, November 19-20, 2007.
122. "Teaching 'Old' Materials 'New' Tricks: Patterning, Microscopy and Functional Identity of Nanostructures," University of Washington Seattle, WA, Nov. 19-20, 2007.
123. "Some Assembly Required: Nanopatterning of Multifunctional Materials," Nano 2007, Bangalore, India, December 2007.

2006

124. "Nanopatterning of Functional Inorganics," IED Detection Symposium, Sandia National Laboratory, Albuquerque, NM, January 2006.
125. "Nondestructive Subsurface Analysis with SPM," University of Pennsylvania Nanoprobe Network, Philadelphia, Pennsylvania, January 2006.
126. "Top Down Meets Bottom Up: Emerging Paradigms in Bio-Chem Nanosensors," IIT Colloquium Series, Chicago, IL, February 2006.
127. "Emerging Microscopy Techniques: Answers Looking for Appropriate Questions," State Microscopical Society of Illinois Meeting, Chicago, IL, February 2006.
128. "Interdisciplinary Nanomechanics: From Acoustic Imaging to Microcantilever-based Bio-Chem Sensing," UIUC Electrical Engineering Colloquium Series, Urbana, IL, February 2006.
129. "Teaching Old Materials New Tricks: Nanopatterning of Functional Inorganics," Iowa State University Colloquium Series, Ames, IA, March 2006.
130. "Teaching Old Materials New Tricks: Nanopatterning of Functional Inorganics," UT Austin Nano Colloquium Series, Austin, TX, March 2006.
131. "Nanostructured Devices," Honeywell visit, Minneapolis, MN, March 2006.
132. "Nanomechanics Based Devices for Imaging and Sensing," NSF-Korea Workshop, Seoul, Korea, April 2006.
133. "Emerging Nanostructures and Devices for Novel Diagnostics and Therapeutics," ENH GE meeting, Evanston, IL, June 2006.
134. "Development of Scanning Near-Field Ultrasound Holography (SNFUH) System as a Nano-Metrology Toolset for Buried Defects and Sub-Surface Pattern Recognition," SRC Nanolithography Review, Madison WI, June 2006.
135. "Status and Future of NUANCE Center," DuPont Corp., Wilmington, DE, June 2006.
136. "Electron Microscopy & Spectroscopy," ASME Nano Bootcamp, Minneapolis, MN, July 2006.
137. "Electron Microscopy and Spectroscopy," NSF Short Course, Evanston, IL, August 2006.
138. "Magnetic Nanostructures for Biomedicine," Nano 2006 Meeting, Bangalore, India, August 2006.
139. "Nanopatterning of Inorganics," Nano 2006 Meeting, Bangalore, India, August 2006.
140. "Nanomechanics in Microelectronics: From Ultrasound Holographic Imaging to MOSFET-Embedded Microcantilevers," Intel Visit, Ronler Acres, OR, September 2006.
141. "Getting More out of the Scanning Probe: From Acoustic Holographic Imaging to Bio-Chem Sensing," Frontiers of Microscopy Workshop, West LaFayette, IN, October 2006.

142. "Emerging Bio-Nano-Structures and Devices for Imaging, Diagnostics and Therapeutics," 1st International Symposium of Nano Bio Molecular Assembly, Yonsei University, Seoul Korea, October 2006.
143. "MOSFET-Embedded Microcantilevers," IEEE Sensors 2006 conference, Daegu, Korea, October 2006.
144. "Emerging Nanostructures and Devices for Imaging, Diagnostics and Therapeutics," TDD Bioimaging Symposium, University of Toronto, Toronto, Ontario, November 2006.
145. "Seeing the Invisible: Scanning Near-Field Ultrasound Holography (SNFUH) for Non-Destructive Nanoscale Imaging of Buried and Embedded Structures," FENA Workshop, San Francisco, CA, December 2006.

2005

146. "Integrating Emerging Bio Nano Structures on Engineering Platform: Bottom Up Meets Top Down," Nanotechnology Workshop Organizer, Bombay, India, January 2005.
147. "Novel Electronic Transduction Scheme for Biomolecular Binding Events," APS Annual Meeting, Los Angeles, CA, March 2005.
148. "High Resolution Near - Field Acoustic Holography (NFAH) of Embedded Nanostructures," ASME Nanotechnology Institute, Knoxville, TN, May 2005.
149. "Advanced Microscopy and Spectroscopy: Window to the Nanoworld," Mornings at McCormick-Northwestern University, Evanston, IL, May 2005.
150. "Advanced Microscopy," ASME Nanobootcamp," Washington, DC, July 2005.
151. "Scanning Near-Field Ultrasound Holography (SNFUH) for Non-Destructive Nanoscale Imaging of Sub-surface and buried features," Seeing at the Nanoscale III, Veeco Inc, Washington, DC, August 2005.
152. "Scanning Near-Field Ultrasound Holography (SNFUH) for Non-Destructive Nanoscale Imaging of Sub-surface and buried features," Visit with collaborators at University of Oxford, Oxford, Great Britain, August 2005.
153. "Bio-Chem Nanosensors," University of Buenos Aires, Argentina, September 2005.
154. "Integrated Electronic Detection Approach to Biological Warfare Agents using Cantilever Arrays as Hybrid/Parallel Biomechanical Systems," Materials Science and Technology Conference 2005, Pittsburgh, PA, September 2005.
155. "Some Assembly Required: Building Nanostructures from the Bottom Up Across Length Scales," NanoCommerce/NanoForum, Chicago, IL, October 2005.
156. "Nanotechnology Programs at Northwestern: Partner in Leadership," Hitachi Corp, San Francisco, CA, October 2005.
157. "SNFUH Approach for Nano-Metrology," SRC-NIST Workshop, Washington, DC, December 2005.

2004

158. "Nanopatterning of Oxide Sensor Elements," NIST, Washington, DC, January 2004.
159. "Teaching Old Materials New Tricks: Site-and Shape Specific Nanopatterning," DPN Workshop, Florida, January 2004.
160. "New Paradigms in Bio-Chem Sensing via Nanostructured Materials," Argonne National Laboratory, Argonne, IL, February 2004.
161. "Teaching Old Materials New Tricks: Site-and Shape Specific Nanopatterning on Inorganics," MSE Dept Colloquium Series Seminar at University of Pennsylvania, February 2004.
162. "Bio-Chem Nanosensors," University Buenos Aires, Argentina, March 2004.
163. "Novel Bio-Nano Sensors," University Colloquium Series Seminar at Virginia Commonwealth University, March 2004.
164. "Probing the Invisible: Near Field Acoustic Holography & Towards Novel Paradigms in Nano-bio sensors," AcerS Annual Meeting, Indianapolis, IN, April 2004.
165. "Site Specific Nanopatterning of Inorganics," Materials Research Society, Spring 2004 Meeting, San Francisco, CA, April 2004.
166. "Towards Novel Paradigms in Nano-Bio Sensors," Americas Materials Conference: Chile, US, and Brazil at Santiago, Chile, April 2004.
167. "N3: Nanotechnology and Nanoscience at Northwestern," Nano-Bio Outreach Workshop, Palo Alto, CA, May 2004.
168. "Site-specific Nanopatterning of Inorganics: Nanodots and Microcantilevers," Dept Colloquium, University of Wisconsin, Milwaukee, WI, May 2004.
169. "Emerging Bio-Chem Nanosensors," IMTECH, NCL, Pune, and IIT Bombay, India, July 2004.
170. "Nanoscale Science, Technology and Educational Initiatives at Northwestern," US-India Nano Workshop, Bangalore, India, August, 2004.
171. "NUANCE Center," US-India Nano Workshop, Bangalore, India, August, 2004.
172. "To Find a Needle in a Haystack: In-situ Manipulation and Measurements of Nanostructures," CNMS-ORNL, Knoxville, TN, September 2004.
173. "Nanotechnology Beyond the Hype: Towards High Technology Job Creation and Illinois Leadership," State of Illinois Trade Office Meeting, Chicago, IL, September 2004.
174. "Nanopatterning and Microscopy of Nanostructures," Nanotech Seminar at 3M, Minneapolis, MN, October 2004.
175. "Novel Electronic Transduction Scheme for Biomolecular Binding Events," DARPA/Simbiosys PI Meeting, Vail, CO, October 2004.
176. "Integrating Emerging Bio Nano Structures on Engineering Platform: Bottom UP Meets Top Down," Purdue University, West LaFayette, IN, November 2004.

177. "Probing the Invisible: NFAH," Fall MRS Meeting, Boston MA, November 2004.
178. "Probing the Invisible: Near Field Acoustic Holography," DARPA meeting, NSF-NIH Workshop, Washington, DC, November 2004.
179. "Tuning GB Barrier via Thermal Treatment," Boston, MA, November 2004.
180. "Integrating Emerging Bio Nano Structures on Engineering Platform: Bottom Up Meets Top Down," National Chemical Laboratory, Pune, India, December 2004.

2003

181. "Nanosensors for BCW Agents," Oak Ridge National Laboratory, Oak Ridge, TN, January 2003.
182. "Functional Nanopatterns for Ferroelectrics," Sandia National Laboratory, Albuquerque, NM, March 2003.
183. "Inorganic Nanotstructures for Bio-Chem Sensors," Annual AcerS Mtg, Nashville, TN, May 2003.
184. "Development of Central User Facilities and Multiuser Coordination," Faculty Academic Network Workshop, Palo Alto, CA, June 2003.
185. "Nanotechnology at Northwestern University," Post PASI visit, Univ. Buenos Aires, Argentina, June 2003.
186. "Towards Electronic Nano-Nose," Post PASI visit, Univ. Buenos Aires, Argentina, June 2003.
187. "Introduction to NUANCE Center," Veeco Inc., information session, Santa Barbara, CA, July 2003.
188. "Nanopatterning of Functional Inorganics," MRSEC Seminar, Santa Barbara, CA, July 2003.
189. "Scanning Acoustic Holography," Veeco Inc., Santa Barbara, CA, July 2003.
190. "Holography and Interference Microscopy," Annual Microscopy Mtg, San Antonio, TX, July 2003.
191. "Site Specific Nanopatterning," Annual Microscopy Mtg, San Antonio, TX, July 2003.
192. "Dip Pen Nanopatterning (DPN) of Inorganics," AFOSR-MURI Review, Dayton, OH, September 2003.
193. "Nanopatterning," Integrated Nanosystems Meeting, Palo Alto, CA, September 2003.
194. "Near Field Holography," SEMATECH, Analytical Manager Meeting, Austin, TX, September 2003.
195. "Nanopatterning of Inorganics," Brazilian Materials Society Bi-Annual Meeting, Rio de Janeiro, October 2003.
196. "Emerging Issues in Nanoscience and Nanotechnology," IIT Bombay, India, December 2003.

197. "Advanced Electron Microscopy of Interfaces and Defects," IIT Bombay, India, December 2003.
198. "Site-and Shape Specific Nanopatterning of Ferroelectrics," Annual Materials Research Meeting, Boston, December 2003.
199. "Probing Ferroelectric Domain Dynamics," Annual Materials Research Meeting, Boston, December 2003.
200. "Material Science and Integration of a New Hybrid TiAl- Layer," Annual Materials Research Meeting, Boston, December 2003.
201. "Miniaturized Electronic Nano-Nose," Annual Materials Research Meeting, Boston, December 2003.

2002

202. "Teaching Old Ceramics New Tricks: Site-Specific Nanopatterning of Functional Inorganics," Gordon Research Conference, Meriden, NH, August 2002.
203. "Nanotitration of Active Grain Boundaries," Electroceramics VIII conference, Rome, Italy, August 2002.
204. "Electron Holography in Materials Science," Intl. Conf. On Electron Microscopy, Durban, South Africa, Aug-Sept. 2002.
205. "Better Transparency and Conductivity through ALCHEMI," Intl. Conf. On Electron Microscopy, Durban, South Africa, Aug-Sept. 2002.
206. "Site- and Shape-Specific Nanopatterning of Ceramics," Colloquium, University of Illinois at Urbana-Champaign, September 2002.
207. "Nanopatterning of Addressable Functional Inorganic Nanostructures," PASI, Joint Argentina-NSF workshop on Ferroelectrics, Rosario, Argentina, September 2002.
208. "3-D Nanomanipulation in TEM for Nanostructures," ASME Annual Meeting, New Orleans, LA, November 2002.
209. "Nanopatterning of Functional Inorganics," IBM Watson, Yorktown Heights, NY, November 2002.
210. "Nanostructures for Functional Duties," International Conference on Inorganic Materials, IIT Bombay, INDIA, December 2002.
211. "Site-and Target specific Drug Delivery Approaches," International Conference on Inorganic Materials, IIT Bombay, INDIA, December 2002.
212. "Nanopatterning," Annual MRS Meeting, Boston, MA, December 2002.

2001

213. "Advanced Electron Microscopy in Materials Research at Northwestern University," Nissei Sangyo America, Mountain View, CA, January 2001.
214. "Patterning Magnetic Nanostructures," DPN Workshop, Key West, FL, February, 2001.

215. "Synthesis, Characterization and Patterning of Soft and Hybrid Nanostructures," NIH, Bioengineering Seminar, February 2001.
 216. "Electron Holography of Active Structures," University of Oslo Workshop on Advanced EM, Oslo, Norway, March 2001.
 217. "Hierarchical Length-Scale Influence on Interfacial Phenomena," MSE Seminar, Lehigh University, Bethlehem, PA, May 2001.
 218. "Probing the Invisible: Electron Holography of Electrically Active Interfaces," First European Workshop on Electron Holography, Stockholm, Sweden, June 2001.
 219. "In-situ Electron Holography of Active Nanostructures," Workshop on In-Situ EM, National Center for EM, Berkeley, CA, June 2001.
 220. "When Electrons Meet Light: Advanced EM of Optical Active Oxides," NU-CNRS Workshop, Evanston, IL, June 2001.
 221. "Focused Ion Beam: More than just a fancy IBT," Microscopy and Microanalysis' 2001, Long Beach, CA, August 2001.
 222. "When Electrons Meet Light: ALCHEMI of Optical Active Oxides," Microscopy and Microanalysis' 2001, Long Beach, CA, August 2001.
 223. "Towards Predictive Structure-Property Relationship for Electrically Active Interfaces," RPI, Materials Science Colloquium, Troy, NY, September 2001.
 224. "Synthesis, Patterning and Microscopy of Nanostructures," U. Conn, MSE Dept Colloquium, October 2001.
 225. "Development and Management of Shared User Facilities," MRSEC Director's Meeting, Brown Univ., November, 2001.
 226. "Microscopy for Nanotechnology and Vice Versa," IIT Bombay, India, December, 2001.
- 2000**
227. "How Low Can One Get? Low Voltage Imaging and Spectroscopy with FEG SEM," MAS NY Chapter, MAS Tour Speaker Event, Fishkill, NY, February 2000.
 228. "Low Voltage Imaging, Diffraction and Spectroscopy," General Electric,, Central R & D, Schenectady, NY, March 2000.
 229. "Dynamics of Charged Interfaces in Dielectric and Ferroelectric Thin Films," International Conference of the International Society for Integrated Ferroelectrics (ISIF-00), Aachen, Germany, March 2000.
 230. "Probing the Invisible: Electron Microscopy of Nanostructures," Physics and Nanotechnology Initiative Colloquia, Univ. of Central Florida, Orlando, FL, March 2000.
 231. "Towards Structure-Property Relationship for Electroceramic Interfaces," MSE Colloquium, Lehigh University, Bethlehem, PA, March 2000.

- 232. "Graphite Encapsulated Magnetic (GEM) Nanocrystal: Carriers for Site-Specific Drug Delivery?!" Invited [, Annual Retreat of the Robert H. Lurie Comprehensive Cancer Center, Evanston, IL, March 2000.
- 233. "Teaching Old Nanostructures New Tricks," MSE Colloquium, Northwestern University, Evanston, IL, October 2000.
- 234. "Dynamics of Electrically Active Interfaces," MSE Seminar, KAIST, S. Korea, October 2000.
- 235. "Electron Holography and Spectroscopy of Interfaces," Keynote Address, Annual Meeting of the Korean Ceramic Society, Chunchun, S. Korea, October 2000.

1999

- 236. "Engineering First: Integrating Basic Sciences and Mathematics in Engineering Curricula," IIT Bombay, India, March 1999.
- 237. "Advanced Electron Microscopy of Nanostructures," Tata Institute for Fundamental Research, Bombay, India, March 1999.
- 238. "In-Situ Dynamic Studies of Electrically Active Interfaces," MRS Spring Mtg., San Francisco, CA, April 1999.
- 239. "Electron Holography of Active Interfaces," Annual Mtg. of the Amer. Ceram. Soc., Indianapolis, IN, April 1999.
- 240. "Probing the Invisible: Electron Spectroscopy and Holography of Electrically Charged Interfaces." MSE Colloquium, Georgia Tech., Atlanta, GA, May 1999.
- 241. "Electron Holography of Active Junctions," IBM Watson Research Center, Yorktown Heights, NY, July 1999.
- 242. "Probing Electrically Active Interfaces," Bell Labs, Lucent Technologies, Murray Hill, NJ, July 1999.
- 243. "Dynamics of Grain Boundary Space-Charge Potential in Electroceramics," Microscopy and Microanalysis 99, Portland, OR, August 1999.
- 244. "Analytical Electron Microscopy of Composite Interfaces," Microscopy and Microanalysis 99, Portland, OR, August 1999.
- 245. "Hierarchy of Length-Scales in Crack Propagation and Fracture," NIST/CRC Invitee Workshop, Gaithersburg, MD, September 1999.
- 246. "Electron Holography of Active Structures," SEMATECH, Austin, TX, October 1999.
- 247. "Dynamics of Charged Interfaces via Electron Holography," Motorola, Austin, TX, October 1999.
- 248. "Electron Holography of Charged Interfaces," Applied Micro Devices, Sunnyvale, CA, November 1999.

249. "Dynamics of Electrically Active Interfaces," Ann. MRS Fall Mtg., Boston, MA, Nov/Dec 1999.

1998

250. "Analytical Electron Microscopy in Materials Science," Naka Works, Hitachi Corp., Ibaraki, Japan, January 1998.

251. "Electron Probe Instrumentation Center (EPIC)," Advanced Research Laboratory, Hitachi Corp., Japan, January 1998.

252. "Statics and Dynamics of Interfaces in Electroceramics," US-Japan Workshop on Electrically Charged Interfaces, MIT, Cambridge, MA, March 1998.

253. "In-Situ TEM Studies of Domain Switching Dynamics in Ferroelectric Thin Films," Int. Symp. on Ferroic Domains and Mesoscopic Structures (ISFD-5), Penn State Univ., University Park, PA, April 1998.

254. "Dynamic TEM of Interfaces and Defects," Ann. Mtg. Ohio Chapter of the AVS, Cleveland, OH, June 1998.

255. "Spectroscopy of Oxide Superconductors," CNRS Workshop on Emerging Issues in HTS, Caen, France, July 1998.

256. "Statics and Dynamics of "Charged" Interfaces in Electroceramics," Microscopy and Microanalysis 98, Atlanta, GA, July 1998.

257. "Anisotropy of Electron Structure and Transport Properties of Oxide Superconductors," Microscopy and Microanalysis 98, Atlanta, GA, July 1998.

258. "Seeing Invisible: Electron Spectroscopy and Holography of Electrically Active Interfaces," Gordon Research Conference, Solid State Studies in Ceramics, Meriden, NH, August 1998.

259. "Transmission Electron Microscopy, Spectroscopy and Holography of Nanostructured Materials," Intl. Conf. on Electron Microscopy (ICEM-98), Cancun, Mexico, September 1998.

260. "Probing the Invisible at Electrically Active Interfaces," MSE Colloquium, Cal Tech., Pasadena, CA, October 1998.

261. "Electron Microscopy of Nanostructured Materials," Plenary Lecture, Bi-annual Mtg. of the Brazilian Society for Electron Microscopy, Brazil, October 1998.

262. "Analytical Electron Microscopy of Interfaces," Keynote Lecture, Bi-annual Mtg. of the Brazilian Society for Electron Microscopy, Brazil, October 1998.

1997

263. "AEM of Interfaces," Arizona State University, Tempe, AZ, January 1997.

264. "Crack Propagation in DSEs: Experimental and Simulations," NIST, Gaithersburg, MD, January 1997.

265. "Electrically Active Interfaces in Ceramics," Case Western Reserve University, Cleveland, OH, February 1997.
266. "Interfaces in DSE's of Oxides," Wright-Patterson Air Force Laboratories, Dayton, OH, March 1997.
267. "Introduction to Scanning Microscopy," Invited Tutorial, Ann. Mtg. of Scanning Microscopy, Chicago, IL, May 1997.
268. "Valence Band EELS," Ann. Mtg. of Scanning Microscopy, Chicago, IL, May 1997.
269. "Electron Spectroscopy and Holography of Interfaces," Microscopy Society of America, Annual Meeting, Cleveland, OH, August 1997.
270. "EBSD in a cold FEG SEM," Microscopy Society of America, Annual Meeting, Cleveland, OH, August 1997.
271. "Statics and Dynamics of Electroceramics," MSE Colloquium, Univ. Illinois @ Urbana-Champaign, Urbana, IL, September 1997.
272. "Hierarchy of Length-Scale Influence in Crack Propagation in Oxide Composites," ASM/TMS Special Symposium in memory of Prof. David A. Smith, Indianapolis, IN, September 1997.
273. "Interfaces in Electroceramics," MSE Colloquium, Carnegie Mellon University, Pittsburgh, PA, September 1997.
274. "In-Situ Electron Microscopy," Ann. Mtg. of MRS, Boston, MA, November, 1997.
275. "Dynamics of Electrically Active Interfaces," Ann. Mtg. of MRS, Boston, MA, November 1997.
276. "Seeing the Invisible: Electron Holography of Charged Interfaces," Cavendish Laboratory, Cambridge University, Cambridge, U.K., December 1997.
277. "Analytical Electron Microscopy in Materials Science," Indian Institute of Science, Bangalore, India, December 1997.

1996

278. "Length-Scales and Structure-Property Relationships for Internal Interfaces in Oxides," High Temperature Materials Laboratory (HTML), ORNL, Oak Ridge, TN, February 1996.
279. "Advanced Electron Microscopy of Interfaces and Interfacial Phenomena in Oxides," Univ. Wisconsin, Milwaukee, April 1996.
280. "Electron Spectroscopy and Holography of Oxide Interfaces," Frontiers of Electron Microscopy in Materials Science, Oak Brook, IL, June 1996.
281. "Sensitivity and Resolution in EBSD/OIM with a cFEG SEM," Frontiers of Electron Microscopy in Materials Science, Oak Brook, IL, June 1996.
282. "EBSD/OIM with cFEG SEM: Yes it is possible!" Microscopy Society of America, Minneapolis, MN, August, 1996.

1995

283. "Electroceramic Interfaces," IBM T.J. Watson Research Center, NY, February 1995.
284. "Direct Determination of Structure-Property Relationship for Functional Electroceramic Interfaces," Argonne National Laboratory Seminar Series, Argonne, IL, March 1995.
285. "High Spatial Resolution Spectroscopy of Internal Interfaces," Max Planck Institute Invitee Workshop, Ringberg Castle, Germany, April 1995.
286. "Microanalysis at High Spatial Resolution across Internal Interfaces," Ann. Mtg. of Microscopy Society of America, Cincinnati, August 1995.
287. "Direct Determination of Spatially Varying Potential and Charge across Electroceramic Interfaces," Gordon Research Conference on Solid State Studies in Ceramics, NH, August 1995.

1994

288. "Microscopy and Spectroscopy of Ionic Interfaces," Invitee Workshop on Ionic Interfaces, Max-Planck Institute, Ringberg Castle, Germany, March 1994.
289. "Dielectric Function and Electronic Structure of Oxide Superconductors." Bhabha Atomic Research Center (BARC) Bombay, India, March 1994.
290. "Synthesis, Characterization and Properties of Buckytubes," Ann. Electrochemical Society Meeting, San Francisco, CA, May 1994.
291. "Transmission EELS in Materials Science," EELSI-94 Invitee Conference, Leukerbad, Switzerland, July 1994.
292. "Electron Spectroscopy and Interferometry of Electronic Ceramics," Microscopy Society of America, New Orleans, LA, July 1994.
293. "Electron Interferometry and Holography of Real Materials," First Intl. Conference on Electron Holography, Knoxville, TN, August 1994.
294. "Analytical Electron Microscopy in Ceramics Science," Materials Science & Engineering Seminar Series, University of Illinois @ Urbana-Champaign, October 1994.
295. "Electron Spectroscopy and Holography of Electroceramic Interfaces," Ann. Fall Mtg. of MRS Boston, MA, November 1994.
296. "Towards Structure-Property Relationship for Electroceramic Interfaces," NIST, Gaithersburg, MD, December 1994.
297. "Interphase Interfaces in Structural Eutectics," General Electric, Corporate R & D, Schenectady, NY, December 1994.

1993

298. "Atomic Structure of Interphase Interfaces in Oxides," Materials Science and Engineering Fall Seminar, Cornell University, Ithaca, NY, September 1993.

299. "Bicrystallography and Plan-View CBED," MSA (EMSA) 93, Cincinnati, OH, August 1993.
300. "Electron Spectroscopy of Internal Interfaces in Ceramics: A Status Update and Forecast," MSA (EMSA) 93, Cincinnati, OH, August 1993.
301. "Electron Holography of Internal Interfaces in Electroceramics: Fact or Fiction?" MSA (EMSA) 93, Cincinnati, OH, August 1993.
302. "Artifacts in AEM of Interfaces: From Specimen Preparation to Data Analysis," Great Lakes EM Society Association (GLEMA), Indianapolis, October 1993.
303. "Analytical Electron Microscopy in Catalysis Research," Amoco R & D, Naperville, IL, July 1993.

1992

304. "High Spatial and Energy Resolution EELS with the HF-2000 ARAEM." First ORNL/UT Workshop on Coherent Beam Electron Microscopy, Knoxville, TN, June 1992.
305. "Atomic Resolution Analytical Electron Microscopy and Electron Holography: Implications for Materials Science," Laboratoire de Chimie des Solides, Université de Paris-Sud, Orsay, FRANCE, July 1992.
306. "High Spatial and Energy Resolution Analytical Electron Microscopy," First Intl. Symposium on Quantitative Electron Microscopy, National Center for Electron Microscopy, LBL, CA., August 1992.
307. "Space-Group Determination by CBED: G-M Lines, Crosses and HOLZ Interactions," Ann. Mtg. of EMSA, Boston, MA, August 1992.
308. "Determination of Electronic Structure of Oxides by EELS," Workshop on Grain Boundaries in High T_c Superconductors, University of Wisconsin-Madison, Madison, WI, August 30- Sept.1, 1992.
309. "Role of ARAEM in Interface Analysis of High Technology Materials," Wright-Patterson Air Force Lab., Dayton, OH, October, 1992.
310. "Electrons' Eyeview of Bucky-Balls, Tubes, Toroids and Whatever Comes Next," ASM/TMS Annual Meeting, Chicago, IL, Nov. 1992.
311. "A Journey into the Nanoworld of Buckytubes and Friends," Ann. MRS Mtg., Nov./Dec. 1992.

1991

312. "Progress in Analytical Electron Microscopy of Materials," Argonne National Laboratory, March 1991.
313. "High Resolution and Analytical TEM Studies of Relaxation of Interfaces in Directionally Solidified Eutectics," Center for Solid State Science, Arizona State University, Tempe, AZ, July 1991.

314. "Electron Microscopy Research at Northwestern University," Ann. Mtg. of Mid-West Society of Electron Microscopists, Chicago, IL, May 1991.
315. "Transmission EELS of Hole Formation and Charge Transfer in Oxide Superconductors," Symp.on Bulk Properties and Critical Currents in Oxide Superconductors, Argonne National Laboratory, March 1991.