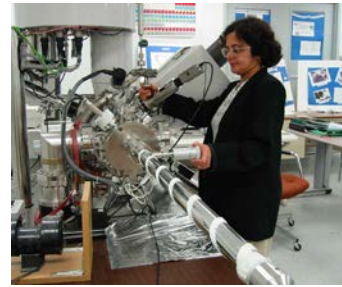


Sharmila M. Mukhopadhyay

Director, Center for Nanoscale Multifunctional Materials
Professor of Mechanical and Materials Engineering
Wright State University, Dayton, OH 45435
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AREAS OF INTEREST

Surface Phenomena; Coatings; Multifunctional Nano-materials; Nature-inspired Hierarchical Architectures; Multidisciplinary Education for Emerging Technologies.

EDUCATION

Ph.D.	Materials Science & Engineering Cornell University.	GPA: 3.9946/4.0000
M. S.	Solid State Physics Indian Institute of Technology	First Class
B. S.	Physics Hons. Indian Institute of Technology	First Class

PROFESSIONAL EXPERIENCE

2008-present	Founding Director, Center for Nanoscale Multifunctional Materials
1997- present	Dept of Mechanical & Materials Engineering Wright State University, Dayton, Ohio.
1990-1997	Dept. of Metallurgy & Materials Science (Subsequently dissolved), Polytechnic University, Brooklyn, NY.
1989 - 1990	Post- Doctoral Associate, Ceramic Research Center, Rutgers University, Busch Campus, Piscataway, NJ.
1983 - 1989	Graduate Research Assistant, Cornell University Dept. of Materials Science and Engineering
2000-03	Summer Faculty Fellow, Propulsion Directorate, WPAFB
Summer, 1986	Consultant, Oak Ridge National Laboratory

HONORS/ AWARDS

- Trustee’s Award for Faculty Excellence, Wright State University, 2011
- Fellow, American Ceramic Society, 2007
- Featured as “Nanotechnology Thought Leader”, AzoNano, 2010
- Featured as “Innovator”, Dayton Business Journal, September 9, 2005.
- Outstanding Scientist, College of Engineering and Computer Science, 2005.
- Biographed in Marquis “Who’s Who in America”, and in “Who’s Who in Science and Engineering”
- Featured in “Who’s Who in the World”
- Certificate for National Ranking (top 10) at the Indian School Certificate Examination.
- Merit Scholarship, Indian Institute of Technology.
- Multiple Research Awards from NSF, NASA, AFOSR, OBOR, DOE, EPA, industry etc.

SUMMARY OF CAREER HIGHLIGHTS

The following are the career highlights of Dr. Mukhopadhyay that are elaborated in the next few pages:

- I. **Started and currently directing the Center** for Nanoscale Multifunctional Materials (CENSMM).
- II. **Publications:** Over 150 papers, short reports, and reviews.
- III. **Research Grants and Contracts:** Obtained and directed multiple million dollars in research contracts from federal, state, and industrial sponsors such as NSF, DOE, AFOSR, AFRL, NASA, OBOR, EPA, small companies, as well as fortune 500 companies.
- IV. **Classroom Teaching** at different levels ranging from Freshmen Intro to Ph.D. Core Courses, as well as Advanced Topics. Involved in curriculum development of Materials Science and Engineering, and Alternate Energy programs.
- V. **Funded and directed graduate theses and Ph.D. dissertations** on a variety of topics. Additional participation as Committee Member in several other theses and dissertations.
- VI. **Student mentoring** in independent studies and design projects ranging from Freshmen Engineering to Capstone Design Teams.
- VII. **External educational activities** at regional, national, and international levels.
- VIII. **Development of materials fabrication and characterization facilities** for research as well as instruction.
- IX. **Services to professional organizations:** leadership positions in societies, symposium organization, proposal review panels, journal review and editorial boards.
- X. **Services to the university:** university-level, college-wide, and departmental committees.
- XI. **Outreach services and voluntary activities** for the larger community.

I. CENTER FOR NANOSCALE MULTIFUNCTIONAL MATERIALS **(CENSMM)**

Website: <http://www.engineering.wright.edu/nanocenter/>

The Center was created by Dr. Mukhopadhyay in 2008 as a charter from the Provost, Vice President of Research, and the Dean of CECS at Wright State University (WSU). It serves as a focal point for science and engineering research and education in the expanding field of nano-technology, and fosters multidisciplinary efforts of university faculty with industrial and federal researchers. Within WSU, it started with eighteen faculty members and currently has twenty two faculty members participating from five departments and two colleges in the Center. Partnering institutions include several for-profit companies, Air Force Research Laboratory, the Environmental Protection Agency, and multiple universities with funded collaborative projects.

II. PUBLICATIONS

(The following is a partial list from over 150 papers, chapters and published reports)

- S. M. Mukhopadhyay and A. Karumuri, “Nanotube attachment to prevent interfacial delamination”, J. Phys. D: Appl. Phys. 43 365301 (2010).
- E. Maurer, S. Hussain and S. M. Mukhopadhyay, “Cell Growth in a Porous Microcellular Structure: Influence of Surface Modification and Nanostructures”, Nanoscience and Nanotechnology Letters Vol. 3, 1–4, (2011)
- J. McCoppin, D. Young, T. Reitz, A. Maleszewski, S. Mukhopadhyay, “Solid oxide fuel cell with compositionally graded cathode functional layer deposited by pressure assisted dual-suspension spraying”, Journal of Power Sources 196 (2011) 3761–3765
- J. Bozeman III, I. Barney, A. Jackson, S. M. Mukhopadhyay, and H. Huang, Pt-Skin Structured Bimetallic Catalyst Supported on nano-Ceria as Sulfur-tolerant Anodes For Fuel Cells, accepted for publication in ECS Transaction, in press.
- S. M. Mukhopadhyay, A. Karumuri and I. T. Barney, “Hierarchical nanostructures by nanotube grafting on porous cellular surfaces”, J. Phys. D: Appl. Phys. 42 (2009).
- S. M. Mukhopadhyay*, “Nanoscale Multifunctional Materials: Nature Inspired Hierarchical Architectures”, AZONanotechnology Feature Article, Nanotechnology Thought Leaders Series (2009).
- Sharmila M. Mukhopadhyay*, Anil Karumuri and Ian T. Barney, “Nanotube Grafting in Porous Solids for High Surface Devices”, pp479-82, Nanotech, Vol. 3, (2009).
- Pulikollu, R.V.; Higgins, S.R.; Mukhopadhyay, S.M.; “Model nucleation and growth studies of nanoscale oxide coatings suitable for modification of microcellular and nano-structured carbon.” Surf. Coat. Technol., 2008, 203, 65-72.
- D. Das, R.N. Singh, I. T. Barney, A. G. Jackson, and S. M. Mukhopadhyay. “Effect of oxygen on growth and properties of diamond thin film deposited at low temperature.” J. Vacuum Science & Technology A, Vol. 26, No. 6, pp. 1487–1496, Nov. 2008.

- R. Pulikollu and S. M. Mukhopadhyay, "Nanoscale coatings for control of interfacial bonds and nanotube growth", *Applied Surface Science* 253 (2007).
- S. M. Mukhopadhyay, J. Su and V. Chintamaneni, "Solution Based Approaches To Fabrication of $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ (YBCO): Precursors Of Tri-Fluoroacetate (TFA) And Nanoparticle Colloids", *Journal of Electronic Materials*, for August 2007.
- J. Su, P. Joshi, V. Chintamaneni and S. M. Mukhopadhyay, "Photoelectron Spectroscopic Investigation of Transformation of Trifluoroacetate Precursors into Superconducting $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ Films" *Applied Surface Science* 253 (10): 4652-4658 MAR 15 2007
- X.M. Hu, P.Joshi, S.M.Mukhopadhyay and S.R.Higgins," X-Ray Photoelectron Spectroscopic Studies Of Dolomite Surfaces Exposed To Undersaturated And Supersaturated Aqueous Solutions" *GEOCHIMICA ET COSMOCHIMICA ACTA* 70 (13): 3342-3350 JUL 1, 2006.
- Pratik P. Joshi, Rajasekhar Pulikollu, Steven R. Higgins, Xiaoming Hu, S.M.Mukhopadhyay, " Investigation of Growth, Coverage and Effectiveness of Plasma Assisted Nano-films of Fluorocarbon", *Applied Surface Science*, June (2006).
- J. Su, S. M. Mukhopadhyay, V. Chintamaneni, S. Sengupta, R. Revur," Fabrication of A Thin Film Of Multi-Cation Oxide ($\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$) starting from Nanoparticles of Mixed Ions ", *Supercond. Sci. Tech.* 19, L51-L54, (2006).
- S. M. Mukhopadhyay, J.H. Su, V. Chintamaneni, S. Vemulakonda, and P.P. Joshi, "Comparison of YBCO Thin Films Fabricated Using Different Approaches" *Ceramic Transactions*, (2007).
- J. Su, V. Chintamaneni, and S. M. Mukhopadhyay, "Microstructure and Superconducting Behavior of $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ Films Fabricated from Colloids of Nanoparticles", accepted by *IEEE transactions of Applied Superconductivity* (2007).
- P.Joshi, R.Pulikollu & S.M.Mukhopadhyay, "Nanometer-scale Coatings for Nano-structured Solids", *Surfaces & Interfaces in Nanostructured Materials*, TMS Proceedings, March, 2006.
- S.M. Mukhopadhyay, Pratik P. Joshi, Rajasekhar V. Pulikollu, " Thin Films for Coating Nanomaterials", *Tsinghua Science and Technology*, Vol. 10, No.6, 277 – 287 (2005)
- J.H. Su, Pratik P. Joshi, V. Chintamneni, S.M. Mukhopadhyay, " The Influence of Heating Rate on YBCO Films Prepared by The Trifluoroacetate Metal-organic Deposition Process", *Superconducting Science and Technology*, Vol. 18, 1496 –1501, (2005)
- S. M. Mukhopadhyay, Pratik P. Joshi, Rajasekhar V. Pulikollu, " Surface Engineering Issues in Nanomaterials", *TRANSACTIONS OF THE INDIAN INSTITUTE OF METALS* 58 (6): 1017-1026 DEC 2005
- S. M. Mukhopadhyay R. V. Pulikollua and A. K. Roy, "Surface modification of a microcellular porous solid: carbon foam", *Applied Surface Science*, Vol: 225, 1-4, March 30, 223-228, (2004)
- S. M. Mukhopadhyay, R. Pulikollu, E. Ripberger & A. K. Roy, "Surface Modification of Graphitic Foam", *Journal of Applied Physics*, 93, 2, Jan 2003.
- Paul N. Barnes, Sharmila M. Mukhopadhyay, Swaminathan Krishnaswami, Timothy J. Haugan, Justin C. Tolliver and Imaan Maartense, "Correlation between the XPS Peak Shapes of $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ and Film Quality", *IEEE Trans. on Appl. Superconductivity*, 13, 3643 (2003).
- P. N. Barnes, T. J. Haugan, J. T. Grant, S. M. Mukhopadhyay, C. B. Cobb, M. Sumption, and J. C. Tolliver, *AC Loss and XPS Issues of YBCO Coated Conductors*, *Ceramic Transactions* (2004).
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- S. Sathiraju, R. Wheeler, P.N. Barnes, T.L. Peterson, I. Maartense, A.L. Campbell, R.M. Nekkanti, L. Brunke, J. Murphy, T.A. Campbell, N.A. Yust, T.J. Haugan, Q. Jia, P. Arendt, S. Mukhopadya, and S. Vemulakonda, Studies on YBa₂NbO₆ and YBa₂Cu_{3-x}Nb_xO_y Buffer Layers, Proceedings of AFOSR HTS Coated Conductor Peer-Review (2004).
- S.M. Mukhopadhyay, "Science & Engineering of Carbon Core Structures: Surface Engineering Issues", Proceedings of Aerospace & Materials Sciences Program Review (2004).
- S. M. Mukhopadhyay, R.V. Pulikollu & A.K. Roy, "Surface Engineering Issues in Composite Core Structures" ICCM-14, July 2003, published by Society of Manufacturing Engineers, Article # TP03PUB296.
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- P.N. Barnes, S. Mukhopadhyay, R. Nekkanti, T. Haugan, R. Biggers, and I. Maartense, XPS depth profiling studies of YBCO layer on buffered substrates, Advances in Cryogenic Engineering, 48B, pp. 614-618 (2002).
- S. M. Mukhopadhyay, N. Mahadev and P. Joshi, A. K. Roy, K. Kearns and D. Anderson "Structural Investigation of Graphitic Foam", Journal of Applied Physics, Vol. 91, No 5, 3415-3420, (2002).
- S. M. Mukhopadhyay, P. Joshi, S. Datta, J.G. Zhao, P. France, "Plasma Assisted Hydrophobic Coatings in Porous Materials", J. Phys. D: Appl Phys, 35, 1927-1933, (2002).
- S. M. Mukhopadhyay and S. Sengupta "Dopant Enhanced Processing of Superconducting Perovskites", Ceramic Transactions, Vol 104, 49-59, (2001).
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- Paul N. Barnes, Sharmila Mukhopadhyay, Rama Nekkanti, Tim Haugan, Rand Biggers, Iman Maartense, "XPS Depth Profiling Studies of YBCO Layer on Buffered Substrates", Advances in Cryogenic Engineering, ICMC, Vol 48, 614-18, (2002).
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- Sharmila M. Mukhopadhyay, N. Mahadev & S. Sengupta "Microstructural Analysis of Strongly-Linked Joint Formed in a Superconductor," Physica C, 329, 95-01 (2000).
- Sharmila M. Mukhopadhyay, Roberto Garcia and Niraj Mahadev, "Influence of Surface Doping on Sintering and Microstructure of a Superconducting Oxide", Physica C, 313, 205-12, (1999).
- S. Sengupta, E. Caprino, K. Card, J. R. Gaines, L.R. Motowildo, R.S. Sokolowski, R.R. Garcia and S.M. Mukhopadhyay, "Synthesis of Bi-Sr-Ca-Cu-O Powders for Silver Composite Wires with Uniform Microsized Filaments" IEEE transactions on Applied Superconductivity, vol.9, 2, 2601-4, June (1999).

- Sharmila M. Mukhopadhyay and C.Wei, "Interaction of Br with $Y_1Ba_2Cu_3O_{7-x}$: its role as a dopant and an etchant", *Physica C*, 295, 263-70, (1998).
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- E. Weil, W. Zhu & S. M. Mukhopadhyay, "Intumescent Flame-Retardant System of Phosphates and 5,5,5', 5', 5'', 5'', Hexamethyltris (1,3,2 Dioxaphosphorin-anemethan) amine 2,2', 2''-Trioxide for Polyolefins", *Journal of Applied Polymer Science*, Vol. 62, 2267-2280,(1996).
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- S.M.Mukhopadhyay and Tim C.S.Chen, "Interaction of PZT with Ni: Role of Surface Defects", *Journal of Physics D: Applied Physics*, 28, 2170-2175, (1995).
- Tim C.S.Chen and S.M.Mukhopadhyay, "Metallization of Electronic Fluoropolymers" *Journal of Applied Physics*, 78, 9, Nov.1, (1995).
- S.M.Mukhopadhyay and Tim C.S.Chen, "Surface Properties of Perovskites and Their Response to Ion Bombardment", *Journal of Applied Physics*, 74, 2, 872-876, July15, (1993).
- S.M.Mukhopadhyay and Tim C.S.Chen, "Ion Bombardment Induced Changes in Oxide-Metal Interactions Studied by Photoelectron Spectroscopy", *Journal of Materials Research*, 8, 8, 1958-1963, August, (1993).
- S.M.Mukhopadhyay and Tim C.S.Chen, "Understanding Surface Activity of Oxides from Metal-Ceramic Interface Formation", *Journal of Vacuum Science and Technology A*, 10 (6), 3545-3549, (1992).
- S.M.Mukhopadhyay and C.S.Chen, "Role of Surface Defects in Metal-Ceramic bonding", *Structure and Properties of Interfaces in Materials*, MRS Symp. Proc. Vol. 238, pp. 787-792, Materials Research Society, (1992).
- S.M.Mukhopadhyay and J.M.Blakely, "Ionic Double Layers at the Surface of Mg-doped Aluminum Oxide: Its Effect on Segregation Properties", *Journal of American Ceramic Society*, 74, 1, 25-30, (1991).
- S.M.Mukhopadhyay and S.H.Garofallini, "Surface Studies of TiO_2-SiO_2 Glasses by X-Ray Photoelectron Spectroscopy", *Journal of Non-Crystalline Solids*, 126, 202-208, (1990).
- S.M.Mukhopadhyay, A.P.Jardine, J.M.Blakely & S.Baik, "Ca and Mg Segregation to the (1010) Prismatic Surface of Mg-Implanted Sapphire." *Journal of the American Ceramic Society*, 71 [5] 358-362,(1988).
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- “MPMD FIFTH GLOBAL INNOVATIONS PROCEEDINGS: Surfaces and Interfaces in Nanostructured Materials and Trends in LIGA, Miniaturization and Nanoscale Materials”, Edited by Sharmila M. Mukhopadhyay, Sudipta Seal, Narendra Dahotre, Arvind Agarwal and John E. Smugeresky, March 2004.
- “Interfaces in Electronic Materials”, Ed: L. Cook, D. Misra, S. Mukhopadhyay, W. Wong-Ng, O.Leonte & K. Sundaram, Electrochemical Society, 2006.
- S.M.Mukhopadhyay, "Sample Preparation Techniques for Characterization of Solid Surfaces and Films" in *Sample Preparation Techniques in Chemical Measurements*, Edited by S. Mitra, John Wiley & Sons (2003).
- S.M.Mukhopadhyay and J.M.Blakely, “Long Range Space Charge Effects at Ceramic Interfaces” pp 205 -225 in *Science of Ceramic Interfaces*, Edited by J.Nowotny, Elsevier Science Publishers, (1991).

III. PRIMARY RESEARCH GRANTS AND CONTRACTS

Title	Sponsor	Amount	Dates
Nano-engineering of Microcellular Foam for Biocompatibility of Bone Cell (PI)	AFRL-DAGSI	\$ 71,569 (PI)	6/08-6/10
“Behavior of Carbon Nanomaterials in Aqueous Suspensions of Natural Organic Matter”	Environmental Protection Agency	\$ 400,000 (co-PI)	03/09-03/12
“Thermally responsive Encapsulated Phase Change Materials”	AFRL-DAGSI	\$ 126,681 (PI)	6/09-6/11
Influence of Water Quality on the Bioavailability and Food Chain Transport of Carbon Nano-particles	Environmental Protection Agency	\$1,000,000 (Co-PI)	03/09-03/12
A molecular modeling approach to predicting elastic and failure behavior of thermosetting polymers	AFOSR	\$ 450,000 (PI)	07/09-06/12
Multifunctional Nanomaterials	Ohio Third Frontier	\$16,000 (PI)	07/10-3/11
Surface Modification of Porous Carbon Structures	AFRL-GrafTech-DAGSI	\$40,000 (PI)	07/10-06/11
“Functionalization of Carbon nanostructures with Metal Based Nanoparticles”	AFRL-DAGSI	\$ 72,501 (PI)	6/09-6/11
Materials Characterization	CENSMM member	\$70,000 (PI)	10/07-9/09

	companies		
Seed Grant-Center for Nanoscale Multifunctional materials (CENSMM)	Ohio Board of Regents-Research Challenge	\$60,000 (PI)	6/07-5/08
Characterization of Surface Modified Substrates and Particulates using XPS	P&G Inc.	\$100,000 (PI)	5/05-5/07
Fabrication of High Jc Coated Conductors Using Colloids of Un-agglomerated Nanoparticles	DOD/STTR	\$100,000 (co-PI)	7/05-4/06
Wright Center for Multifunctional Polymer nanomaterials & Devices	Ohio Department of Development	Total \$22,489,845 (WSU as partner, share \$500,000)	10/05-09/10
Performance Enhancement of Coated Conductors by Investigation of Flux Pinning and AC Loss Issues.	DOE	\$953,601 (PI)	6/04-12/05
Hybrid Structures	AFRL	\$28,600 (PI)	9/06-8/07
Science and Engineering of Carbon Foams	AFOSR	\$78,000 (PI)	10/02 - 9/05
"High pressure Plasma Processes"	Major Industry	\$218,000 (PI)	3/01-5/03
"Surface Modification of Nano-structured Solids"	OBOR_Major Collaboration Grant	\$40,000 (PI)	6/03-12/04
" Thin Film Characterization Using XPS"	Proctor & Gamble	\$86,000 (PI)	6/03- 5/05
"Acquisition of High Resolution XPS facility"	National Science Foundation-MRI	\$ 300,000 (PI)	9/98 - 8/02
" High Resolution XPS facility"	Ohio Board of Regents: Action Fund	\$150,000 (PI)	9/98 - 8/02
"Characterization of Thin Film Superconductors"	Air Force Research Laboratory-Propulsion	\$17,160 (PI)	5/01-6/02
"Plasma Polymer Characterization using XPS"	Major Industry	\$64,000 (PI)	6/01-5/03
" Characterization of Thin Film Surfaces using XPS"	Proctor & Gamble Inc.	\$25,000 (PI)	4/00 -3/01
"Nano-structure of Carbon Core Materials"	Air Force -Materials	\$25,000 (PI)	10/00-9/01
" Characterization of Carbon Materials"	Air Force-MLBC	\$25,498 (PI)	7/99-9/00
"YBCO Toroid for Gravity Shielding"	NASA - with SCI Inc.	\$20,028 (PI)	8/99-9/01
"Characterization of Sub-micron Particles"	SCI Inc	\$5,000 (PI)	3/98 - 2/99
"Doping of BSSCO Superconductors"	Plastronics Inc	\$5,000 (PI)	4/98 - 9/98
" High Resolution XPS facility"	WSU Matching Fund	\$150,000 (PI)	9/98 - 8/02

"Nano-Structure-Property Relationships	Ohio Board of Regents Research Challenge	\$20,000 (PI)	6/00-5/01
"Surface Engineering of Complex Solids"	Ohio Board of Regents-TCG	\$41,000 (PI)	7/02-6/03
"Surface Chemistry of Plasma Polymer Films"	Ohio Board of Regents Research Challenge	\$30,000 (PI)	6/01 -5/02
Interfacial Bonding in C-Reinforced Composites	Ohio Board of Regents R C	\$18,410 (PI)	6/99-5/00
"Surface Phenomena in Superconducting Oxides"	OBOR R C	\$15,155 (PI)	1/99-12/99
"Interfacial Tailoring of Engineering Materials"	OBOR Research Challenge	\$38,677 (PI)	1/98 – 6/00
"Influence of Dopants on Metal-Ceramic Bonding"	NSF-DMR	\$185,900 (PI)	'91-'94
"Surface Science Laboratory"	Teagle Foundation Faculty Development	\$150,000 (PI)	'90-'92
"Improvement of the Superconductor-Metal Interface"	NSF-DMR	\$20,090 (PI)	'95-'96
"Surface Composition of Particulate Matter"	United States EPA	\$10,000 (PI)	'95-'96

IV. CLASSROOM TEACHING EXPERIENCE

COURSE TITLE	Info
Thermodynamics of Solids (for Mat. Sci. & Energy Programs)	Grad Core course
Ceramics for Advanced Applications (Developed new Course)	Grad Core Course
Nanomaterials (Developed new Course)	Elective
Intro. to Ceramics	Undergrad Core
Physical Ceramics	Older Elective
Phase Transformation in Solids	Graduate Core
Materials Engineering Science	Undergrad Core
Engineering Materials	Undergrad Core
X-Ray Diffraction	Elective
Physical Metallurgy	Undergrad Core
Structure- Prop. Relationship in Crystals	PH.D. Core
Developed: Electro-ceramics	Advanced Elective

Diffusion in Solids	Part of Elective
Introduction to Engineering-co-teaching with others	Freshmen Engineering
Introduction to Design- co-teaching with others	Freshmen Design
Ceramics	Grad & Undergrad Core
Analytical Techniques in Materials	Grad Advanced Elective

V. RESEARCH MENTORING AND SUPERVISION

Guidance of Post-Doc/Visiting Scientists for Multi-Institutional Activities:

1. Dr. Al Jackson, 2007-present (Nano-Center Partners & Industrial Liason)
2. Dr. Natalia Shenojina, Starting 2010 (Molecular Modeling with Air Force and U. Akron)
3. Dr. Jianhua Sun, 2005-2007 (DOE Project with SUNY Albany and AFRL)
4. Dr. Farhad Miralai, 2003-2005 (Industrial Collaboration with Proctor & Gamble)

As Thesis/Dissertation Director

In progress:

1. Ph.D. (Ian Barney) – “Nanoscale Structures for Enhanced Functionality” started S 2006
2. Ph.D. (Anil Karumuri) – “Hierarchical Structures for Composites”, started W 2010
3. Ph.D. (Betty Quinton) – “Carbon Nanotubes on Diamond Films”, started 2009.
4. M.S. (Adam Maleszewski) – “Functionalization of Carbon Nanotubes for Biological Sensors), started 2008
5. M.S. (Hema Vijwani) – “Highly Active Porous Catalysts by Attachment of Metal Nanoparticles on Hierarchical Structures”, started 2007
6. M.S. (Beth Maurer) – “Bone Cell Growth in a Porous Microcellular Structure”, started 2008.
7. B.S. Honors Thesis (Timothy Smith) – “High Temperature Solid Lubricants”: started 2010.

Completed:

8. Ph.D. (R. V. Pulikollu) -- "Modification of Interfaces" completed F 2005
9. Ph.D. (P. Joshi) -- "Surface Modification with Plasma" Completed F 2004
10. Ph.D.(Chao Wei)-- “Influence of Br on High Temperature Superconductors” Completed, May 1997.
11. Ph.D.(Tim C.S. Chen)-- “Study of Oxide-Metal Interfaces Using Electron Spectroscopy” Completed, August 1995.
12. M.S. (A. Karumuri) – “Multifunctional Coatings on Microcellular Foams”, F 2009.
13. M.S. (J. Kell) -- "Thin Film Coated Conductors" Summer 2007.
14. M.S. (D. Sharma) -- "High Temperature Superconductors" Spring 2007.
15. M.S. (S. Vemulakonda) -- "Characterization of Thin Film Coated Conductors" started Spring 2007.
16. M.S. (V. Chintamamneni) -- "Composition and Chemistry of High Temperature Superconductors" July 2006.
17. M.S. (S. Krishnaswami) -- "Characterization of Superconducting Films", Completed July, 2002.
18. M.S. (P. Joshi) -- "Plasma Polymer Modification of Surfaces " Completed Dec. 2001

19. M.S. (N. Mahadev) -- "Interface Modification of Superconductors", Completed Sept. 2000.
20. M.S.(Tim C.S. Chen)-- “ Ar Sputtering in Oxides Studied by ESCA”, completed, April 1993.
21. M.S. (J. Tolliver) -- "Pulsed Laser Deposition of Thin Film Coated Conductors" completed, 2004.
22. M.S. (Nick Yust, Co-advisor with R. Srinivasan)--, "Textured Copper Substrates for Second Generation High temperature superconductors”, completed, Nov. 2003.

As Committee Member

1. Ph.D. (Klint Simon) – “Li-anodes on Bucky-paper for pacemaker batteries”, 2008-
2. Ph.D. (Monita Sharma) – “Biological Assays for Gold Nanoparticles”, 2010-
3. Ph.D (J. Shi)--“Composite PEM Composites for Fuel Cells” completed 2008.
4. Ph.D. (Bala Cherukuri)– “Titanium Processing”, completed 2008.
5. Ph.D. (Brian Joyce) – “Deformation and Recrystallization of Coarse-grained β -Titanium” Completed 2004.
6. M.S. (Theresa Hill) – “Sol-Gel deposition of ZnO”, Completed 2010.
7. M.S. (Kirthi Paula) – “Computational Modeling of Nanographene Ribbons”, Completed 2009.
8. M.S. (Yena Li) – “Carbon Nano-Structures”, completed 2007.
9. M.S. (Murali) – “ Manipulation of Polystyrene microparticles on Microchannel Glass” Completed 2006
10. M.S. (Ravi) – “Fabrication of Polymer nanofibers by Modified Wet spinning”, Completed April, 2006
11. M.S. (Teodora Nedkova) – “Processing of AA6061 by accumulative Roll Bonding”, completed Jan. 2006.
12. M.S. (Yogesh Bahmbri)--, "Microstructure Evolution of AA 6061 Subject to Severe Plastic Deformation”, completed, Nov. 2003.
13. Ph.D. (Craig Reviello)--"Ti-Matrix Composites" in progress
14. M.S. (Goutham Gowda) -- "Paper Abrasivity", Nov. 2000.
15. M.S. (L. Gulapalli) –“Abrasive Testing of Grament Labels” F 2004
16. M.S. (John Snyder) -- "Rare Earth Metals in Welding Consumables" Nov. 2000.
17. M.S. (Jennifer Finch)--, "Fracture Behavior of Si_3N_4 -BN Fibrous Monolith Ceramic, completed, August 98.
18. M.S. (Jenny Sun)--, completed, September 99.
19. Ph.D. (Z. C. Li)-- “Superlattice Dislocations in Ti-Alloys”, completed 1992.
20. Ph.D. (J. Petruzzello)- “Structural Characteristics of ZnSe Grown by Molecular Beam Epitaxy”, completed, Dec. 1993.
21. M.S. (G. Kumar) -- “CVD Synthesis of PbTiO_3 films”, completed Aug. 1994.
22. M.S. (I. Valsenya) --“Sol-Gel Synthesis of BaTiO_3 ”, completed June 1994.
23. Ph.D. (P. Bowman) – “Ferro-magnetic Compounds”, completed, May 1997.

VI. MENTORING OF NON-THESIS STUDENTS

1. Senior Design Team (W-S 07): “Oxidation Resistant Coatings for Microcellular Foam”.
2. James Ryan, (F 05 – W 06): “Materials for Geothermal Heat Pumps”, Sr. Design Project.

3. Tom Donaldson, (F 03-W04): "Design of Experimental Tests for Mechanical Properties of Graphitic Foam."
4. Sweta Bose (Ph.D student in Earth Sciences Program): Lab experience in microscopy, W04.
5. Kristen Shiverdecker (F 03-W04): "Design of a field-Level on-aircraft Polyimide Adhesively Bonded repair Process".
6. Erik Ripberger (Su 2001ME 499, W-S 2002 ME 491-492):
Surface-Engineered Graphitic Foams For Increased Matrix Infiltration And Wettability, resulted in **student presentation at national meeting** (SAMPE, 2002) and used in a **Journal of Applied Physics publication**.
7. Paul Kennedy (1998, ME491-492)
8. Jeff Ingels: (1998, ME 491-492)
Senior Design Project Team: "Design and Construction of a Magnetically Levitated Train." The students built a superconducting train that would move frictionlessly along a magnetic track, but would resist derailment off the track. **This train is now used in all external demonstrations and student recruitment efforts.**
9. Tom Fink (1998 ME 490) & Vernon Brown (1998 ME 490)
Levitation force measuring instrument for a superconducting train-track system.
10. Adam Stechschutte, Greg Updike, and Nick Elson (1999 EGR 199),
Measurements of levitation forces in superconducting levitators.
11. Indy Roca (1998 ME 699)
Literature Search & SEM studies: Piezo-electric Microstructures
12. Niraj Mahadev (1998 ME 699)
Microscopy of nanostructures
13. Hanna Li (1999)
Training on Carbon Nanostructures as exploratory Dissertation Topic
14. Srikant Bhandari (1998)
SEM and XPS Laboratory Training with hourly financial support.
15. Terry Harbough (1999, non thesis option student)
Initial X-Ray Laboratory Training for exploring company-university collaboration options.
16. S. Mahesh (2000, ME 890)
Initial XPS on Paper Literature Search & Training for Dissertation topic selection.
17. S. Krishnaswami (2001, ME 890)
Thin Film Oxide Materials, Exploratory studies for collaborative options with AFRL.
18. Pratik Joshi (2000 & 2001, ME 890)
SiC Surface Studies (2000) and Oxygen Micro-plasma Studies (2001)
19. R. Pulikollu (2001, ME 890)
Literature Search- Advanced Studies in Superconducting Systems
20. R. Radhakrishnan (2001, ME 890)
SEM and XPS Laboratory Training with hourly financial support.
21. L. GullaPalli (F 2001, ME 898)
SEM Training for Basic Materials Science
22. Swapna Vemulakonda (F 2002, ME 699)
Microscopy & Spectroscopy of Advanced Solids

23. 1995-1997: Freshman Engineering Design Projects (**2-4 students every term**): Introduction to Engineering Design EG 102, I used to be the faculty mentor for typically 3-4 students each term, guide them through engineering magazines to select design topics and help them through the design. Notable Designs that were taken to competitions were “Superconducting Sensor Operated Levitated Platform for Earthquake protection”, “Piezoelectric Sensor for Traffic Monitoring” etc.
24. (1991-1992) Faculty Mentor for YES (Youth in Engineering and Science) Projects: Topics: Controlled Crystal Growth and Alloy Compositional Changes.

VII. EXTERNAL STUDENT ACTIVITIES

- Organizer and Chair - Dayton Area Graduate Student Symposium of Materials (**DASSOM**).
- Judge, Student Poster Contests: Hosted by Ceramic Education Council and other organizations, Annual Meetings of American Ceramic Society, and MS&T meetings, 2001-present .
- Judge, Student Speaking Contest: Environmental Effects of Nanoparticles and Nanomaterials: 2010.
- Chair of the Hoffman Scholarship Program for junior students in Materials (Nationally). Served three terms: 01-04.
- Overseeing the committee for best student presentation award in the Electronics Division symposium at the affiliated Fall meetings, 2002-04.

VIII. FACILITIES DEVELOPMENT

- Set up a Surface Spectroscopy facility (AXIS Ultra), which is the **latest generation** of X-ray Photoelectron Spectroscopy (XPS) Instruments. This laboratory was aired in Channel 7 "Learning Counts" and in "Women in Engineering" shows.
- Plasma Processing as well as Chemical Vapor Deposition capabilities recently added to laboratory enables controlled surface modification of engineering materials. This capability is allowing us add a surface engineering component to our materials course offerings.
- Field Emission Scanning Electron Microscopy (FE-SEM): JEOL-7401 Field Emission SEM (FESEM) is being installed with a recent Third Frontier grant. It will have 1 nm resolution at 15 KeV, and 1.5 nm resolution at 1 KeV.
- Improvement of older laboratory: Obtained and invested over \$100,000 from miscellaneous companies, State of Ohio and WSU to upgrade the existing facilities at WSU. This facility is essential for any student training on materials characterization.
- Planning, set-up and administration of state-of-the-art Surface Science Research Facility, and also Freshmen Laboratory experiments: 1992-1997

IX. SERVICES TO PROFESSIONAL ORGANIZATIONS

<u>ORGANIZATION</u>	<u>Position</u>
American Ceramic Society, Electronics Div. (National)	Division Chair (2008-09) Executive Committee & Program Chair (2004-09) Chair, Honors & Awards Committee (2001-2004)
National Science Foundation	Panel & Mail Reviews, ongoing, 1-3 per year
Indian Institute of Technology, Bombay	Ph.D. Thesis, International Reviewer
Jadavpur University	Invited speaker, 2008-10, Advisory Committee for International Symposium 2010
Saha Institute of Nuclear Physics	Invited speaker 2007-8, Review Panel for laboratory Evaluation
Journal of Am. Ceramic Society Journal of App Phys./Applied Phys. Letters Journal of Membrane Research Journal of Materials Science Journal of Electronic Materials Journal of Coatings and Technology Journal of Biomedical Materials Met Trans. A	Reviewer Reviewer Reviewer Reviewer Reviewer Reviewer Reviewer Key Reader
US Civilian Research and Development Foundation Israel Science Foundation	Proposal Reviewer Proposal Reviewer
ASM International, Dayton Chapter ASM International, WSU Chapter	Executive Committee 1998-present Host for three International Speakers Faculty Advisor 2001-04
TMS: Symposium on Surfaces and Interfaces in Nano- structured Materials, Annual Mtg.I and II, 3/04 and 3/06	Lead Organizer
ECS/A CerS. Joint Symposium "Interfaces in Electronic Materials" ,Orlando, Fl, 2003	Co-organizer
ASM- Student Symposium	Organizer and Chair
American Ceramic Society, Annual Meetings (01-present)	Organizer and Co-organizer of 8 Symposia
Materials Science and Technology (MS&T) 2008-2010	Judge for student posters, panelist

Ohio Innovation Summit (OIS), and University Clean alliance of Ohio (UCEAO)	presenter, panelist, co-organizer and exhibitor
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X. SERVICES TO THE UNIVERSITY

University Level Committees at WSU

Faculty Budget Priority Committee	2009-
Leadership Team, NSF ADVANCE Program	2008-
Search Committee: Vice President of Research	2006-07
Board of Trustees: Academic Affairs	2005-06
Center for Women's Studies-Advisory Board	2004-08
University Honors Committee	2002-03
University Technology Council	1999-00
UCAPC	2003-04

College of Engineering Committees at WSU

Scholarship Committee	2008-
Ph.D. in engineering: Program & Student Affairs	2004-06
Faculty Development Committee	2006-09
Department Chair Search Committee	2005-06
Curriculum Committee	2003-04
By-Laws Review Committee	1998-00
Academic Computing Committee	1998-01
Academic Computing Committee	1999-00
Expenditure of Technology Fee	1998-01
Associate Dean Search Committee	2001

Departmental Committees at WSU

Chair Advisory Committee	2006-
Assistant Chair Search Committee	2006-07
Petitions	1998-04
Materials Program	1997-
Faculty Development Committee	2000-
Materials Faculty Search Committees	2001-04
MS Program in Clean Energy	2007-

XI. OUTREACH SERVICES AND VOLUNTARY ACTIVITIES

- Media productions: newspapers and TV. Aired frequently by local TV channels
- Regular participation in planning meetings with AFRL and other organizations for present and upcoming State & Federal project solicitations.
- Visits from Dignitaries: Briefings on Multiple Programs (ongoing)
- Documentary production for Anniversary Celebration of CECS (2002)

- Organized Dayton Area Graduate Student Symposium at WSU (2000).
- Take Your Sons and Daughters to Work: (ongoing)
- Freshmen Engineering and High School Open House days: every year with graduate students.
- Curriculum Revision Committees: 1990 – present (B.S., M.S. and Ph.D.)
- Preparation Committee for ABET Accreditation, every six years
- Math Booster’s Club, Beavercreek High School, 2006
- Education Committee Chairperson, Dayton India Club, 2004
- “Science is Fun” and “Cultures in Asia” presentations at schools and Youth Clubs (K-12).
- Summer projects with Science Teacher from Bronx School of Science to incorporate new experiments for the following school year (1992).
- Consult with teachers at schools and 2-year colleges to get them acquainted with K-12, upcoming K-14 and other federal funding programs (ongoing).