Curriculum Vitae

Vinayak P. Dravid
Professor of Materials Science & Engineering
McCormick School of Engineering & Applied Science

Director, NU*ANCE* Center
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Northwestern University
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http://www.nuance.northwestern.edu
http://vpd.ms.northwestern.edu
http://www.northwestern.edu/vpdgroup

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

2000 - present	Professor, Department of MS & E, Northwestern University
2001 - present	Director, NU*ANCE* (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, *Advisors: Profs. Michael R. Notis and Charles E. Lyman*
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

2009	Inauguration Class of Fellows: Microscopy Society of America (MSA)
2009	Election to Faculty Honor Roll: Northwestern University *Selected by voting UG* students

2008	Richard M. Fulrath Award: American and Japanese Ceramics Society
2007	6th 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 NU*ANCE* 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* NU*ANCE Center from two instruments and <30 users to over 20+ major instruments, 100+ faculty affiliates and 450+ users.* (*http://www.nuance.northwestern.edu*)
- 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*)
- Dean and Provost Advisor: International and Global Outreach.
- Member: NU Strategic Plan Globalization Workshop Group, 2010.
- Conceived and executed sustainable MoU and funded scholarly exchange programs with IIT Bombay.
- Board Member: Joint Niles University (Egypt) and NU Global Collaborative Center.
- Steering Committee Member: Provost Taskforce on Global Engagement.
- MSE Long Range Planning Committee, 2005 – present.
- Presidential Circle Member: 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: Nangyang 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.
- International Advisory Committee: Global Indian Scientists and Technocrats Convention (GIST), 2008-9.
- Member: Robert H. Lurie Comprehensive Cancer Center, 2008-2009.
- Founder, Board Member and Chair Scientific Advisory Committee: NanoSonix, Inc., a hi-tech start-up, founded in Spring 2008.
- Member: CLP Corporate & International Outreach/Entrepreneurial Activities Committee, 2009.
- Member: NU Imaging Advisory Committee, 2009.
- Co-Chair: NSEC Annual Meeting, 2009.

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.
- NIH-CCNE: Director, Nanofabrication Core (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.

Recent Professional Activities

2010	DOE –BES Reviewer: Sandia National Laboratory
2010	Guest Editor: Advanced Drug Delivery Reviews
2009	DOE Reviewer: Basic Energy Sciences (BES) Early Career Research Program
2009	Symposium Co-Chair: International Institute for Nanotechnology (IIN) Symposium
2009	Corporate & International Outreach/Entrepreneurial Activities Committee: Chemistry of Life Processes Institute (CLP) NU
2009	Co-Organizer: Conference on Advanced Materials (ICAM), Brazil
2009	DOE-BESAC Committee: Program Review LBL–MSD/NCEM
2009	Niles University and NU Advisory Board
2009	DOE-SHaRE Committee: Program Review Oak Ridge, TN
2008	ACerS Program Committee: Daytona Beach, FL
2006	ANL Center for Nanoscale Materials (CNM) Critical Decision 4a Committee
2004, 2006	DOE-BESAC Committee: Program Review LBL–MSD/NCEM
2003 - present	Co-Founder and Instructor: ASME Nano Training Bootcamp
2000 - 2001	Chair/Organizer: Basic Science Division Program (The American Ceramic Society)
1999 - present	Board of Directors: IIT Bombay Heritage Forum (IITBHF)
1999 - present	The US alumni association of IIT Bombay, INDIA
1999 - 2005	Editor: Materials Science Section; Microscopy and Microanalysis, (Flagship journal of the Microscopy Society of America (MSA)
1999 - 2005	Principal Editor: J. of Mater. Res., (Flagship journal of the Materials Research Society (MRS)
1999 - 2000	DOE-BESAC Committee: Review panel on DOE EM Facilities (EBMCC)
1995 - present	Editorial Board: Journal of Microscopy (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. Founder: NanoSonix, Inc, a hi-tech start-up, 2008.

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.

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 Research 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	CTC Corp., PA
Murat Guruz	PhD	2002	Scientist, Hitachi-IBM Alliance, CA
Ming Su	PhD	2004	Assistant professor, U Central Florida, FL
Pradyumna Prabhumirashi	PhD	2006	Intel Corp., Santa Clara, CA
Nasim Alem	PhD	2007	Post Doctoral Scholar, UC Berkeley
Suresh Donthu	PhD	2008	Exponent Consulting, Maryland

Zixiao Pan	PhD	2008	Exponent Consulting, Menlo Park, CA
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.
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 U., 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	NU*ANCE* Center, IL
Hao Hu	Postdoc	2007	PriceWaterhouseCoopers, New York, NY
Mohammed Aslam	Postdoc	2007	Assistant Professor, IIT Bombay
Arvind Srivastava	Postdoc	2009	NanoSonix, Inc.
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 student at Harvard University
Ken D'Aquila	BS	2008	PhD student at Northwestern University

List of Current Graduate Students/Postdoctoral Scholars, and Research Topics

Graduate Students	**Degree/Status**	**Research Topic**
Mengchun Pan	PhD/3rdyear	Nanopatterning
Bin Liu	PhD/3rd year	Nanostructures

Aiming Yan	PhD/3rd year	Novel microscopy and scattering
Shiayou Chou	PhD/3rd year	Bio-Nano-Sensors
Shraddha Avasthy	PhD/2ndyear	Micro Cantilevers
Shih-Han Lo	PhD/2nd year	Nanomagnetic structures
Yi-Kai Huang	PhD/2nd year	Nanopatterning
Verawati	PhD/2nd year w/ NTU	Biopatterning

Post Docs

Jiaqing He	Res. Assoc.	Electron Microscopy
Prasad Kelkar	Res. Assoc.	Bio-sensing and imaging
Saurabh Sharma	Postdoc/3rd yr	Cellular transfection of nanostructures
Hrushikesh Joshi	Postdoc/2ndyr	Magnetic nanostructures for MRI
Mrinmoy De	Postdoc/2nd yr	Nano-bio Science
Tao Sun	Postdoc/1st yr	Nanopatterning and *in-situ* x-ray scattering
Soo-Hyun Tark	Postdoc/1st yr	Signal Transduction in bio-chem sensors

Undergraduates

Jonathan Lin	UG - HPME	Magnetic nanostructures for MRI
Stan Gutionov	UG - HPME	Magnetic nanostructures for MRI
James Sbarboro	UG - DePaul	Biotechnology

Recent Visiting Scientists

Domestic

Dr. Crystal Porter	Visiting Scientist	L'Oreal, USA
Prof. Eric Stach	Visiting Faculty	Purdue University, IN
Dr. Michael Radler	Visiting Scientist	Dow Chemical Co.
Dr. Seungbum Hong	Visiting Scientist	Argonne Laboratories, IL
Dr. Bernd Kabius	Visiting Scientist	Argonne Laboratories, IL
Dr. Shinichi Tachi	Visiting Scientist	Hitachi High Technologies, CA
Dr. Robert Klie	Visiting Faculty	University of Illinois at Chicago
Dr. Tsapogas	Visiting Scientist	NSF, Virginia
Dr. S. Yousef	Visiting Scientist	NSF, Virginia
Dr. M. Radler	Visiting Scientist	Dow Chemical Company
Prof. D. Green	Visiting Faculty	Penn State, PA
Dr. L. Nagahara	Visiting Scientist	NCI, Maryland

International

Dr. JY Kempf	Visiting Scientist	L'Oreal, France
Dr. Jain	Visiting Faculty	IIT, Gandhinagar
Dr. Tachi	Visiting Scientist	Hitachi, Japan
Dr. A. Aneja	Visiting Scientist	Reliance Industries, Ltd., India

Prof. CNR Rao	Visiting Faculty	IMTECH, India
Prof. K. Ramamrithen	Visiting Faculty	IIT, Bombay
Prof. D. Bahadur	Visiting Faculty	IITB, India
Dr. R. Suri,	Visiting Scientist	IMTECH, India
Prof. Lay Poh Tan	Visiting Faculty	NTU, Singapore
Prof. S. Mhaisalkar	Visiting Faculty	NTU, Singapore
Prof. Freddy Boey	Visiting Faculty	NTU, Singapore
Prof. H. Lichte	Visiting Faculty	Dresden, Germany
Prof. Yoshio Bando	Visiting Faculty	NRIM, Japan
Prof. Yeng Ming Lam	Visiting Faculty	NTU, Singapore

Current Research Projects and Funding Support ~ $ 2,400.000 yr

Support Agencies

NSF-DMR	NSF-MWN	NSF-MRI	NIH-NCI	Exxon
NSF-MRSEC	AFOSR	SRC	IBM Corp.	Intel Corp.
DARPA/DOD	ONR	DOE-BES	NSF-NSEC	DOE-BES-EFRC
Hitachi High-Technology America			DOE-BER	

Chicago Biomedical Consortium (CBC)/Searle
Indo-US Science & Technology Forum (IUSSTF)
Catalysis Center SEED Funding Program (NU)
Baxter Northwestern Alliance Program
Indo-US S&T Forum (IUSSTF)

Recent Representative Service

MSE Department

Long Range Planning Committee	2005 - present
Colloquium Committee	2005 - present
Co-Chair: Biomaterials Search Committee	2005 - 2006
50th Anniversary Celebration Committee	2004 - 2005
Director: EPIC	1995 - present
Chair: UG Recruiting and Publicity	1995 - 1999

McCormick School of Engineering

Advisory Board Member: NU-Niles University, Egypt	2009
Ad-Hoc Committee Member: Promotion and Tenure	2009
Committee Member: New Initiatives	2009
Program Member: Cancer Center, Program in Engineering and Nanotechnology in Cancer Research	2008 – present
Chair: Global McCormick	2008 - present
Chair, Ad-Hoc Committees	2005 - present
Advisor to the Dean: Global Outreach	2005 - present
Committee: Future of Engineering Education in 21st Century	1997 - 1999

Faculty Advisor: Local MRS Chapter	1991 - present
Freshmen Advisor	1991 - 2002
Freshmen Recruiting	1991 - 2002

University

Member: CLP Corporate & International Outreach/ Entrepreneurial Activities Committee	2009
Member: Global NU Committee	2009
Program Review Panel: Core Facilities	2009
Mentor: NU SROP (Summer Research Opportunity Program)	2009
Member: IIN Steering Committee	2009
One Northwestern Committee	2007 - present
Provost Committee on NU Globalization Strategy	2006 - present
Program Review of Office of VP Research	2006 - present
Vice President of Research: Committee on Nanoscience and Nanotechnology	2005 - present
Committee Member: Minority Outreach Initiative	2005 - present
Director: CCNE Nanofabrication Core	2005 - present
Program Review Committee: ME Department	2005 - 2006
Member: IBNAM; Co-PI Baxter Incubator Grant	2005 - present
Director: NU*ANCE* Center	2001 - present
Committee Member: Intellectual Property	1998 - present
Chair, Committee Member: Advisor-Student Conflict Resolution	1998 - 1999

Outside NU

Workshop Contributor: National Nanotechnology Initiative (NNI) "Future of Nanotechnology"	2010
Group Leader: NCI Alliance for Nanotechnology in Cancer, "Nanotechonolgy Tools and Fabrication Working Group"	2009
Co-Organizer: Indo-US Joint Conference on Advanced Materials Research	2009
DOE-BES: SHaRE program reviewer, Oak Ridge National Laboratory, TN	2009
Member: Chicago Council on Global Affairs	2009
Member: India Biodesign	2009
Member: International Advisory Committee for the International Conference on Nano Science and Technology, (ICONSAT), I.I.T. Bombay, India	2009
Member: AMMRF Australian Microscopy and Microanalysis Research Facility International Technical and User Advisory Group	2009
Member: NanoInk Scientific Advisory Board	2009
DOE-BES: Program Review Committee, Lawrence National Lab, Berkeley	2009

Continuing Education Intitiatives: Scanning Probe Module For JEOL Company	2008
Founder: Nanosonix, Inc.	2008
DOE: Program Reviews	2006
Organizer: MS&T 2005 Conference	2005
MRS: Spring 2004 Program Committee	2004
Program Review Committee: DOE Basic Energy Sciences. Lawrence National Lab, Berkeley	2004
External Advisory Board: IIT Bombay, INDIA	2003 - present
US Alumni Association: IIT Bombay, INDIA	2003 - present
Organizer: ASME Nano Bootcamp, ASME-NU Initiative	2003 - present
Principal Editor: Journal of Material Research, (Flagship journal of the Materials Research Society (MRS))	2000 - 2005
Program Chair/Organizer: Basic Science Division Program (The American Ceramic Society)	2000 - 2001
DOE-BESAC Committee: Panel on DOE EM Facilities	1999 - 2000
Board of Directors: IIT Bombay Heritage Forum (IITBHF)	1999 - present
Editor, Materials Science: Microscopy & Microanalysis (Flagship journal of Microscopy Society of America – MSA)	1999 - 2005
Editorial Board: Journal of Microscopy (Royal Microscopical Society, UK)	1995 - present
Panelist and Site Review Committees: NSF, DOE, DoD, NIH	1993 - present
EMSA/MAS: Program Committee (Symposium Organizer)	1992 - 1994, 1997
Reviewer for: NSF, DOE, NASA, ACS, DOD and numerous international journals.	1991 - present

Facility Leadership

Director, NU*ANCE* Center	2001 - present
Director, Electron Probe Instrumentation Center (EPIC)	1995 - present

Journal Publications/Book Chapters

(230+ archival publications, "H" index of 38 as of Summer 2009)

1. Dravid VP, Notis MR, Lyman CE, "Electron-Microscopy of Boundary Structure in Calcium Zirconate", Journal of Material Sci., Vol. 22 (12): pp: 4546-4549 (1987)
2. Dravid VP, Lyman CE, Notis MR, "Crystallography of Phase-Transition of $YBa_2Cu_3O_{7\delta}$", Applied Physics Letters, Vol. 52 (11): pp: 933-934 (1988)
3. Dravid VP, Notis MR, Lyman CE, "Twinning and Microcracking Associated with Monoclinic Zirconia in the Eutectic System Zirconia-Mullite", Journal of the American Ceramic Society, Vol 71 (4): pp: C219-C221 (1988)

4. Dravid VP, Sung CM, Notis MR, Lyman CE, “Crystal Symmetry and Coherent Twin Structure of Calcium Zirconate”, Acta Crystallographica Section B-Structural Science, Vol 45: pp: 218-227 Part 3 (1989)
5. Dravid VP, Lyman CE, Notis MR Revcolevschi A, “High-Resolution Transmission Electron-Microscopy of Interphase Interface in NiO-ZrO_2 (CaO)”, Ultramicroscopy , Vol 29 (1-4): pp: 60-70 (1989)
6. Dravid VP, Sutliff JA, Westwood AD, Notis MR Lyman CE, “On the Space Group of Aluminum Oxynitride Spinel”, Philosophical Magazine A-Physics of Condensed Matter Structure Defects and Mechanical Properties, Vol. 61 (3): pp: 417-434 (1990)
7. Dravid VP, Lyman CE, Notis MR, Revcolevschi A, “Low-Energy Interfaces in NiO-ZrO_2(CaO) Eutectic Metallurgical Transactions”, A-Physical Metallurgy and Materials Science,Vol. 21 (9): pp: 2309-2315 (1990)
8. Dravid VP, Liu SZ, Kappes MM, “Transmission Electron-Microscopy of Chromatographically Purified Solid-State C60 And C70”, Chemical Physics Letters, Vol. 185 (1-2): pp: 75-81(1991)
9. Dravid VP, Zhang H, Marks LD, Zhang JP, “Combined HRTEM, X-Ray Microchemical and EELS Fine-Structure Analysis of Planar Defects in $YBa_2Cu_3O_{7-d}$”, Physica C, Vol. 192 (1-2): pp: 31-34 (1992)
10. Dravid VP, Lin XW, Zhang H, Liu SZ, Kappes MM, “Transmission ElectronMicroscopy of C-70 Single-Crystals At Room-Temperature”, Journal of Materials Research Vol. 7 (9): pp: 2440-2446 (1992)
11. Dravid VP, Zhang H, “Hole Formation And Charge-Transfer In Y1-Xcaxsr2cu2gao7 A New Oxide Superconductor”, Physica C Vol. 200 (3-4): pp: 349-358 (1992)
12. Zhang JP, Groenke DA, Zhang H, Deloach DI, Dabrowski B, Poeppelmeier KR, Dravid VP, Marks LD, “Local-Structure of $Y_{1-x}Ca_xSr_2Cu_2GaO_7$ Superconductors”, Physica C Vol. 202 (1-2): pp: 51-60 (1992)
13. Chen MY, Lin X, Dravid VP, Chung YW, Wong MS, Sproul WD, “Growth and Characterization of C-N Thin-Films”, Surface & Coatings Technology Vol. 55 (1-3): pp: 360-364 (1992)
14. Han B, Neumayer D, Schulz DL, Marks TJ, Zhang H, Dravid VP, “Metalorganic Chemical Vapor-Deposition Route to Epitaxial Neodymium Gallate Thin-Films”, Applied Physics Letters Vol. 61 (25): pp: 3047-3049 (1992)
15. Zhang H, Dravid VP, “Transmission High-Energy Electron-Energy Loss Spectrometry (EELS) of Cuprate Superconductors”, Applied Superconductivity Vol. 1 (1-2): pp: 141-149 (1993)
16. Han B, Neumayer DA, Schulz DL, Hinds BJ, Marks TJ, Zhang H, Dravid VP, “Insitu Growth of Epitaxial Yalo3 Thin-Films By Metal Organic-Chemical Vapor-Deposition” , Chemistry Of Materials Vol. 5 (1): pp:14-16 (1993)
17. Lin XW, Wang YY, Dravid VP, Michalakos PM, Kung MC, “Valence States and Hybridization in Vanadium-Oxide Systems Investigated by Transmission Electron-Energy-Loss Spectroscopy”, Physical Review B Vol. 47 (7): pp: 3477-3481 (1993)

18. Zhang H, Wang YY, Dravid VP, Dabrowski B, Zhang K, “Unusual Defect and Domain-Structure in $YBa_2Cu_4O_8$ (Y124) Single-Crystals”, Physica C Vol. 207 (1-2): pp:167-174 (1993)

19. Dravid VP, Lin X, Wang Y, Wang XK, Yee A, Ketterson JB, Chang RPH, “Buckytubes and Derivatives - Their Growth and Implications for Buckyball Formation” , Science Vol. 259 (5101): pp: 1601-1604 (1993)

20. Wang XK, Lin XW, Dravid VP, Ketterson JB, Chang RPH, “Growth and Characterization of Buckybundles”, Applied Physics Letters Vol. 62 (16): pp: 1881-1883 (1993)

21. Zhang H, Wang YY, Dravid VP, Dabrowski B, Zhang K, Hinks DG, Jorgensen JD, “Anisotropy of Charge-Carriers and Dielectric Function of $YBa_2Cu_4O_8$ (Y124)”, Physica C Vol. 208 (3-4): pp: 231-237 (1993)

22. Wang YY, Zhang H, Dravid VP, Shi D, Hinks DG, Zheng Y, Jorgensen JD, “Evolution Of The Low-Energy Excitations And Dielectric Function Of $Ba_{1-x}K_xBiO_3(0<x<0.50)$”, Physical Review B Vol. 47 (21): pp: 14503-14509 (1993)

23. Zhang JP, Li DJ, Boldt C, Plass R, Dravid VP, Marks LD, Lin CH, Eades JA, Sodonis A, Wolbach W, Chabala JM, “ Levisetti Microstructure and Properties of Cu-Rich 123 .2. Homogeneous Copper And High Magnetic Jc”, Journal of Materials Research, Vol. 8 (6): pp: 1232-1239 (1993)

24. Chen MY, Li D, Lin X, Dravid VP, Chung YW, Wong MS, Sproul WD, “Analytical Electron-Microscopy and Raman-Spectroscopy Studies of Carbon Nitride Thin-Films”, Journal of Vacuum Science & Technology A-Vacuum Surfaces and Films Vol. 11 (3): pp: 521-524 (1993)

25. Duray SJ, Buchholz DB, Zhang H, Song SN, Schulz DL, Dravid VP, Marks TJ, Ketterson JB, Chang RPH, “Superlattices of Yba2cu3o7-Delta/Prba2cu3o7-Delta Grown by the Pulsed Organometallic Beam Epitaxy Method” Journal of Vacuum Science & Technology A-Vacuum Surfaces And Films Vol.11 (4): pp: 1346-1348 Part 1 (1993)

26. Kumta PN, Dravid VP, Risbud SH, “Structural Characterization of Chemically Synthesized Cubic Lanthanum Sulfide (γ-La_2S_3) ”, Philosophical Magazine B-Physics of Condensed Matter Statistical Mechanics Electronic Optical and Magnetic Properties Vol. 68 (1): pp: 67-84 (1993)

27. Chen MY, Lin X, Dravid VP, Chung YW, Wong MS, Sproul WD, “ Synthesis and Tribological Properties of Carbon Nitride as a Novel Superhard Coating and Solid Lubricant”, Tribology Transactions Vol. 36 (3): pp: 491-495 (1993)

28. Zhang H, Dravid VP, “Transmission High-Energy Electron-Energy-Loss Spectrometry (EELS) Analysis of Hole Formation and Charge-Transfer in p-Type Doped Cuprate Superconductors”, Journal of the American Ceramic Society Vol. 76 (5): pp: 1143-1149 (1993)

29. Chung YW, Li D, Lin XW, Dravid VP, Chen MY, Wong MS, Sproul WD, “Synthesis and Characterization of Ultrahigh Strength Carbon Nitride Thin-Films Prepared by Magnetron Sputtering”, Vide-Science Technique Et Applications Vol. 49 (267): pp: 181-188 (1993)

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Inventions/Patents

Over 15 patents issued/pending in synthesis of nanostructures, nanopatterning, bio-chem sensing, metrology, instrumentation and software control.

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18. Johnson, Lynn D, Dravid, Vinayak P. “Evaparator Apparatus and Method for Making Nanoparticles.” U.S. Patent 5,618,475. Issued 8 April 1997.
19. Dravid, Vinayak P, Teng, Mao-Hua, Host, Jonathan J, Elliott, Brian R, Johnson, Lynn D, Mason, Thomas O, Weertman, Julia R, Hwang, JH. “Graphite

Encapsulated Nanophase Particles Produced by a Tungsten Arc Method." U.S. Patent 5,472,749. Issued 5 December 1995.

Talks/Presentations (Invited)

2010

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

2. "Emerging Microscopy and Spectroscopy: A Window to the Nanoworld," ICONSTAT 2010, Mumbai, India, February 2010.

3. "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.

2009

1. "Science, Technology, Education and Policy (STEP)," Vibrant Gujarat Global Investor's Summit, Gujarat, India, January 2009.
2. "Nanotechnology a Decade Later: Prospective and Prospects," Nanotech Conference: Sanken International Symposium, Osaka, Japan, January 2009.
3. "Teaching "Old" Dogs "New" Tricks: Synthesis and Nanopatterning of Multifunctional Oxides," JNCASR (Jawaharlal Nehru Centre for Advanced Scientific Research), Bangalore, India, April 2009.
4. "Nanotechnology: Hip, Hope or Hype?" Nanotechnology Town Hall Meeting V, Evanston, IL, May 2009.
5. "Teaching Old Materials New Tricks: Nanopatterning and Localized Properties of Multifunctional Oxides," CNM Nanoscience Colloquium, Argonne National Laboratory, June 2009.
6. "Synthesis, Patterning and Properties of Nanostructured Oxides," INDO-US Joint Conference on Advanced Materials, Bangalore, India,September 2009.
7. "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.
8. "Towards Targeted In-Vivo Theranostics with Magnetic Nanostructures," 11th International Conference on Advanced Materials (ICAM), Rio de Janeiro, Brazil, September 2009.
9. "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.

10. “Nanopatterning of Multifunctional Oxides: Teaching Old Materials New Tricks,” DFG-NSF Conference, New York, New York, October 2009.
11. “Nanotechnology and Business: Hype, Hope or Hip?” Brinks Hofer Gilson & Lione and the NanoBusiness Alliance (NBA) Nanotechnology Seminar, Chicago, IL, December 2009.

2008

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

2007

1. “Interdisciplinary Nanomechanics: From Acoustic Imaging to Microcantilever-based BioChemSensing,” PittCon 2007 Waters Symposium, Chicago, IL, February 2007.
2. “Nanotechnology and Business: Hip, Hype or Horrible,” Reliance Industries, Mumbai, India, February 2007.
3. “Disruptive Technology Opportunities in Nanotechnology,” Reliance Industries, Mumbai, India, February 2007.
4. “Emerging Nanostructures and Devices for Nano-Bio-Medicine,” Children’s Memorial Research Center Academic Day, Chicago, IL April 2007.
5. “Overview of the NU*ANCE* Center,” Centerpiece Live, Evanston, IL, May 2007.
6. “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.
7. “Teaching Old Materials New Tricks: Site –Shape- Specific Patterning of Functional Nanostructures,” University of Albany MSE Colloquium Series, Albany, NY, May 2007.

8. "Emerging Nanostructures and Devices for Imaging and Therapeutics," Pfizer meeting, Evanston, IL, June 2007.
9. “Some Assembly Required: Patterning, Lithography and Functional Identity of Nanostructures,” McBain Memorial Lecture, NCL, Pune, India, July 2007.
10. “Variable Pressure Soft Electron Beam Lithography (VP-e BL),” Microscopy and Microanalysis 2007, Fort Lauderdale, FL, August 2007.
11. “Some Assembly Required: Self-, Directed- and Hierarchical Patterning and Assembly of Functional Nanostructures,” South Africa, University of Zululand,August 2007.
12. “Appropriate Microscopy at Appropriate Resolution (AMAR),” University of California, Berkeley, September 2007.
13. “Nanotechnology: Hip, Hype or Horrible?!” Illinois Engineering Council - Key Note Speaker, Chicago, IL, October 2007.
14. “Emerging Nanostructures and Devices for Biomedicine,” IEEE Sensor Council Symposium (Chaired by Larry Nakahara, NCI): Atlanta, GA, October 29, 2007.
15. "Seeing the Invisible: Holography and Interference Scanning Probe Microscopy in the Nonlinear Regime," DSRC -DARPA Workshop, Arlington, VA, November 7-8, 2007.
16. “Seeing and Sensing the Invisible: Emerging Nanostructures and Devices for Biochemical Imaging, Diagnostics and Therapeutics,” University of Washington Seattle, WA, November 19-20, 2007.
17. “Teaching ‘Old’ Materials ‘New’ Tricks: Patterning, Microscopy and Functional Identity of Nanostructures,” University of Washington Seattle, WA, Nov. 19-20, 2007.
18. “Some Assembly Required: Nanopatterning of Multifunctional Materials,” Nano 2007, Bangalore, India, December 2007.

2006

1. “Nanopatterning of Functional Inorganics,” IED Detection Symposium, Sandia National Laboratory, Albuquerque, NM, January 2006.
2. “Nondestructrive Subsurface Analysis with SPM,” University of Pennsylvania Nanoprobe Network, Philadelphia, Pennsylvania, January 2006.
3. “Top Down Meets Bottom Up: Emerging Paradigms in Bio-Chem Nanosensors,” IIT Colloquium Series, Chicago, IL, February 2006.
4. “Emerging Microscopy Techniques: Answers Looking for Appropriate Questions,” State Microscopical Society of Illinois Meeting, Chicago, IL, February 2006.
5. “Interdisciplinary Nanomechanics: From Acoustic Imaging to Microcantilever-based Bio-Chem Sensing,” UIUC Electrical Engineering Colloquium Series, Urbana, IL, February 2006.
6. “Teaching Old Materials New Tricks: Nanopatterning of Functional Inorganics,” Iowa State University Colloquium Series, Ames, IA, March 2006.

7. “Teaching Old Materials New Tricks: Nanopatterning of Functional Inorganics,” UT Austin Nano Colloquium Series, Austin, TX, March 2006.
8. “Nanostructured Devices,” Honeywell visit, Minneapolis, MN, March 2006.
9. “Nanomechanics Based Devices for Imaging and Sensing,” NSF-Korea Workshop, Seoul, Korea, April 2006.
10. “Emerging Nanostructures and Devices for Novel Diagnostics and Therapeutics, ”ENH GE meeting, Evanston, IL, June 2006.
11. “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.
12. “Status and Future of NUANCE Center,” DuPont Corp., Wilmington, DE, June 2006.
13. “Electron Microscopy & Spectroscopy,” ASME Nano Bootcamp, Minneapolis, MN, July 2006.
14. “Electron Microscopy and Spectroscopy,” NSF Short Course, Evanston, IL, August 2006.
15. “Magnetic Nanostructures for Biomedicine,” Nano 2006 Meeting, Bangalore, India, August 2006.
16. “Nanopatterning of Inorganics,” Nano 2006 Meeting, Bangalore, India, August 2006.
17. “Nanomechanics in Microelectronics: From Ultrasound Holographic Imaging to MOSFET-Embedded Microcantilevers,” Intel Visit, Ronler Acres, OR, September 2006.
18. “Getting More out of the Scanning Probe: From Acoustic Holographic Imaging to Bio-Chem Sensing,” Frontiers of Microscopy Workshop, West LaFayette, IN, October 2006.
19. “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.
20. "MOSFET-Embedded Microcantilevers," IEEE Sensors 2006 conference, Daegu, Korea, October 2006.
21. “Emerging Nanostructures and Devices for Imaging, Diagnostics and Therapeutics,” TDD Bioimaging Symposium, University of Toronto, Toronto, Ontario, November 2006.
22. "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

1. “Integrating Emerging Bio Nano Structures on Engineering Platform: Bottom Up Meets Top Down,” Nanotechnology Workshop Organizer, Bombay, India, January 2005.
2. “Novel Electronic Transduction Scheme for Biomolecular Binding Events,” APS Annual Meeting, Los Angeles, CA, March 2005.

3. “High Resolution Near - Field Acoustic Holography (NFAH) of Embedded Nanostructures,” ASME Nanotechnology Institute, Knoxville, TN, May 2005.
4. “Advanced Microscopy and Spectroscopy: Window to the Nanoworld,” Mornings at McCormick-Northwestern University, Evanston, IL, May 2005.
5. “Advanced Microscopy,” ASME Nanobootcamp,” Washington, DC, July 2005.
6. “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.
7. “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.
8. “Bio-Chem Nanosensors,” University of Buenos Aires, Argentina, September 2005.
9. “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.
10. “Some Assembly Required: Building Nanostructures from the Bottom Up Across Length Scales," NanoCommerce/NanoForum, Chicago, IL, October 2005.
11. “Nanotechnology Programs at Northwestern: Partner in Leadership,” Hitachi Corp, San Francisco, CA, October 2005.
12. “SNFUH Approach for Nano-Metrology,” SRC-NIST Workshop, Washington, DC, December 2005.

2004

1. “Nanopatterning of Oxide Sensor Elements,” NIST, Washington, DC, January 2004.
2. “Teaching Old Materials New Tricks: Site-and Shape Specific Nanopatterning,” DPN Workshop, Florida, January 2004.
3. “New Paradigms in Bio-Chem Sensing via Nanostructured Materials,”Argonne National Laboratory, Argonne, IL, February 2004.
4. “Teaching Old Materials New Tricks: Site-and Shape Specific Nanopatterning on Inorganics,” MSE Dept Colloquium Series Seminar at University of Pennsylvania, February 2004.
5. “Bio-Chem Nanosensors,” University Buenos Aires, Argentina, March 2004.
6. “Novel Bio-Nano Sensors,” University Colloquium Series Seminar at Virgina Commonwealth University, March 2004.
7. “Probing the Invisible: Near Field Acoustic Holography &Towards Novel Paradigms in Nano-bio sensors,” AcerS Annual Meeting, Indianapolis, IN, April 2004.
8. “Site Specific Nanopatterning of Inorganics,” Materials Research Society,Spring 2004 Meeting, San Francisco, CA, April 2004.

9. "Towards Novel Paradigms in Nano-Bio Sensors," Americas Materials Conference: Chile, US, and Brazil at Santiago, Chile, April 2004.
10. "N3: Nanotechnology and Nanoscience at Northwestern," Nano-Bio Outreach Workshop, Palo Alto, CA, May 2004.
11. "Site-specific Nanopatterning of Inorganics: Nanodots and Microcantilevers," Dept Colloquium, University of Wisconsin, Milwaukee, WI, May 2004.
12. "Emerging Bio-Chem Nanosensors," IMTECH, NCL, Pune, and IIT Bombay, India, July 2004.
13. "Nanoscale Science, Technology and Educational Initiatives at Northwestern," US-India Nano Workshop, Bangalore, India, August, 2004.
14. "NU*ANCE* Center," US-India Nano Workshop, Bangalore, India, August, 2004.
15. "To Find a Needle in a Haystack: In-situ Manipulation and Measurements of Nanostructures," CNMS-ORNL, Knoxville, TN, September 2004.
16. "Nanotechnology Beyond the Hype: Towards High Technology Job Creation and Illinois Leadership," State of Illinois Trade Office Meeting, Chicago, IL, September 2004.
17. "Nanopatterning and Microscopy of Nanostructures," Nanotech Seminar at 3M, Minneapolis, MN, October 2004.
18. "Novel Electronic Transduction Scheme for Biomolecular Binding Events," DARPA/Simbiosys PI Meeting, Vail, CO, October 2004.
19. "Integrating Emerging Bio Nano Structures on Engineering Platform: Bottom UP Meets Top Down," Purdue University, West LaFayette, IN, November 2004.
20. "Probing the Invisible: NFAH," Fall MRS Meeting, Boston MA, November 2004.
21. "Probing the Invisible: Near Field Acoustic Holography," DARPA meeting, NSF-NIH Workshop, Washington, DC, November 2004.
22. "Tuning GB Barrier via Thermal Treatment," Boston, MA, November 2004.
23. "Integrating Emerging Bio Nano Structures on Engineering Platform: Bottom Up Meets Top Down," National Chemical Laboratory, Pune, India, December 2004.

2003

1. "Nanosensors for BCW Agents," Oak Ridge National Laboratory, Oak Ridge, TN, January 2003.
2. "Functional Nanopatterns for Ferroelectrics," Sandia National Laboratory, Albuquerque, NM, March 2003.
3. "Inorganic Nanotstructures for Bio-Chem Sensors," Annual AcerS Mtg, Nashville, TN, May 2003.
4. "Development of Central User Facilities and Multiuser Coordination," Faculty Academic Network Workshop, Palo Alto, CA, June 2003.

5. “Nanotechnology at Northwestern University,” Post PASI visit, Univ. Buenos Aires, Argentina, June 2003.
6. “Towards Electronic Nano-Nose,” Post PASI visit, Univ. Buenos Aires, Argentina, June 2003.
7. “Introduction to NUANCE Center,” Veeco Inc., information session, Santa Barbara, CA, July 2003.
8. “Nanopatterning of Functional Inorganics,” MRSEC Seminar, Santa Barbara, CA, July 2003.
9. “Scanning Acoustic Holography,” Veeco Inc., Santa Barbara, CA, July 2003.
10. “Holography and Interference Microscopy,” Annual Microscopy Mtg, San Antonio, TX, July 2003.
11. “Site Specific Nanopatterning,” Annual Microscopy Mtg, San Antonio, TX, July 2003.
12. “Dip Pen Nanopatterning (DPN) of Inorganics,” AFOSR-MURI Review, Dayton, OH, September 2003.
13. “Nanopatterning,” Integrated Nanosystems Meeting, Palo Alto, CA, September 2003.
14. “Near Field Holography,” SEMATECH, Analytical Manager Meeting, Austin, TX, September 2003.
15. “Nanopatterning of Inorganics,” Brazilian Materials Society Bi-Annual Meeting, Rio de Janeiro, October 2003.
16. “Emerging Issues in Nanoscience and Nanotechnology,” IIT Bombay, India, December 2003.
17. “Advanced Electron Microscopy of Interfaces and Defects,” IIT Bombay, India, December 2003.
18. “Site-and Shape Specific Nanopatterning of Ferroelectrics,” Annual Materials Research Meeting, Boston, December 2003.
19. “Probing Ferroelectric Domain Dynamics,” Annual Materials Research Meeting, Boston, December 2003.
20. “Material Science and Integration of a New Hybrid TiAl- Layer,” Annual Materials Research Meeting, Boston, December 2003.
21. “Miniaturized Electronic Nano-Nose,” Annual Materials Research Meeting, Boston, December 2003.

2002

1. “Teaching Old Ceramics New Tricks: Site-Specific Nanopatterning of Functional Inorganics,” Gordon Research Conference, Meriden, NH, August 2002.
2. “Nanotitration of Active Grain Boundaries,” Electroceramics VIII conference, Rome, Italy, August 2002.

3. “Electron Holography in Materials Science,” Intl. Conf. On Electron Microscopy, Durban, South Africa, Aug-Sept. 2002.
4. “Better Transparency and Conductivity through ALCHEMI,” Intl. Conf. On Electron Microscopy, Durban, South Africa, Aug-Sept. 2002.
5. “Site- and Shape-Specific Nanopatterning of Ceramics,” Colloquium, University of Illinois at Urbana-Champaign, September 2002.
6. “Nanopatterning of Addressable Functional Inorganic Nanostructures,” PASI, Joint Argentina-NSF workshop on Ferroelectrics, Rosario, Argentina, September 2002.
7. “3-D Nanomanipulation in TEM for Nanostructures,” ASME Annual Meeting, New Orleans, LA, November 2002.
8. “Nanopatterning of Functional Inorganics,” IBM Watson, Yorktown Heights, NY, November 2002.
9. “Nanostructures for Functional Duties,” International Conference on Inorganic Materials, IIT Bombay, INDIA, December 2002.
10. “Site-and Target specific Drug Delivery Approaches,” International Conference on Inorganic Materials, IIT Bombay, INDIA, December 2002.
11. “Nanopatterning,” Annual MRS Meeting, Boston, MA, December 2002.

2001

1. “Advanced Electron Microscopy in Materials Research at Northwestern University,” Nissei Sangyo America, Mountain View, CA, January 2001.
2. “Patterning Magnetic Nanostructures,” DPN Workshop, Key West, FL, February, 2001.
3. “Synthesis, Characterization and Patterning of Soft and Hybrid Nanostructures,” NIH, Bioengineering Seminar, February 2001.
4. “Electron Holography of Active Structures,” University of Oslo Workshop on Advanced EM, Oslo, Norway, March 2001.
5. “Hierarchical Length-Scale Influence on Interfacial Phenomena,” MSE Seminar, Lehigh University, Bethlehem, PA, May 2001.
6. “Probing the Invisible: Electron Holography of Electrically Active Interfaces,” First European Workshop on Electron Holography, Stockholm, Sweden, June 2001.
7. “In-situ Electron Holography of Active Nanostructures,” Workshop on In-Situ EM, National Center for EM, Berkeley, CA, June 2001.
8. “When Electrons Meet Light: Advanced EM of Optical Active Oxides,” NU-CNRS Workshop, Evanston, IL, June 2001.
9. “Focused Ion Beam: More than just a fancy IBT,” Microscopy and Microanalysis’ 2001, Long Beach, CA, August 2001.
10. “When Electrons Meet Light: ALCHEMI of Optical Active Oxides,” Microscopy and Microanalysis’ 2001, Long Beach, CA, August 2001.

11. "Towards Predictive Structure-Property Relationship for Electrically Active Interfaces," RPI, Materials Science Colloquium, Troy, NY, September 2001.
12. "Synthesis, Patterning and Microscopy of Nanostructures," U. Conn, MSE Dept Colloquium, October 2001.
13. "Development and Management of Shared User Facilities," MRSEC Director's Meeting, Brown Univ., November, 2001.
14. "Microscopy for Nanotechnology and Vice Versa," IIT Bombay, India, December, 2001.

2000

1. "How Low Can One Get? Low Voltage Imaging and Spectroscopy with FEG SEM," MAS NY Chapter, MAS Tour Speaker Event, Fishkill, NY, February 2000.
2. "Low Voltage Imaging, Diffraction and Spectroscopy," General Electric,, Central R & D, Schenectady, NY, March 2000.
3. "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.
4. "Probing the Invisible: Electron Microscopy of Nanostructures," Physics and Nanotechnology Initiative Colloquia, Univ. of Central Florida, Orlando, FL, March 2000.
5. "Towards Structure-Property Relationship for Electroceramic Interfaces," MSE Colloquium, Lehigh University, Bethlehem, PA, March 2000.
6. "Graphite Encapsulated Magnetic (GEM) Nanocrystal: Carriers for Site-Specific Drug Delivery?!" Invited Presentation, Annual Retreat of the Robert H. Lurie Comprehensive Cancer Center, Evanston, IL, March 2000.
7. "Teaching Old Nanostructures New Tricks," MSE Colloquium, Northwestern University, Evanston, IL, October 2000.
8. "Dynamics of Electrically Active Interfaces," MSE Seminar, KAIST, S. Korea, October 2000.
9. "Electron Holography and Spectroscopy of Interfaces," Keynote Address, Annual Meeting of the Korean Ceramic Society, Chunchun, S. Korea, October 2000.

1999

1. "Engineering First: Integrating Basic Sciences and Mathematics in Engineering Curricula," IIT Bombay, India, March 1999.
2. "Advanced Electron Microscopy of Nanostructures," Tata Institute for Fundamental Research, Bombay, India,March 1999.
3. "In-Situ Dynamic Studies of Electrically Active Interfaces," MRS Spring Mtg., San Francisco, CA, April 1999.
4. "Electron Holography of Active Interfaces," Annual Mtg. of the Amer. Ceram. Soc., Indianapolis, IN, April 1999.

5. "Probing the Invisible: Electron Spectroscopy and Holography of Electrically Charged Interfaces." MSE Colloquium, Georgia Tech., Atlanta, GA, May 1999.
6. "Electron Holography of Active Junctions," IBM Watson Research Center, Yorktown Heights, NY, July 1999.
7. "Probing Electrically Active Interfaces," Bell Labs, Lucent Technologies, Murray Hill, NJ, July 1999.
8. "Dynamics of Grain Boundary Space-Charge Potential in Electroceramics," Microscopy and Microanalysis 99, Portland, OR, August 1999.
9. "Analytical Electron Microscopy of Composite Interfaces," Microscopy and Microanalysis 99, Portland, OR, August 1999.
10. "Hierarchy of Length-Scales in Crack Propagation and Fracture," NIST/CRC Invitee Workshop, Gaithersburg, MD, September 1999.
11. "Electron Holography of Active Structures," SEMATECH, Austin, TX, October 1999.
12. "Dynamics of Charged Interfaces via Electron Holography," Motorola, Austin, TX, October 1999.
13. "Electron Holography of Charged Interfaces," Applied Micro Devices, Sunnyvale, CA, November 1999.
14. "Dynamics of Electrically Active Interfaces," Ann. MRS Fall Mtg., Boston, MA, Nov/Dec 1999.

1998

1. "Analytical Electron Microscopy in Materials Science," Naka Works, Hitachi Corp., Ibaraki, Japan, January 1998.
2. "Electron Probe Instrumentation Center (EPIC)," Advanced Research Laboratory, Hitachi Corp., Japan, January 1998.
3. "Statics and Dynamics of Interfaces in Electroceramics," US-Japan Workshop on Electrically Charged Interfaces, MIT, Cambridge, MA,March 1998.
4. "In-Situ TEM Studies of Domain Switching Dynamics in Ferroelectric Thin Films," Int. Symp. on Ferroic Domains and Mesoscopic Structures (ISFD-5), PennState Univ., University Park, PA, April 1998.
5. Dynamic TEM of Interfaces and Defects," Ann. Mtg. Ohio Chapter of the AVS, Cleveland, OH, June 1998.
6. "Spectroscopy of Oxide Superconductors," CNRS Workshop on Emerging Issues in HTS, Caen, France, July 1998.
7. "Statics and Dynamics of "Charged" Interfaces in Electroceramics," Microscopy and Microanalysis 98, Atlanta, GA, July 1998.
8. "Anisotropy of Electron Structure and Transport Properties of Oxide Superconductors," Microscopy and Microanalysis 98, Atlanta, GA, July 1998.

9. "Seeing Invisible: Electron Spectroscopy and Holography of Electrically Active Interfaces," Gordon Research Conference, Solid State Studies in Ceramics, Meriden, NH, August 1998.
10. "Transmission Electron Microscopy, Spectroscopy and Holography of Nanostructured Materials," Intl. Conf. on Electron Microscopy (ICEM-98), Cancun, Mexico, September 1998.
11. "Probing the Invisible at Electrically Active Interfaces," MSE Colloquium, Cal Tech., Pasadena, CA, October 1998.
12. "Electron Microscopy of Nanostructured Materials," Plenary Lecture, Bi-annual Mtg. of the Brazilian Society for Electron Microscopy, Brazil, October 1998.
13. "Analytical Electron Microscopy of Interfaces," Keynote Lecture, Bi-annual Mtg. of the Brazilian Society for Electron Microscopy, Brazil, October 1998.

1997

1. "AEM of Interfaces," Arizona State University, Tempe, AZ, January 1997.
2. "Crack Propagation in DSEs: Experimental and Simulations," NIST, Gaithersburg, MD, January 1997.
3. "Electrically Active Interfaces in Ceramics," Case Western Reserve University, Cleveland, OH, February 1997.
4. "Interfaces in DSE's of Oxides," Wright-Patterson Air Force Laboratories, Dayton, OH, March 1997.
5. "Introduction to Scanning Microscopy," Invited Tutorial, Ann. Mtg. of Scanning Microscopy, Chicago, IL, May1997.
6. "Valence Band EELS," Ann. Mtg. of Scanning Microscopy, Chicago, IL, May 1997.
7. "Electron Spectroscopy and Holography of Interfaces," Microscopy Society of America, Annual Meeting, Cleveland, OH, August 1997.
8. "EBSD in a cold FEG SEM," Microscopy Society of America, Annual Meeting, Cleveland, OH, August 1997.
9. "Statics and Dynamics of Electroceramics," MSE Colloquium, Univ. Illinois @ Urbana-Champaign, Urbana, IL, September 1997.
10. "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.
11. "Interfaces in Electroceramics," MSE Colloquium, Carnegie Mellon University, Pittsburgh, PA, September 1997.
12. "In-Situ Electron Microscopy," Ann. Mtg. of MRS, Boston, MA, November, 1997.
13. "Dynamics of Electrically Active Interfaces," Ann. Mtg. of MRS, Boston, MA, November 1997.

14. “Seeing the Invisible: Electron Holography of Charged Interfaces,” Cavendish Laboratory, Cambridge University, Cambridge, U.K., December 1997.
15. “Analytical Electron Microscopy in Materials Science,” Indian Institute of Science, Bangalore, India, December 1997.

1996

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

1995

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

1994

1. "Microscopy and Spectroscopy of Ionic Interfaces," Invitee Workshop on Ionic Interfaces, Max-Planck Institute, Ringberg Castle, Germany, March 1994.
2. "Dielectric Function and Electronic Structure of Oxide Superconductors." Bhabha Atomic Research Center (BARC) Bombay, India, March 1994.
3. "Synthesis, Characterization and Properties of Buckytubes," Ann. Electrochemical Society Meeting, San Francisco, CA, May 1994.
4. "Transmission EELS in Materials Science," EELSI-94 Invitee Conference, Leukerbad, Switzerland, July 1994.

5. "Electron Spectroscopy and Interferometry of Electronic Ceramics," Microscopy Society of America, New Orleans, LA, July 1994.
6. "Electron Interferometry and Holography of Real Materials," First Intl. Conference on Electron Holography, Knoxville, TN, August 1994.
7. "Analytical Electron Microscopy in Ceramics Science," Materials Science & Engineering Seminar Series, University of Illinois @ Urbana-Champaign, October 1994.
8. "Electron Spectroscopy and Holography of Electroceramic Interfaces," Ann. Fall Mtg. of MRS Boston, MA, November 1994.
9. "Towards Structure-Property Relationship for Electroceramic Interfaces," NIST, Gaithersburg, MD, December 1994.
10. "Interphase Interfaces in Structural Eutectics," General Electric, Corporate R & D, Schenectady, NY, December 1994.

1993

1. "Atomic Structure of Interphase Interfaces in Oxides," Materials Science and Engineering Fall Seminar, Cornell University, Ithaca, NY, September 1993.
2. "Bicrystallography and Plan-View CBED," MSA (EMSA) 93, Cincinnati, OH, August 1993.
3. "Electron Spectroscopy of Internal Interfaces in Ceramics: A Status Update and Forecast," MSA (EMSA) 93, Cincinnati, OH, August 1993.
4. "Electron Holography of Internal Interfaces in Electroceramics: Fact or Fiction?" MSA (EMSA) 93, Cincinnati, OH, August 1993.
5. "Artifacts in AEM of Interfaces: From Specimen Preparation to Data Analysis," Great Lakes EM Society Association (GLEMA), Indianapolis, October 1993.
6. "Analytical Electron Microscopy in Catalysis Research," Amoco R & D, Naperville, IL, July 1993.

1992

1. "High Spatial and Energy Resolution EELS with the HF-2000 ARAEM." First ORNL/UT Workshop on Coherent Beam Electron Microscopy, Knoxville, TN, June 1992.
2. "Atomic Resolution Analytical Electron Microscopy and Electron Holography: Implications for Materials Science," Laboratoire de Chimie des Solides, Universite de Paris-Sud, Orsay, FRANCE, July 1992.
3. "High Spatial and Energy Resolution Analytical Electron Microscopy," First Intl. Symposium on Quantitative Electron Microscopy, National Center for Electron Microscopy, LBL, CA., August 1992.
4. "Space-Group Determination by CBED: G-M Lines, Crosses and HOLZ Interactions," Ann. Mtg. of EMSA, Boston, MA, August 1992.

5. "Determination of Electronic Structure of Oxides by EELS," Workshop on Grain Boundaries in High Tc Superconductors, University of Wisconsin-Madison, Madison, WI, August 30- Sept.1, 1992.
6. "Role of ARAEM in Interface Analysis of High Technology Materials," Wright-Patterson Air Force Lab., Dayton, OH, October, 1992.
7. "Electrons' Eyeview of Bucky-Balls, Tubes, Toroids and Whatever Comes Next," ASM/TMS Annual Meeting, Chicago, IL, Nov. 1992.
8. "A Journey into the Nanoworld of Buckytubes and Friends," Ann. MRS Mtg., Nov./Dec. 1992.

1991

1. "Progress in Analytical Electron Microscopy of Materials," Argonne National Laboratory, March 1991.
2. "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.
3. "Electron Microscopy Research at Northwestern University," Ann. Mtg. of Mid-West Society of Electron Microscopists, Chicago, IL, May 1991.
4. "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.