

Sharmila M. Mukhopadhyay

Founding Director, Center for Nanoscale Multifunctional Materials

Founding Director, NAE-Grand Challenges Scholars Program

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Jefferson Science Fellow, National Academies of Science, Engineering and Medicine

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EDUCATION

Ph.D.	Materials Science & Engineering Cornell University	GPA: 3.99/4.00
M. S. / B.S.	Solid State Physics Indian Institute of Technology	First Class Honors

PROFESSIONAL EXPERIENCE

2018-present	Founding Director, National Academies-Grand Challenges Scholars, WSU
2017-present	MS Program Director, Materials Science & Engineering
2008- present	Founding Director, Center for Nanoscale Multifunctional Materials
1997- present	Dept. of Mechanical & Materials Engineering, Wright State University
2016-2017	Jefferson Science Fellow, National Academies and US Department of State
1990-1997	Metallurgy & Materials Science (subsequently dissolved), Polytechnic University, Brooklyn, NY.
1989 - 1990	Post- Doctoral Associate, Rutgers University, Piscataway, NJ
1983 - 1989	Graduate Research Assistant, Cornell University Dept. of Materials Science and Engineering
Summers 2000-03	Summer Faculty Fellow, Air Force Research Laboratory
Summer, 1986	Consultant, Oak Ridge National Laboratory

HONORS/ AWARDS

- Jefferson Science Fellow, The National Academies of Science, Engineering and Medicine, 2016
- Fellow, American Ceramic Society, 2007
- Trustee's Award of Faculty Excellence, the highest award given by Wright State University "to honor those who serve as the most outstanding of role models for all faculty", 2011.
- Outstanding Faculty Member, College of Engineering & Computer Science, 2011.
- Excellence in Research, College of Engineering and Computer Science, 2005.
- Featured in Marquis "Who's Who in America", "Who's Who in Science and Engineering", Who's Who in the World.
- Certificate for National Ranking (top 10) at the Indian School Certificate Examination.

- Merit Scholarship for B.S. performance, Indian Institute of Technology.
- Featured in multiple media releases such as Innovation News Daily, Ceramic Bulletin, PhysOrg, Homeland Security News Wire, Dayton Business Journal etc.

SELECTED CAREER HIGHLIGHTS

The following are some of my career highlights elaborated in the next few pages:

- I. Founding Director, National Academy of Engineering-Grand Challenges Scholar's Program at Wright State**
- II. Jefferson Science Fellow, National Academies to serve as Senior Scientific advisor to the US Department of State**
- III. Media coverage of research and leadership activities**
- IV. Founding Director, Center for Nanoscale Multifunctional Materials**
- V. Sample Publications:** From over 150 papers, book chapters, reports, and reviews (over 5000 citations on Google Scholar).
- VI. Sample Invited Talks:** Snapshot from the last two years are listed.
- VII. Research Grants and Contracts:** Obtained and directed **over forty externally funded research projects** from a large number of Federal, State, and Industrial sponsors such as:
 - National Science Foundation (NSF)
 - Department of Energy (DOE)
 - Air Force Office of Scientific Research (AFOSR)
 - Air Force Research Laboratory (AFRL)
 - Environmental protection Agency (EPA)
 - National Aeronautics and Space Agency (NASA)
 - Ohio Board of Regents, Third Frontier (OBOR)
 - Teagle Foundation
 - Proctor and Gamble
 - Multiple small companies through SBIR/STTR etc.
- VIII. Classroom Teaching and Course Development** at different levels
- IX. Research Mentoring and Supervision** on a variety of topics.
- X. Non-thesis mentoring** in independent studies and design projects ranging from Precollege, Freshmen Engineering to Capstone Design Teams.
- XI. External educational activities** at regional, national, and international levels.
- XII. Development of materials fabrication and characterization facilities** for research as well as instruction.
- XIII. Services to professional organizations:** leadership positions in societies, symposium organization, review panels, journal review and editorial boards.
- XIV. Services to the university:** university-level, college-wide, and departmental committees.
- XV. Sample outreach and voluntary activities** for the larger community

I. NAE-GRAND CHALLENGES SCHOLAR'S PROGRAM AT WRIGHT STATE

<http://webapp2.wright.edu/web1/newsroom/2018/12/11/grand-challenges/>

<http://www.engineeringchallenges.org/GrandChallengeScholarsProgram/15784/31117.aspx>

The National Academy of Engineering - Grand Challenges Scholars Program (GCSP) envisions training future graduates to become visionary leaders who can address the global challenges of the 21st century. This will be done by strengthening five competency areas **in addition to classroom teaching**: (i) research and creativity (ii) multidisciplinary thinking, (iii) viable business and entrepreneurship skills, (iv) multi-cultural understanding, and (v) social consciousness. Students who complete this program are individually certified by the National Academies, in addition to getting special accolades from their home institution, and are expected to be the most competitive cohort of professionals for the future global job market. I have worked closely with the National Academy of Engineering (NAE) for the last year to get the GCSP program at WSU approved by NAE in November, 2018. Given the fiscal constraints within the university, this program was developed with minimal resources, by combining the existing strengths within different colleges in the university, and bridging them with shared infrastructure and expertise. The goal for 2019 is to start with 12-15 students, then grow it further by involving 2-year feeder colleges as well as federal, industrial partners and non-profit foundations.

II. JEFFERSON SCIENCE FELLOW

Website: http://sites.nationalacademies.org/PGA/Jefferson/PGA_169847

This fellowship, offered by the National Academies of Science, Engineering and Medicine, is designed to engage the academic communities in the formulation and implementation of U.S. foreign policy. After a nationwide competition, this fellowship is offered to 10-15 tenured faculty members across the country. Therefore, receiving a Jefferson Science Fellowship (JSF) is considered a significant honor, both for the individual and for their academic institution.

My JSF assignment for the 2016-17 academic year was with the Bureau of Economic and Business Affairs at the US Department of state, where I was able to leverage my expertise and network to create linkages between cutting-edge technical innovations and governmental entities focused on economic development. This included assisting the State Department in advancing US leadership role in the rapidly expanding area of nanotechnology, which impacts both emerging and traditional industrial sectors such as biotech and pharma, transportation, communication, infrastructure, energy, environment, and consumer products. I was involved in facilitating US engagement with international academics and governmental personnel to support high-tech innovation and entrepreneurship hubs within bilateral/multilateral regulatory framework. This included working with multiagency working groups within the US Government such as the NSET subcommittee of the National Nanotechnology Initiative (NNI), the Emerging Materials and Manufacturing Sciences (EMMS) working group of the India-US S&T Agreement, and the S&T Joint Committee of Korea-US (KORUS) agreement.

III. MEDIA COVERAGE

(The following is a small sample from widely acclaimed projects my group has conducted at WSU. Some of these have been highlighted in different languages across the world.)

General leadership profiles

- http://www.bizjournals.com/dayton/potmsearch/detail/submission/5483312/Sharmila_Mukhopadhyay?l=&time=&ind=&type=&id=2016-01-26&ro=1
- <http://www.dayton.com/news/news/local/wright-state-professor-named-us-foreign-policy-gro/np9HM/>
- http://sites.nationalacademies.org/PGA/Jefferson/PGA_169847
- <http://www.azonano.com/article.aspx?ArticleID=2499>

Media releases related to research accomplishments (2010-onwards)

- <http://www.materialstoday.com/carbon/news/carbon-scaffolds-give-muscle-cells-the-right-cues/>
- <http://phys.org/news/2012-01-watershed-moment-purification.html>
- <http://www.nanowerk.com/news/newsid=23972.php>
- <http://www.homelandsecuritynewswire.com/dr20120117-innovative-method-of-water-purification>
- <http://ceramics.org/ceramic-tech-today/cnt-nanobrushes-coated-with-nanocatalysts-show-promise-for-cleaning-polluted-water>
- <http://www.daytondailynews.com/news/business/ws-u-researcher-creates-nano-brushes-that-remove--1/nMy2B/>
- <http://www.frogheart.ca/?tag=sharmila-mukhopadhyay>

Earlier media releases related to superconductivity projects

- <http://phys.org/news2386.html>
- Dayton Business Journal, 2005 (hardcopy)

IV. CENTER FOR NANOSCALE MULTIFUNCTIONAL MATERIALS (CENSMM)

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

I built this Center in 2008 as a charter from the then 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. Partnering institutions include several for-profit companies, Air Force Research Laboratory, the Environmental Protection Agency, and multiple universities with funded collaborative projects.

V. SELECTED PUBLICATIONS

(Partial list from over 150 archival papers, books, patents, reviews and reports)

1. Wenhui Wang, M.N. Nadagouda, S.M. Mukhopadhyay, "Catalytic degradation of trichloroethane using robust and reusable hierarchical hybrid membranes" to be submitted.
2. Soham D Parikh, Luping Huang, Wenhui Wang, Sharmila M Mukhopadhyay, Debra A Mayes, "Multi-walled carbon nanotube carpets as scaffolds for u87Glioblastoma multiforma cell growth", to be submitted.
3. H. Vijwani, M.N. Nadagouda, S.M. Mukhopadhyay, "Robust nanocatalyst membranes for degradation of atrazine in water", Journal of Water Process Engineering, Volume 25, October 2018, Pages 15-21
4. Betty T. Quinton, Levi Elston, James D. Scofield and Sharmila M. Mukhopadhyay, "Aligned Carbon Nanotube Arrays Bonded to Solid Graphite Substrates: Thermal Analysis for Future Device Cooling Applications", Journal of Carbon Research, 2018, 4, 28; doi:10.3390/c4020028.
5. LvMeng He, Anil Karumuri and Sharmila M. Mukhopadhyay, "Wettability Tailoring of Nanotube Carpets: Morphology-Chemistry Synergy for Hydrophobic-Hydrophilic Cycling", RSC Advances 7(41):25267, May 2017.
6. Akhil Patel, Shilpa Mukundan, Wenhui Wang, Anil Karumuri, Vinayak Sant, Sharmila M. Mukhopadhyay, Shilpa Sant, Carbon-based hierarchical scaffolds for myoblast differentiation: Synergy between nano-functionalization and alignment, Acta Biomater. 2016, Mar 1.
7. Rajaram Narayanan, Hema Vijwani, Sharmila M. Mukhopadhyay, Prabhakar R. Bandaru, "Electrochemical charge storage in hierarchical carbon manifolds", Carbon, Volume 99, April 2016, Pages 267–271.
8. Anil K. Karumuri, Dhawal P. Oswal, Heather A. Hostetler and Sharmila M. Mukhopadhyay, "Silver nanoparticles supported on carbon nanotube carpets: Influence of surface functionalization", Nanotechnology, Apr 8, 27(14), 2016.
9. Kshitij C. Jha, Zhuonan Liu, Hema Vijwani, Mallikarjuna Nadagouda, Sharmila M. Mukhopadhyay, and Mesfin Tsige, "Carbon nanotube based groundwater remediation: the case of Trichloroethylene", Molecules **2016**, 21, 953; doi:10.3390/molecules21070953
10. Anil Karumuri, LvMeng He and Sharmila M. Mukhopadhyay, "Tuning the Surface Wettability of Carbon Nanotube Carpets in Multiscale Hierarchical Solids", Applied Surface Science, 327 (2015) 122–130.
11. H. Vijwani, M. Nadagouda, V. Namboodiri and S. M. Mukhopadhyay "Hierarchical hybrid carbon nano-structures as robust and reusable adsorbents: Kinetic studies with model dye compound" Chemical Engineering Journal 268, 197-207, 2015. 1, 2015.
12. B. T Quinton, K. Leedy, J. W Lawson; B. Tsao, J. D. Scofield, J. N Merrett, Q. Zhang, K. Yost and S. M Mukhopadhyay, "Influence of Oxide Buffer Layers on the Growth of Carbon Nanotube Arrays on Carbon Substrates", Carbon, Volume 87, Pages 175–185, June 2015.
13. Anil Karumuri, Adam A Maleszewski, Dhawal P Oswal, Heather A Hostetler, Sharmila M Mukhopadhyay, "Fabrication and Characterization of Antibacterial Nanoparticles Supported on Hierarchical Hybrid Substrates", Journal of Nanoparticle Research, March 2014, 16:2346

14. Jared McCoppin, Thomas L. Reitz, Ryan Miller, Hema Vijwani, Sharmila Mukhopadhyay & Daniel Young, "Low Temperature Consolidation of Micro/Nanosilver Die-Attach Preforms", *Journal of ELECTRONIC MATERIALS*, DOI: 10.1007/s11664-014-3257-4, 2014.
15. Betty T. Quinton, Paul N. Barnes, Chakrapani V. Varanasi, Jack Burke, Bang-Hung Tsao, Kevin J. Yost, and Sharmila M. Mukhopadhyay, "A Comparative Study of Three Different Chemical Vapor Deposition Techniques of Carbon Nanotube Growth on Diamond Films," *Journal of Nanomaterials*, vol. 2013, Article ID 356259, 9 pages, 2013.
16. Natalia B. Shenogina¹, Mesfin Tsige, Soumya S. Patnaik, Sharmila M. Mukhopadhyay, "Molecular Modeling of Elastic Properties of Thermosetting Polymers Using a Dynamic Deformation Approach" *POLYMER*- Volume 54, Issue 13, 7 June 2013, Pages 3370–3376.
17. Anil K. Karumuri, Dhawal P. Oswal, Heather A. Hostetler and Sharmila M. Mukhopadhyay, "Silver nanoparticles attached to porous carbon substrates: robust materials for chemical-free water disinfection", *Materials Letters*, Volume 109, 15 October 2013, Pages 83–87.
18. Barney, I. T., Ganguli, S., Roy, A. K., & Mukhopadhyay, S. M. "Improved Thermal Response in Encapsulated Phase Change Materials by Nanotube Attachment on Encapsulating Solid." *J. Nanotechnol. Eng. Med.* 3(3), 031005 (Jan 18, 2013).
19. S. M. Mukhopadhyay, "Ultrahigh Surface area Supports for Nanomaterial Attachment", United States Patent Application Publication, Pub # US 2013/0130383 A1, May 23, 2013.
20. B.T. Quinton, Q. Zhang, J. Burke, K. Leedy, B. Tsao, J. Scofield, J.N. Merrett, K. Yost, S.M. Mukhopadhyay, "The Effects of Surface Treatments on the Growth of CNTs on 3-Dimensional Carbon Foam Structure", *Nanotech 2013 Vol. 1, 10*, Nanoscience & Technology Institute, 2013.
21. A. Mian, C. Taylor, S. Mukhopadhyay, K. Hartke, and L. Dosser, "Microstructural Analysis of Laser Micro-welds between Electrode Materials for Li-Ion Battery Applications," *Proceedings of 2013 ASME International Congress & Exposition*, November 2013.
22. Hema Vijwani and Sharmila M. Mukhopadhyay, "Palladium Nanoparticles on Hierarchical Carbon Surfaces: A New Architecture for Robust Nano-Catalysts Applied Surface Science", *Applied Surface Science*, 2012.
23. Elizabeth I. Maurer, Kristen K. Comfort, Saber M. Hussain, John J. Schlager, and Sharmila M. Mukhopadhyay, "Novel Platform Development using Assembly of Carbon Nanotube, Nanogold and Immobilized RNA Capture Element for Rapid, Selective Sensing of Bacteria", *Sensors* 2012, 12, 8135-8144;
24. Natalia B. Shenogina, Mesfin Tsige, Soumya S. Patnaik, and Sharmila M. Mukhopadhyay, "Molecular Modeling Approach to Prediction of Thermo-Mechanical Behavior of Thermoset Polymer Networks, *Macromolecules*, (2012).
25. Hema Vijwani, Abinash Agrawal, and Sharmila M. Mukhopadhyay, "Dechlorination of Environmental Contaminants Using a Hybrid Nanocatalyst: Palladium Nanoparticles Supported on Hierarchical Carbon Nanostructure", *Journal of Nanotechnology*, 2012,
26. Barney, I. T., Lennaerts, D. S., Higgins, S. R., & Mukhopadhyay, S. M. (2012), "Specific Surface Area of Hierarchical Graphitic Substrates Suitable for Multifunctional Applications", *Materials Letters*, 88, 160-163.

27. J. McCoppin, I. Barney, S. Mukhopadhyay, R. Miller, T. Reitz, D. Young, "Compositional control of continuously graded anode functional layer", *Journal of Power Sources* 215 (2012) 160-163.
28. N. B. Shenogina, M. Tsige, S. M. Mukhopadhyay, S. S. Patnaik, "Molecular Modeling of Thermosetting Polymers: Effects of Degree of Curing And Chain Length on Thermo-Mechanical Properties", *Proceedings of the 18th International Conference on Composite Materials (ICCM-18)*, Korea, 2011.
29. 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).
30. S. M. Mukhopadhyay, "Key Attributes of Nanoscale Materials and Special Functionalities Emerging from them" Chapter 1 in *Nanoscale Multifunctional Materials: Science and Applications*, Sharmila Mukhopadhyay (Ed.), Wiley, ISBN: 978-0-470-50891-6, October 2011.
31. S.M.Mukhopadhyay, "Societal Impact and Future Trends in Nanomaterials" Chapter 2 in *Nanoscale Multifunctional Materials: Science and Applications*, Sharmila Mukhopadhyay (Ed.), Wiley, ISBN: 978-0-470-50891-6, October 2011.
32. 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
33. 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, *ECS Transactions*, Volume 35, Issue 1, May , 2011.
34. S. M. Mukhopadhyay, Editor, "Nanoscale Multi-functional Materials: Science & Applications" Fifteen-Chapter Textbook, Wiley, ISBN: 978-0-470-50891-6, October 2011.
35. S. M. Mukhopadhyay and A. Karumuri, "Nanotube attachment to prevent interfacial delamination", *J. Phys. D: Appl. Phys.* 43 365301 (2010).
36. 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).
37. S. M. Mukhopadhyay, "Nanoscale Multifunctional Materials: Nature Inspired Hierarchical Architectures", *AZONanotechnology Feature Article*, *Nanotechnology Thought Leaders Series* (2009).
38. Sharmila M. Mukhopadhyay, Anil Karumuri and Ian T. Barney, "Nanotube Grafting in Porous Solids for High Surface Devices", pp479-82, *Nanotech*, Vol. 3, (2009).
39. 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.
40. 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.
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42. 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.
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44. 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.
45. "Interfaces in Electronic Materials", Ed: L. Cook, D. Misra, S. Mukhopadhyay, W. Wong-Ng, O.Leonte & K. Sundaram, Electrochemical Society, 2006.
46. 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).
47. 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).
48. 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).
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85. 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).
86. Tim C.S.Chen and S.M.Mukhopadhyay, "Metallization of Electronic Fluoropolymers" Journal of Applied Physics, 78, 9, Nov.1, (1995).
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89. 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).
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95. S.M.Mukhopadhyay and J.M.Blakely, "Effect of Magnesia on Mass Transport at the Surface of Alumina." *Characterization of the Structure and Chemistry of Defects in Materials*, MRS Symp. Proc., Vol. 138, pp. 415-420, (1989).
96. A.P.Jardine, S.M.Mukhopadhyay and J.M.Blakely, "Mg Implantation and Characterization of Sapphire Surfaces." *Beam Solid Interactions and Transient Processes*, MRS Symp. Proc., pp. 365-373, Materials Research Society, (1987).
97. 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).

VI. SAMPLE INVITED TALKS FROM LAST TWO YEARS (2016-18)

1. "Hierarchical Hybrid Architectures for Robust & Reusable Nano-Devices", Keynote lecture in 18th International Conference in materials Science and Engineering, Osaka, Japan, May 2018
2. "Emerging Materials for Next Generation Manufacturing" Invited lecture in national Metallurgical Laboratory, Jamshedpur, India, June 2018
3. "Next Generation Nanomaterials: Bioinspired Hierarchical Architectures" Colloquium Speaker, Miami University, Oxford, Ohio.
4. "Bioinspired 3D Carbon Architectures: Beyond graphene and nanotubes" Invited Talk at MS&T Symposium: Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials, Oct 2018.

5. "Surface Modification of Carbon Nanotube Carpets for Wettability Tailoring" Invited Talk in MS&T Symposium: Advances in Surface Engineering: Functional Coatings /Films/ Surface Features, 2018
6. Invited Talk in Next Generation Biomaterials Symposium, "Hierarchical Carbon Scaffolds for Tissue Engineering", MS&T 2016
7. Perspectives for Emerging Materials Professionals Symposium, "Nanotechnology: Societal Impacts and Policy Perspectives", Materials Science and Technology (MS&T), Salt Lake City, Oct 2016.
8. Institute Keynote Lecture for Science Day Celebration at IIT Kanpur, India "Next Generation Nanotechnology: Balance and Sustainability", March 2017
9. Department of State, Economic Bureau, "Policy Perspectives and Economic Impacts of Nanotechnology", Nov. 2016.
10. Invited Seminar at IIT, Delhi, "Next Generation Nanomaterials: Hierarchical Hybrid Architectures, Feb 2017
11. Invited Seminar at IIT Kharagpur, "Advanced Nanomaterials", March 2017
12. Invited paper at International Symposium on Semiconductor Materials and Devices (ISSMD), "Next Generation Nanodevices: Hierarchical Hybrid Architectures", March 2017
13. Invited Seminar at National Institute of Pharmaceutical Education and Research, Kolkata, "Nanotechnology and Next Generation Biomaterials", 2017
14. Invited Seminar at US Consulate, Kolkata, "Nanotechnology: Economic and Social Impacts", March 2017.
15. The National Academies, Jefferson Distinguished Lecture Series. "Emerging Materials for Next Generation Manufacturing, April, 2017.
16. Invited Lecture at SNBose Institute of Basic Sciences, "Emerging Materials for Next Generation Manufacturing", April, 2017.
17. Invited Lecture at International Conference in Materials Engineering, (ICME), IIT Kanpur, "Three-Dimensional Hierarchical Hybrid Architectures for Robust Multifunctional Materials", June 2017
18. Invited talk at Collaborative Conference of Materials Research (CCMR), "Three Dimensional hierarchical Hybrid Materials", Jeju Island, Korea, June 2017.
19. Invited Seminar at Seoul National University, S. Korea, " Next Generation Nanotechnology: Balance and Sustainability", July 2017
20. Invited Seminar at Korea University, "Three-Dimensional Hierarchical Hybrid Architectures for Robust Multifunctional Materials" July 2017

VII. SAMPLE GRANTS AND CONTRACTS

Title	Sponsor	Amount	Dates
REU Supplement: Bio-inspired 3D Materials	NSF	12,000 (PI)	5/19-8/20

EAGER: Novel Bio-inspired 3D Materials for Surface-Active Devices	National Science Foundation	\$150,000 (PI)	9/17-8/19
EAGER: Novel catalyst design by tailored integration of nanomaterials with larger porous scaffolds	National Science Foundation	\$107,995 (PI)	9/14-8/18
DERA award through ORISE	EPA & AFIT	About \$60K/year	9/15-ongoing
Water Purification Using Nano-enabled Solutions	Ohio Third Frontier (with industries)	Total \$2M with Industry (Academic budget \$220,000)	10/11-1/14
“Behavior of Carbon Nanomaterials in Aqueous Suspensions of Natural Organic Matter”	Environmental Protection Agency	\$ 400,000 (co-PI with Clemson University)	03/09-01/13
“Thermally responsive Encapsulated Phase Change Materials”	AFRL-DAGSI	\$ 126,681 (PI)	6/09-6/13
Influence of Water Quality on the Bioavailability and Food Chain Transport of Carbon Nano-particles	Environmental Protection Agency	\$1,000,000 (Co-PI with Clemson U.)	03/09-01/13
Nanoparticles for Water Purification	State of Ohio: Commercialization	\$25,000(PI)	11/11-9/12
Simulation of Small-Scale Damage Evolution	UES SBIR Phase I	\$26,962 (PI)	6/12-1/13
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
Nano-engineering of Microcellular Foam for Biocompatibility of Bone Cell (PI)	AFRL-DAGSI	\$ 71,569 (PI)	6/08-6/10
Surface Modification of Porous Carbon Structures	AFRL-GrafTech-DAGSI	\$40,000 (PI)	07/10-06/11
“Functionalization of Carbon with Metal Based Nanoparticles”	AFRL-DAGSI	\$ 72,501 (PI)	6/09-6/11
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
Materials Characterization	CENSMM member companies	\$70,000 (PI)	10/07-9/09
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 J _c Coated Conductors Using Colloids of Un-agglomerated Nanoparticles	DOD/STTR	\$100,000 (co-PI)	7/05-4/06
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	SCI Inc	\$5,000 (PI)	3/98 - 2/99

Particles"			
"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

VIII. CLASSROOM TEACHING AND CURRICULUM DEVELOPMENT

COURSE TITLE	Info
Advanced Engineering Materials (developed new course)	Grad Core
Phase Transformations	Grad Core
Thermodynamics (Mechanical, Materials & Clean Energy graduate programs)	Grad Core
Ceramics for Advanced Applications (Developed new course)	Grad Core
Materials for Nanotechnology (Developed new course)	Elective

Thermodynamics	Undergrad Core
Diffusion and Kinetics	Undergrad Core
Intro. to Ceramics	Undergrad Core
Physical Ceramics	Elective
Materials Engineering Science	Undergrad Core
Structure and properties of Materials II	Undergrad Core
Engineering Materials	Undergrad Core
X-Ray Diffraction	Elective
Structure- Prop. Relationship in Crystals	Ph.D. Core (past program)
Electro-ceramics (Developed new course)	Advanced Elective
Introduction to Engineering: co-teaching with other departments	Freshmen Engineering Competitions
Introduction to Design: co-teaching with others	Freshmen Design
Ceramics	Grad & Undergrad Core
Analytical Techniques	Grad Advanced Elective

IX. RESEARCH MENTORING AND SUPERVISION

Guidance of Scientists for Multi-Institutional Activities:

1. Dr. Al Jackson, 2007-2012 (Nano-Center Manager & Industrial Liason)
2. Dr. Natalia Shenojina, 2010-2013 (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. (Soham Parikh) – Nano-materials for biological tissue scaffolding, started 2016
2. Ph.D. (Wenhu Wang) – Multiscale Flexible Structures for Catalysis and Pollutant Degradation, expected completion 2019.
3. M.S. (Kimia Kiwei) – Fluid interaction with multiscale surfaces, started 2017

Completed:

4. Ph.D. (Betty Quinton) – Carbon Nanostructures for Power Electronics, 2016.
5. Ph.D. (Hema Vijwani) – Hierarchical Carbon Substrates and Nano-Catalysts S 2015
6. M.S. (Lvmen He) – Surface Modification of Hierarchical Structures, Su 2015
7. Ph.D. (Anil Karumuri) – Porous Nano-structures and Their Adaptation for Environmental Remediation Applications, S 2014
8. Ph.D. (Ian Barney) – Nanoscale Structures for Enhanced Functionality, F 2012
9. Ph.D. (R. V. Pulikollu) -- Nano-Coatings on Carbon Structures for Interfacial Modification, F 2005.

10. Ph.D. (P. Joshi) -- Study of Growth and Characterization of Nano-Coatings on Solids for Surface Modification, Completed F 2004.
11. Ph.D.(Chao Wei)-- Influence of Br on High Temperature Superconductors, Completed, May 1997.
12. Ph.D.(Tim C.S. Chen)-- Study of Oxide-Metal Interfaces Using Electron Spectroscopy, Completed, August 1995.
13. M.S. (Beth Maurer) – Cell Growth in a Porous Microcellular Structure, 2010.
14. B.S. Honors Thesis (Timothy Smith) – High Temperature Solid Lubricants: 2010.
15. M.S. (Hema Vijwani) – Highly Active Porous Catalysts by Attachment of Metal Nanoparticles on Hierarchical Structures, 2011
16. M.S. (Adam Maleszewski) – Functionalization of Carbon Nanotubes for Biological Sensors), 2011.
17. M.S. (A. Karumuri) – Multifunctional Coatings on Microcellular Foams, F 2009.
18. M.S. (J. Kell) -- Thin Film Coated Conductors, Summer 2007.
19. M.S. (D. Sharma) -- High Temperature Coatings on Carbon, Spring 2007.
20. M.S. (S. Vemulakonda) -- Characterization of Thin Film Coated Conductors, 2008.
21. M.S. (V. Chintamamneni) -- Composition and Chemistry of High Temperature Superconductors, July 2006.
22. M.S. (S. Krishnaswami) -- Characterization of Superconducting Films, Completed July, 2002.
23. M.S. (P. Joshi) -- Plasma Polymer Modification of Surfaces, Completed Dec. 2001
24. M.S. (N. Mahadev) -- Interface Modification of Superconductors, Completed Sept. 2000.
25. M.S.(Tim C.S. Chen)-- Ar Sputtering in Oxides Studied by ESCA, completed, April 1993.
26. M.S. (J. Tolliver) -- Pulsed Laser Deposition of Thin Film Coated Conductors, completed, 2004.
27. 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. (Theresa Hill) – ongoing
2. Ph.D. (Aaron Blake)- ongoing
3. Ph.D. (Anthony Polito) – Bioeffects of Gold Nanomaterials in an In-vitro Lung Model, 2013-15
4. Ph.D. (Sathya Ganti) – Terahertz Waveguides, completed 2012
5. Ph.D. (Klint Simon) – Li-anodes on Bucky-paper for pacemaker batteries, completed 2011
6. Ph.D. (Monita Sharma) – Biological Assays for Gold Nanoparticles, 2010-present
7. M.S. (Sri Krishna Divya Pemmaraju) – Modeling of carbon nano-ribbons, completed 2012
8. M.S. (Vamsi Vempati) – Ti-based alloys, completed 2012
9. Ph.D. (Tim Osborne) – First principle atomistic models of Silicene, 2011-2014
10. Ph.D (J. Shi)--Composite PEM Composites for Fuel Cells, completed 2008.
11. Ph.D. (Bala Cherukuri)– Titanium Processing, completed 2008.
12. Ph.D. (Brian Joyce) – Deformation and Recrystallization of Coarse-grained β -Titanium, Completed 2004.
13. M.S. (Theresa Hill) – Sol-Gel deposition of ZnO, Completed 2010.

14. M.S. (Kirthi Paula) – Computational Modeling of Nanographene Ribbons, Completed 2009.
15. M.S. (Yena Li) – Carbon Nano-Structures, completed 2007.
16. M.S. (Murali) – Manipulation of Polystyrene microparticles on Microchannel Glass, Completed 2006
17. M.S. (Ravi) – Fabrication of Polymer nanofibers by Modified Wet spinning, Completed April, 2006
18. M.S. (Teodora Nedkova) – Processing of AA6061 by accumulative Roll Bonding, completed Jan. 2006.
19. M.S. (Yogesh Bahmbri)--, Microstructure Evolution of AA 6061 Subject to Severe Plastic Deformation, completed, Nov. 2003.
20. M.S. (Goutham Gowda) -- Paper Abrasivity, Nov. 2000.
21. M.S. (L. Gulapalli) –Abrasivity Testing of Graft Labels F 2004
22. M.S. (John Snyder) -- Rare Earth Metals in Welding Consumables Nov. 2000.
23. M.S. (Jennifer Finch)-- Fracture Behavior of Si_3N_4 -BN Fibrous Monolith Ceramic, completed, August 98.
24. M.S. (Jenny Sun)-- completed, September 99.
25. Ph.D. (Z. C. Li)-- Superlattice Dislocations in Ti-Alloys, completed 1992.
26. Ph.D. (J. Petruzzello)- Structural Characteristics of ZnSe Grown by Molecular Beam Epitaxy, completed, Dec. 1993.
27. M.S. (G. Kumar) -- CVD Synthesis of PbTiO_3 films, completed Aug. 1994.
28. M.S. (I. Valsenya) --Sol-Gel Synthesis of BaTiO_3 , completed June 1994.
29. Ph.D. (P. Bowman) – Ferro-magnetic Compounds, completed, May 1997.

X. MENTORING OF NON-THESIS STUDENTS

UNDERGRADUATE MENTORING:

1. Doyle, Kathryn, Hardenbrook, Bram, Kirkham, Chase and Yannetti, Evan, Senior Capstone Design, Testing of Oil-Water Separation with Carbon Nanotube Filters, Jan-Dec 2018.
2. Phlopatir Rizk (2017-18): Undergraduate Student supported through NSF-Research Experience for Undergraduates Supplement, Nanomaterials for Biomedical Applications
3. Patrick Snarr (2015 - 2016): Undergraduate Student supported through NSF-Research Experience for Undergraduates Supplement, Nanotechnology Training.
4. A. Malhotra, (Su 2013): Visiting Summer Student from IIT Kgp, Responsive Hydrogel Polymers.
5. A. Balwally, (Su 2013): Visiting summer Student from UIUC, Spin coating of carbon nanotubes.
6. Senior Design Team (W-S 07): Oxidation Resistant Coatings for Microcellular Foam.
7. James Ryan, (F 05 – W 06): Materials for Geothermal Heat Pumps, Sr. Design Project.
8. Tom Donaldson, (F 03-W04): Design of Experimental Tests for Mechanical Properties of Graphitic Foam.

9. 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.
10. Paul Kennedy (1998, ME491-492) and 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.
11. Tom Fink (1998 ME 490) & Vernon Brown (1998 ME 490)
Levitation force measuring instrument for a superconducting train-track system.
12. Adam Stechschutte, Greg Updike, and Nick Elson (1999 EGR 199), Measurements of levitation forces in superconducting levitators.
13. 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.
14. Multiple students (1991-1992): Faculty Mentor for YES (Youth in Engineering and Science) Projects: Topics: Controlled Crystal Growth and Alloy Compositional Changes.
15. Freshmen teams (1994-96): Faculty mentor for "Introduction to Engineering" projects: Student teams would design microphones and sensing using piezoelectric samples, and compete for best response.

GRADUATE NON-THESIS SPECIAL TOPICS:

16. R. Nalla (2015-16): Special Topic: Surface properties of carbon nanotube-arrays
17. P. Karode, (Spring 2015): Special Topic: Surface Modification of Multiscale Solids
18. Special Topics team (Su, 2014): R. Ramanujam, A. Jandhyala and S. Sai-Goutham, Water purification system using nanomaterials.
19. Sweta Bose (Ph.D student in Earth Sciences Program): Lab experience in microscopy, W04.
20. Kristen Shiverdecker (F 03-W04): "Design of a field-Level on-aircraft Polyimide Adhesively Bonded repair Process".
21. Indy Roca (1998 ME 699), Literature Search & SEM studies: Piezo-electric Microstructures
22. Niraj Mahadev (1998 ME 699), Microscopy of nanostructures
23. Hanna Li (1999), Training on Carbon Nanostructures as exploratory Dissertation Topic
24. Srikant Bhandari (1998), SEM and XPS Laboratory Training with hourly financial support.
25. Terry Harbough (1999, non thesis option student) Initial X-Ray Laboratory Training for exploring company-university collaboration options.
26. S. Mahesh (2000, ME 890), Initial XPS on Paper Literature Search & Training for Dissertation topic selection.

27. S. Krishnaswami (2001, ME 890), Thin Film Oxide Materials, Exploratory studies for collaborative options with AFRL.
28. Pratik Joshi (2000 & 2001, ME 890), SiC Surface Studies (2000) and Oxygen Micro-plasma Studies (2001)
29. R. Pulikollu (2001, ME 890), Literature Search- Advanced Studies in Superconducting Systems
30. R. Radhakrishnan (2001, ME 890), SEM and XPS Laboratory Training with hourly financial support.
31. L. GullaPalli (F 2001, ME 898), SEM Training for Basic Materials Science
32. Swapna Vemulakonda (F 2002, ME 699), Microscopy & Spectroscopy of Advanced Solids

XI. EXTERNAL STUDENT ACTIVITIES

- Judge, Student Poster Contests: Hosted by Ceramic Education Council and other organizations, American Chemical society, Annual Meetings of American Ceramic Society, and MS&T meetings, 2001-present.
- Organizer and Chair - Dayton Area Graduate Student Symposium of Materials (DASSOM).
- Judge, Student Speaking Contest: Environmental Effects of Nanoparticles and Nanomaterials, Clemson University, 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.

XII. FACILITIES DEVELOPMENT

- Surface Spectroscopy facility (AXIS Ultra), which is the latest generation of X-ray Photoelectron Spectroscopy (XPS) Instruments. This laboratory was purchased using Major Research Instrumentation (MRI) award obtained by me from NSF.
- 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 surface engineering component to our materials course offerings.
- Field Emission Scanning Electron Microscopy (FE-SEM): JEOL-7401 Field Emission SEM (FESEM) was purchased by a State of Ohio Third Frontier grant obtained by me in partnership with three other universities.
- Laboratory upgrades: I have obtained and invested over \$200,000 from miscellaneous funding through companies, State of Ohio and WSU to upgrade the existing facilities in the MME Department. These facilities are essential for student training and materials testing.

XIII. SERVICES TO PROFESSIONAL ORGANIZATIONS

<u>ORGANIZATION</u>	<u>Position</u>
National Academies and US Department of State	Scientific Advisor as Jefferson Science Fellow, 2016-17 Distinguished Speaker Series at the Academies Advocate for Bilateral/Multilateral S&T Initiatives.
Metallurgical and Materials Transactions	President of Editorial Board 2014-2015 Board member since 2007
Journal of Nanotechnology	Guest editor, Multifunctional Nanomaterials for Biomedical Engineering: Unique Properties, Fabrications, Diverse Applications, 2014-2015
Journal of Nanotechnology	Guest Editor of Special Edition: Nanomaterials Synthesis, Applications, and Toxicity 2012
Metallurgical and Materials Transactions	President of Editorial Board 2014-2014 Board member since 2007
ISRN Condensed Matter Physics	Editorial Board
American Ceramic Society Electronics Division (National)	Elected Fellow , Past Chair & Nominating Committee
Materials Science and Technology (MS&T)	Invited speaker, symposium organizer, panelist and judge, 2006-present
Materials & Devices Workshop	Invited Speaker, Nov 2012
Indian Institute of Technology, Madras	Ph.D. Thesis, International Reviewer, 2014
ASM International, Dayton Chapter Materials Advantage, WSU Chapter	Executive Committee 1998-present Faculty Advisor 2001-04
American Chemical Society	Invited Speaker and Student Poster Judge 2012
ASM International, Dayton Chapter	Executive Committee
National Science Foundation	Panel & Mail Reviews, typically 1-2 per year
Peer Reviewed Medical Research Program (PRMRP)	Reviewer, 2016
Indian Institute of Technology, Bombay	Ph.D. Thesis, International Reviewer
Jadavpur University	Invited speaker, 2008-10, Advisory Committee for International Symposium 2010, Ph.D. Reviewer
Saha Institute of Nuclear Physics	Invited speaker 2007-8, Review Panel
Carbon	Reviewer
ASME-Special Issue	Reviewer
Journal of App Phys./Applied Phys. Letters	Reviewer
Journal of Membrane Research	Reviewer
Journal of Electronic Materials	Reviewer
Journal of Coatings and Technology	Reviewer

Journal of Biomedical Materials	Reviewer
Journal of American Ceramic Society	Reviewer
ACS Applied Materials and Interfaces	Reviewer
US Civilian R&D Foundation	Proposal Reviewer
Israel Science Foundation	Proposal Reviewer
TMS: Surfaces and Interfaces in Nano-structured Materials,	Lead Organizer of symposium sequence, 3/04 and 3/06
"Interfaces in Electronic Materials"	Co-organizer and proceedings Editor, Orlando, FL, 2003
ASM- Student Symposium	Organizer and Chair-1998, 2000
Ohio Innovation Summit (OIS), and University Clean alliance of Ohio (UCEAO)	presenter, panelist, co-organizer and exhibitor

XIV. SERVICES TO THE UNIVERSITY

University Level Committees at WSU

Search Committee: Vice President of Research	2005, 2012
Search Committee: Dean of Engineering & Computer Science	2013
Search Committee: Associate Dean of Research	2013
Faculty Budget Priority Committee	2009-12
Leadership Team, NSF ADVANCE Program	2008-
Search Committee: Vice President of Research	2006-07
Search Committee: Director of RSP	2005
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	2008-12
Graduate Curriculum Committee	2012- 14
Engineering Ph.D: Materials & Nanotechnology Focus Area, Chair	2004-06, 2014-16
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, Graduate Curriculum Committee	2011-present
Chair Advisory Committee	2006-present
Assistant Chair Search Committee	2006-07
Petitions	1998-04
Materials Program	1997-present, Chair 2014-
Faculty Development Committee	2000-present
Materials Faculty Search Committees	2001-present
MS Program in Clean Energy	2007-08
Program Director-MS in Materials Sci & Eng	2017-present

XV. SAMPLE OUTREACH SERVICES AND VOLUNTARY ACTIVITIES

- Summer lectures and mentoring of K-12 Science Teachers (Outreach programs organized by ASM-Dayton Teachers Camp, NSF-RET funding and local sponsorships).
- Participated in multiple leadership panels and think tanks for popularizing science among younger children.
- Prepared lecture slides for colleagues and teachers to present at rural communities.
- From 1993 to 2008, I have collaborated with my mother in India to raise health and hygiene awareness among children of leprosy victims (yearly visits). Also remotely helped with arranging tutors and personal coaches for these children and helping them procure school supplies.
- Served as Board Member of neighborhood Homeowners Association (HOA).
- Lectured at elementary schools, middle schools and high schools to increase science awareness among teachers and students.
- Developed hands-on science activities for precollege students in summer.
- Served as translator for medical information pamphlets for a rural NGO in India
- Involvement in STEM outreach within the greater Dayton community: PubScience (talk at Pubs attended by local community members)
- Volunteered at local High School Math club: provided policy advice and logistic support.
- Provided non-technical briefings to TV and newspaper reporters about recent scientific advancements.

- Served as judge for multiple student speaking and poster contests at local, national and international meetings. Hosts have included variety of organizations such as American Chemical Society, American Ceramic Society, Materials Science and Technology, ASM Dayton Chapter, Environmental Effects of Nanoparticles and Nanomaterials, etc.
- Sponsored networking meetings with community and professional organizations for connecting advocacy groups with scientific experts.
- Multiple planning efforts with local organizations for collaborative team building and multi-institutional project solicitations.
- Panelist & Judge: Local science fair projects, Women in Engineering and Women in Science events.