Curriculum Vitae

Distinguished University Professor Jagannathan Sankar
Mechanical Engineering
North Carolina A & T State University, Greensboro, NC 27411

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Distinguished University Professor and White House Millennium Researcher
Director - NSF- ERC for Revolutionizing Metallic Biomaterials (since 2008)
Director - Center for Advanced Materials and Smart Structures (started with NSF CREST) (since 1997)
Director - Army - Center for Multifunctional Materials for Homeland Security (2003-2005)
Director - Navy - Center for Nanoscience and Nanomaterials (CNN) 2005-2010
A&T Site Coordinator – NSF - Nanoscale Science and Engineering Center (UIUC Lead – 2003-2012)

DEGREES:

Ph.D Metallurgy and Materials Engineering, Lehigh University, PA, 1983
M.S Materials Engineering, Concordia University - McGill University Co-op Program, Canada, 1978
B.E. Metallurgical Engineering, University of Madras (Distinguished Record), India, 1976

APPOINTMENT AT NC A&T SU

- Original appointment as Assistant Professor – 1983
- Promoted to Associate Professor – 1988
- Promoted to Full Professor - 1994
- Graduate Program Coordinator - Mechanical Engineering Department 1985- 1998
- Distinguished University Professor (One of the first at NCA&T)
- NC Interinstitutional Adjunct Faculty, Materials Engineering, North Carolina State University, Raleigh, NC. 1988- 2007
- Honorary Visiting Professorship, Chonbuk National University, S. Korea. 2009

Other experiences

- Teaching Fellowship, Concordia University, Jan/77 - July/78
- Research Associate Fellowship, Canadian National Research Council, April/78- Aug/78
- Graduate Assistantship, Welding Research Council - Pressure Vessel Research Committee, Jan/79 - Dec/82
- Teaching Assistant and Instructor, Lehigh University, Jan/80- May/82
- Consultant, Oak Ridge National Laboratory - Fusion Energy Program, 1983 to 1985
- Materials Consultant, - Concordia Computer Aided Vehicle Engineering Research Center
- Consultant, various companies - product reliability problems
- **See Awards and Accomplishments**

RESEARCH AND EDUCATIONAL AREAS:

Engineered Advanced and Multifunctional Materials, Structure-Property Relationships, Materials Processing, Coatings and Surface Engineering of Materials, Multi-Disciplinary Convergence

Approach to Advanced Materials, Biometals and Manufacturing Revolution, Innovation in Education, Outreach and Broadened participation (Culture of Inclusion) for next generation STEM and manufacturing workforce for knowledge economy

Courses taught include Materials science, Modern Engineering Materials, Manufacturing, Mechanical Properties and Structure of Solids and Physical Metallurgy of Industrial alloys.

Efforts also led to the introduction of CAMSS and NSF-ERC facility into engineering undergraduate labs, novel courses under special topics such as Imaging, Digital microscopy and research based courses to graduate students through trans ERC long distance education

SELECTED DISTINGUISHED RECOGNISITIONS & ACCOMPLISHMENTS SINCE YEAR 2000

(Please refer to the next section for the list on Plenary, Keynote and Invited addresses given since year 2000)

1. 2017 BEYA *Innovation STEM Award*, Washington DC.
2. 2015 Awarded North Carolina's highest civilian honor given by the NC Governor *"the Order of the Long Leaf Pine".*
3. 2016 Keynote Address – to the Associate Deans of ~100 Engineering Colleges and Schools of the USA, ASEE national gathering
4. 2016 Invited Address - USA- Ireland-UK, Center 2 Center Global partnership for innovation convergence.
5. 2015 Invited Address - the National Research Council, National Academy of Engineering and Academy of Sciences on "FUTURE Center based model for the USA" Washington, DC
6. 2015 NSF –ERC- RMB's story as "Science Nation" for the global audience; narrated by CNN Science/PBS Frontline/Science hour/Nova anchor/ multiple Emmys and Peabody winner Miles O'Brien https://www.nsf.gov/news/special_reports/science_nation/biomaterials.jsp
7. 2015 Most Influential Person Honor – Business Journal – Piedmont Triad of NC
8. 2015 onwards, Fellow recognition- NanoSMAT Society
9. 2017-2011 Board Member, UNC System- Partnership for National Security United States Army Special Operations Command (USASOC) - Charter Blue Ribbon Member, Defense Applications Group - UNC System – High security clearance
10. Scientific Advisory Board, NSF-CREST, Alabama State University, Al (since 2008)
11. 2014 UNC TV Featuring ERC-RMB/Sankar, UNC TV PBS. (April 2014).
12. 2014 Featured Article - Catalyzing Commercialization, the National Science Foundation and Chemical Engineering Progress. (December 2014)
13. 2014 AIMBE Fellows recognition – The American Institute for Medical and Biological Engineering (AIMBE) College of Fellows.
14. 2014 ERC on NC TV – 7 minutes coverage on North Carolina Now http://science.unctv.org/content/medical-metals
15. 2014 Most Influential Person Honor – Business Journal – Piedmont Triad of NC
16. 2013 Most Influential Person Honor – Business Journal – Piedmont Triad of NC
17. 2013 Invited Panelist- National Academy of Engineering- Global Grand Challenges in Manufacturing, Raleigh, NC
18. 2013 Commercialization Agreement – ERC with InCube labs, CA for translating Mg biodegradable processing for Orthopedic Implant technologies

19. 2013 Invited Address - the National Academies- Board on Science, Technology and Economic Policy, Washington DC.
20. 2012 Most Influential Person Honor – Business Journal – Piedmont Triad of NC
21. 2012 UNC Educational System- Research Strategic Direction - Key Selected Member
22. 2012 Co-Organizer: NSF/FDA/ERC Biodegradable Think-Tank Workshop, DC, a
23. Founding members of the Development of Absorbable Metal Global Standards – Global team along with industries and FDA members.
24. 2011 Most Influential Person Honor – Business Journal – Piedmont Triad of NC
25. 2011 "Hind Rattan Award" - Honored during the India's Republic Day Eve function - a high recognition for the Non Resident Indians of the world.
26. 2010 Member – STPI/White House Review
27. 2010 Most Influential Person Honor – Business Journal – Piedmont Triad of NC
28. 2010 O. Max Garner Award Recipient *(Highest faculty honor of the UNC 17 campus Educational System* given for *"the greatest contributions to the welfare of the human race"*
29. 2010 Scientific Advisory Board, COIN, NC Biotechnology Center, NC
30. 2009 Most Influential Person Honor – Business Journal – Piedmont Triad of NC
31. 2009 Honorary Professorship recognition, Chonbuk National University, S. Korea
32. 2009 One of the 10 invited people around the world to inaugurate and give keynote talk - World Class University, Korean National Foundation for Nano-Bio Fusion.
33. 2009 Special Invitee for National Academies Meeting -University Industry Demonstration Project (UIDP) of the National Academies meeting, Washington, DC.
34. 2009 Invited along with CEOs of Greensboro-area colleges, universities, companies and industries and ERC/A&T perspective on why Google should locate its super-fast fiber-optic network in Greensboro (http://www.youtube.com/watch?v=T-_v_-h5yL8)
35. 2008 Most Influential Person Honor – Business Journal – Piedmont Triad of NC
36. Board Member (scientific advisor) of the Enhanced Biofuels and Technologies, UK (EBT-UK).
37. 2007 -NSF- MRSEC-PREM Program evaluator
38. 2008 -NSF -MRSEC-PREM Program evaluator
39. 2006 - Member of the NC Biotechnology Center Advisory committee on Medical Devices for NC
40. 2005 Awarded one of the *First Distinguished University Professor Title (NCA&T)*
41. 2005 Awarded -American Association for Advancement of Science *AAAS National Mentor Award (*Publisher of *Science* magazine)
42. 2005 Fellow- National Institute of Aerospace (NIA)
43. 2005 -Member of the Nanotechnology Advisory Science Board for the Governor of North Carolina (Developed the State of North Carolina's nanotechnology Roadmap)
44. 2002 Awarded- *White House Millennium Research award national Title (HBCU)*- Department of Education
45. 2001 Awarded- ORNL-HBCU National project of the year
46. 2001 Awarded- Outstanding Senior Researcher of NC A&T State University
47. 2001 Awarded- Faculty of the year (ME) – College of Engineering /Engineers week
48. 1988-2007 Inter-institutional Adjunct Faculty: Dept. of Materials Science and Engineering; North Carolina State University; Raleigh, NC.

Select few before year 2000:

- Graduate Program Director, Mechanical Engineering, NC A&T State University, 1985 – 1998
- Who is Who in the Microelectronic Center of North Carolina (MCNC), World of Ceramics,

- Technology to-day, International Directory of Distinguished Leadership, the 1st Edition of the Advanced Engineering Materials Research Profile Directory
- Board of Director, Member-at-Large American Society for Metals International (ASM) - Carolina Piedmont Triad Chapter, NC.
- One of ten (10) people selected from different U. S. Universities to receive a scholarship grant and to attend 'all expense' paid Alloy Rods/Allegheny Ludlum Industries, Inc., Special Symposium workshop "Weld Tech 80", Hanover, PA, 1980
- Proficiency Prize, University of Madras, 1976.
- Jawaharlal Nehru Memorial Award for Academic Achievement and Honor, University of Madras, 1976.

PLENARY/KEYNOTE/INVITED ADDRESSES SINCE YEAR 2000

ON MATERIALS & MANUFACTURING

Numerous - Nationally and Internationally at Major Materials and Manufacturing Conferences, Workshops, Government organizations, Universities, Technical Societies and Industries. **Shown below from year 2000.**

1. Plenary Address - ACUN-2- International Composites meeting - Composites in the Transportation Industry, University of New South Wales, Sydney Australia, 02/2000
2. Keynote Address-19th All India Manufacturing Technology, Design and Research Conference, Indian Institute of Technology, Madras, India, 12/2000.
3. Keynote Address-ICCE/8 Eighth International Conference on Composites Engineering, Tenerife, Spain, 08/2001
4. NSF- Joint Annual Program Conference (5 different times- different years)
5. Invited Address- Action Greensboro, NC, 02/2002
6. Invited Address- Advanced Research Workshop "Mixed Ionic Electronic Conducting (MIEC) Perovskites for Advanced Energy Systems" Kyiv, Ukraine (NATO) 06/2003
7. Keynote Address – Advances in Materials, Product Design and Manufacturing Systems Conference, Satyamangalam, India.,12/ 2005
8. Invited Address- TamilNadu Agricultural University, India, 12/2005
9. Invited Address -Final FUTURES meeting of NC A&T for the entire attendees, 04/2006
10. Invited Address, University of Science and Technology, Accra, Ghana (initiation of nano activities at Ghana and to connect USA-Ghana) 07/2006
11. Invited Address- TamilNadu Agricultural University, India (nano in agriculture and to connect USA-India), 06/2006
12. Keynote Address - International Conference on Advances in Manufacturing & Technology Management, Mumbai, India (nano in India), 01/2007
13. Invited Address - Nanotech 2007 for promoting economic development for NC via CAMSS nano activities, 03/2007
14. Keynote Address -International Joint Conference on Knowledge Management for Composite Materials, Germany, (to connect USA- Germany in automotive nanomaterials backed by NSF, Govt. of Germany and industries), 07/2007
15. Keynote Address -National Educators Workshop- on K-12 education, Edmonds, WA, 08/ 2007
16. Keynote Address –International Conference on Advanced Materials 2008, India - to connect USA and India in nanotechnology, 02/2008
17. Keynote Address – International Conference on Multifunctional Materials and Structures MFMS 2008, Hong Kong- NSF- ERC on " Revolutionizing Metallic Biomaterials", 07/ 2008

18. Invited Address -NanoSMAT 2008, Barcelona - NSF- ERC on " Revolutionizing Metallic Biomaterials", 10/ 2008
19. Invited Address - NSF-ERC - RMB, Hannover Medical School + GKSS, Germany, 12/2008
20. Plenary Address -2009 NC Mathematics and Science Education Network- JSHS Awards and Recognition Banquet, 03/2009
21. Invited Address -2009 NC Nanotechnology Commercialization Conference, 03/2009.
22. Keynote Address –International Conference on Composites/Nano Engineering, ICCE 17, Hawaii on ERC and translational opportunities, 07/2009
23. Invited Address -Hong Kong Polytechnic University on "Nano Bio Revolution" 10/2009
24. Keynote Address –International conference on Multifunctional Materials and Structures, MFMS 2009, Qingdao, China on Nanobiotechnology, 10/2009
25. Keynote Address-World Class University, BIN Fusion Technology, S. Korea, 10/2009
26. Keynote Address - International Conference on Composites/Nano Engineering, ICCE 18, Anchorage, Alaska, 07/2010.
27. Invited Address -2nd International Biodegradable Conference, Maratea, Italy, 08/2010
28. Keynote Address -BEYA 2011 on Next Generation Workforce and Millennium Universities, DC, 02/2011
29. Keynote Address -2012 Australian Composite Annual Event/Conference, Composite Australia, Leura, Australia, 03/2012
30. Invited Address- 2012 NSF Workshop on Partnership with Tier 1 Universities- Strategy Workshop, "Developing Bioengineering Education and Research", Miami, FL, 04/2012
31. Invited Address - University of Southern Queensland, "Convergence of Areas for Translational Research and Innovation Ecosystem in Bio-to-Composite Materials", Toowamba, Australia, 03/2012
32. Keynote Address –The European Materials Research Society, Fall meeting, Warsaw, Poland, 09/2012
33. Invited Address - Disruptive Innovation in Healthcare Meeting, IIT, Chennai, India, 10/2012
34. Keynote Address, "ERC-RMB Science, Innovation and Translational Activities through SBIR Programs" National SBIR Conference, Washington DC, 05/2013
35. Keynote Address -Federal Advanced Technologies - Advanced Materials & Manufacturing, Raleigh, NC "ERC/CAMSS Advanced materials research, Innovation and Translation", 05/2013
36. Invited Address -The National Academies- Board on Science, Technology and Economic Policy, Washington DC, 02/2013
37. Keynote Address - The Metals and Materials Society 2013 Annual Meeting, San Antonio, TX, 03/2013
38. Invited Address - 5th Annual Nanotech Commercialization Conference, Wake Forest BioTech Place, NC "Translational Activities and Opportunities in ERC-RMB - Trends & Scientific Breakthroughs in University Nanotechnology Research", 05/2013
39. Invited Panelist address - (One of Three) The National Academy of Engineering; For Grand Challenges- Manufacturing, building bridges for Innovation- based on the impact of ERC at the national and global levels, 10/2013.
40. Plenary Address – International Conference on Advanced Nanomaterials and Emerging Engineering Technologies, ICANMEET 2013, Sathyabama University, India," Convergence in Advanced Materials Innovations for Translational Nano/Bio Technology, 07/2013

41. Keynote Address- NanoSMAT 2013"ERC-RMB for Biodegradable Implants, Granada, Spain, 09/2013
42. Invited Address - Federal Advanced Technologies - Advanced Materials & Manufacturing, Raleigh, NC, 05/2013
43. Invited Address – International Conference Materials Science 2013, Las Vegas, On NSF-ERC-RMB Science, Innovation and Impacts, 10/2013
44. Invited Address - "ERC-RMB and Hong Kong Polytechnic University, Hong Kong, ERC-RMB & CAMSS, Materials Innovation, Industrial Connectivity and Global opportunities" 11/2013
45. Plenary Address – International Conference Materials Science 2014, San Antonio, TX, 10/2014
46. Keynote Address - International 9th NANOSMAT 2014, Dublin, Ireland, 09/2014
47. Keynote Address -NSF National Gathering - Emerging Frontiers of Research and Innovation workshop, NSF Engineering , Arlington, VA, 08/2014
48. Keynote Address - 22nd International Composites Conference and Engineering (ICCE 22), Malta, 07/2014
49. Invited Address - National Research Council, National Academy of Engineering and Academy of Sciences" FUTURE Center based model for the USA" Washington, DC, 03/2015
50. Plenary Address - International Conference on Recent Innovation in Engineering & Technology - 2015(ICRIET), Maha Barathi Engineering College and Educational Trust., Chinnasalem, India, 02/2015
51. Invited Address - Global Healthcare Organization, 4th Annual Global Healthcare Conference (GHC 2015) Singapore, 08/2015
52. Keynote Address – International NanoSMAT 2015, Manchester, UK, 09/2015
53. Keynote Address- American Society for Engineering Education, ASEE -to ~100 Research Associate Deans of Engineering Colleges and schools of the USA, Washington, DC, 03/2016
54. Invited Address - The 6th International Conference on Metals in Genetics, Chemical Biology and Therapeutics (ICMG 2016) at the Indian Institute of Science (IIS), Bangalore, India, 02/2016
55. Invited Address - USA- Ireland C2C global innovation ecosystem convergence, Washington, DC, 03/2016
56. Invited Panelist Address- The National Academies, National Research Council – Future Engineering Research Innovation Centers- Models (for next 10 years of the USA), 04/2016
57. Invited Address The Athens Institute for Education and Research (ATINER) on "Revolutionizing Metallic Biomaterials for Biodegradable Implants – A Global Status" at the 4th Annual International Conference on Physics, Athens, Greece, 07/2016
58. Keynote Address – International NanoSMAT 2016 conference on "Revolutionizing Metallic Biomaterials for Biodegradable Implants – A Global Status" Aviero, Portugal, 08/2016
59. Keynote Address - The 5th Conference of Advanced Materials and Manufacturing, Melbourne, Australia, 12/ 2016
60. Plenary Address - 25th International Conference on Composite Materials and Engineering, Mg- Biomedical to Light weighting Rome, Italy, 07/2017.

61. Keynote Address -, International Conference Mech Aero 2017, Global Status of Mg in broad Applications Las Vegas, 10/2017
62. Invited Address - NSF CREST PI National Meeting, NSF-HRD, Washington, DC, 02/2017
63. Keynote Address - 3rd International NanoSMAT -Asia 2017, A Status on Mg- Biomedical to Light Weighting, Hong Kong, 12/2017
64. Invited Address – 1st Rotary Club of Greensboro, Mg innovation- Greensboro's Industrial Revolution, 05/2018
65. Keynote Address - International Conference on Advanced Materials Research and Manufacturing Technologies, AMRMT 2018, Mg Innovation for Light weight to Bio Manufacturing, Shanghai, China, 08/2018
66. Invited Address - UNCG Colloquium Series, Mg innovation- Greensboro's Industrial Revolution, 10/2018
67. Keynote Address -, International NanoSMAT- Africa 2018, Global status of biodegradable Implant technology, Capetown, S Africa, 11/2018
68. Keynote Address- International Conference on Advanced Materials Research and Manufacturing Technologies, AMRMT 2019, Mag (Mg) ical Metal - Revolutionizing Biodegradable Implant Technologies to Light-weighting Structures and Applications, Oxford University, England, 08/2019

Affiliation with Scientific and Professional Societies over the past years

- Member, Materials Research Society (MRS)
- Member, American Society for Engineering Education (ASEE)
- Member, American Society of Mechanical Engineers (ASME)
- Member, American Society of Materials International (ASM)
- Member, The Minerals, Metals and Materials Society (TMS)
- Member, American Ceramic Society (ACerS)
- Member, Tau Beta Pi Engineering Honor Society
- Member, Sigma Xi Scientific Research Honor Society

Affiliation as Editorial Board Member over the years

- Composites Part B Engineering - Journal -Elsevier
- Journal Current Materials Science (Formerly: Recent Patents on Materials Science)
- Journal of Orthopedic Clinical Studies and Advanced Research
- Journal of Multifunctional Composites
- World Journal of Engineering (WJOE) (Past)
- ISRN Journal Mechanical Engineering (2011-2014)
- Journal of Nanogenomics and Nanomedicine (NGNM) (2012)

Special Journal Issues - Lead Guest Editor:

- Composites Part B Engineering Journal, Elsevier Publication Special Journal issue on ***"Interdisciplinary Approach to Smart Composites Structures and Materials"*** Volume 30B Dec. 1999.
- Composites Part B Journal, Elsevier Publication, Special Journal issue on "***Nanocomposites***" V 35B, #2, 2004
- Special Journal issue on **"*Nanoengineered Composites and Ceramic Laminates",* Composites, Part B, Vol. 37B(6) (2006)** (with peer reviewed journal articles from top scientists from 13 different countries)

- Supported in the initiation of the *new Journal* ***"Structural Health Monitoring"*** by the CAMSS scientists (Publisher: *Sage Publication*) 2002.

Lead/Co-Lead Organizer: International Conference /Symposium/ Workshop

- 1993 The Materials Conference '93 Science and Technology Alliance (Full peer reviewed Proceeding), Department of Energy Sponsorship, Technomic publication, PA (447 pages), Greensboro, NC, Symposium Chair
- 2001 ASME International Mechanical engineering Congress and Exposition, "Processing and Understanding of Structural and Electronic Ceramic Materials" (Full Peer Reviewed Proceeding) ASME – International Congress / MD-Volume 95, New York, Symposium Co-Organizer and Co-Chair.
- 2002 ASME International Mechanical engineering Congress and Exposition, , "Processing, Characterization and Modeling of Novel Nanoengineered and Surface Engineered Materials" (Full Peer Reviewed Proceeding) ASME-IMECE publication, New Orleans, Symposium Co-Organizer and Co-Chair
- 2003 ASME International Mechanical engineering Congress and Exposition, , "Processing, Characterization and Modeling of Multifunctional Materials" (Full Peer Reviewed Proceedings) ASME –IMECE publication, Washington DC, Symposium Co-Organizer and Co-Chair
- 2004 ASME International Mechanical engineering Congress and Exposition, "Processing, Characterization and Modeling of Multifunctional Materials" (Full Peer Reviewed Proceeding) ASME-IMECE publication, Anaheim, CA, Symposium Co-Organizer and Co-Chair
- 2005 ASME International Mechanical Engineering Congress and Exposition, "Innovative Processing for Engineered Composites" (Full Peer Reviewed Proceeding) ASME – IMECE publication, Orlando, FL, Symposium Co-Organizer and Co-Chair
- 2006 ASME International Mechanical Engineering Congress and Exposition, "Advances in Processing of Advanced Materials for challenging Environments" (Full Peer Reviewed Proceeding) ASME-IMECE publication, Chicago, IL, Symposium Co-Organizer and Co-Chair
- 2007 –3 special sessions, ASME International Mechanical Engineering Congress and Exposition, Processing and Advanced Materials, (Full Peer Reviewed Proceeding) ASME-IMEC Publication, Seattle, WA, Symposium Co-Organizer and Co-Chair
- 2008 ASME International Mechanical engineering Congress and Exposition, "Processing, Characterization and Modeling of Advanced Materials for Challenging Environments," Nov 2008 (Full Peer Reviewed Proceeding) ASME IMECE publication, Boston, MA, Symposium Co-Organizer and Co-Chair
- 2009 ASME International Mechanical engineering Congress and Exposition, "Processing, Characterization and Modeling of Advanced Biomaterials for Challenging Environments," ASME IMECE publication, Orlando, Fl, Symposium Co-Organizer and Co-Chair
- **2010 (Vancouver, Canada), 2011 (Denver, CO), 2012 (Houston, TX), 2013 (San Diego, CA), 2014 (Montreal, Canada), and 2015 (Houston, TX)** ASME International Mechanical Engineering Congress & Exposition
    - Each year, at different venues, organized Symposium related to Bioengineered materials, Applications, Processing etc. Symposium Co-Organizer

- 2010 National Educators Worshop-2010 on Translational Biotechnology – University/ Community college workforce development, March 2010, Greensboro, NC, Co-Organizer
- 2011National Educators Worshop-2011 on Convergence of Technologies – University/ Community college workforce development, Greensboro, NC, Co-Organizer
- 2009 Global BioMg09 Workshop, Greensboro, NC, Organizer
- 2012 NSF/FDA/ERC Global Biodegradable Think-Tank Workshop, FDA, White Oak, MD "Absorbable Medical Devices: Lessons Learned from Correlations of Bench Testing and Clinical Performance", Co-Organizer
- 2013, Symposium on Biodegradable Metallic Implant, NANOSMAT 2013, Granada, Spain- Symposium Organizer

Government – Funding agencies -Plenary Workshop (A major event as part of the conference to promote interdisciplinary materials research and cross cutting programs between funding agencies, universities-scientists, and educators across globe)

- ICCE/5 Fifth International Conference on Composites Engineering, Las Vegas, July 5 – 11, 1998
- ICCE/6 Sixth International Conference on Composites Engineering, Orlando, June 27 – July 3, 1999
- ICCC/7 Seventh International Conference on Composites Engineering, Denver, July 2- 8, 2000.
- ICCC/9 Ninth International Conference on Composites Engineering, Denver, San Diego, July 1- 6, 2002.
- ICCE/10 Tenth International Conference on Composites Engineering, New Orleans, July 20-26, 2003
- ICCE/11 Eleventh Annual International Conference on Composites/Nano Engineering Hilton Head, SC, August 8-13, 2004.
- ICCE/12 Twelfth International Conference on Composites/Nano Engineering, Spain, August 2-7, 2005
- ICCE-14, Fourteenth International Conference on Composites/Nano Engineering Boulder, CO, July 2006,
- International Conference on Advances in Manufacturing & Technology Management 2007, Jan 2007, Mumbai, India
- International Joint Conference on Knowledge Management for Composite Materials 2007 Germany, July 2007 (Ministry of Germany, BMW and Benz)

International Advisory Board/ Organizing Committee/ Technical Program Committee

- First Canadian International Composite Conference and Exhibition, Canada, 1991.
- Canadian Society for Mechanical Engineering Forum, 1992: “Transport, 1992+,” Canada, 1992.
- International Composites meeting - Composites in the Transportation Industry – Sydney, Australia, ACUN-2, Feb, 2000
- International Composites meeting – Technology Convergence in Composites Applications – Sydney, Australia, ACUN-3, Feb, 2001
- ICCE/5 Fifth International Conference on Composites Engineering, Las Vegas, July, 1998
- ICCE/6 Sixth International Conference on Composites Engineering, Orlando, June, 1999
- ICCC/7 Seventh International Conference on Composites Engineering, Denver,

July, 2000.

- ICCE/8 Eighth International Conference on Composites Engineering, Tenerife, Spain, Aug, 2001
- ICCC/9 Nineth International Conference on Composites Engineering, San Diego, July, 2002.
- ICCE/10 Tenth International Conference on Composites Engineering, New Orleans,
- July, 2003
- ICCE/11 Eleventh International Conference on Composites Engineering, Hilton Head, SC, August, 2004.
- ICCE/12 Twelfth International Conference on Composites/Nano Engineering, Spain, August , 2005
- ICCE-14, Fourteenth International Conference on Composite/Nano Engineering, Boulder, CO, July, 2006,
- International Conference on Advances in Manufacturing & Technology Management, Mumbai, India Jan, 2007
- International Joint Conference on Knowledge Management for Composite Materials, Germany, July, 2007.
- Multi Functional Materials and Structures 2008, Hong Kong, July, 2008
- BioMg09 Think Tank get-together, Greensboro, NC, Nov, 2009.
- National Educators Worshop-2010 on Translational Biotechnology – University/ Community college workforce development, Greensboro, NC, March 2010
- National Educators Worshop-2011 on Convergence of Technologies – University/ Community college workforce development, Greensboro, NC Nov 2011
- NSF/FDA/ERC Biodegradable Think-Tank Workshop, DC, March 2012
- Scientific Program Organizer with Dr. Witte of Biodegradable Metals Symposium at 9th World Biomaterials Congress (WBC) Chengdu, China, June, 2012

Other Session Chairman/Lead

- Session on Ceramic Matrix Composites, First Canadian International Composite Conference and Exhibition, Canada, 1991.
- Canadian Society of Mechanical Engineers, CSME Forum 1992
- American Society for Materials International, Annual meeting, 1997
- ICCE/5 Fifth International Conference on Composites Engineering, Las Vegas, 1998
- ICCE/6 Sixth International Conference on Composites Engineering, Orlando, July, 1999, ICCC/7 Seventh International Conference on Composites Engineering, Denver, July, 2000, ICCE/8 Eighth International Conference on Composites Engineering, Tenerife, Spain, 2001, ICCC/9 Ninth International Conference on Composites Engineering, San Diego, July, 2002, ICCE/10 Tenth International Conference on Composites Engineering, New Orleans, July, 2003, ICCE/11 Eleventh International Conference on Composites Engineering, Hilton Head, SC, August, 2004, ICCE/12 Twelfth International Conference on Composites/Nano Engineering, Spain, August, 2005 and ICCE-14 Fourteenth International Conference on Composites/Nano Engineering, Boulder, CO, July 2006,
- NATO Advanced Research Workshop-2003-Ukraine
- International Composites meeting - Composites in the Transportation Industry – Sydney, Australia, ACUN-2, Feb, 2000
- Department of Energy, Science &Technology Alliance Materials Conference '93
- ICAMTM2007, Jan 2007, Mumbai, India
- Workshop Organizer and Sessions- National Educators Workshop 2012 Seattle, WA and Greensboro, NC respectively on K-12 education 2007, 2010, 2011,2012

- Sessions- NSF-ERC Annual Meeting, Dec 2011.
- Sessions- NSF-ERC Annual Meeting, Nov 2012
- NanoSMAT2013, Sep 2013

Reviewer over the years

- Industry, UNSW, Sydney, Australia, Feb 2000.
- International Composites meeting – Technology Convergence in Composites Application American Society for Testing Materials "Fractography of Modem Engineering Materials", ASTM-STP 948.
- American Society for Testing Materials "Life Prediction Methodologies and Data for Ceramic Materials". ASTM-STP 1201.
- First Canadian International Composite Conference, 1991.
- CSME Forum, "Transport 1992", Canada, 1992.
- Annual Cocoa Beach Conference, Ceramic Science and Engineering, (many years)
- NIST internal papers
- ASME International Correspondence Course on Material Science.
- Journal of Materials Engineering and Performance, ASM
- Journal of Composites Technology and Research.
- Composites Part 'B' Engineering Journal.
- Journal of Materials Science and Engineering "A"
- Journal of Surface Coatings and Technology
- Journal of Vacuum science and technology
- Journal of Applied Physics
- American Institute of Biological Sciences
- ACUN-2 International Conference: Composites in the Transportation s – Sydney, Australia, and ACUN-3, Feb, 2001
- ICCE/5, ICCE/6, ICCE/7, ICCE/8, ICCE/9, and ICCE/10 (abstracts)
- NSF Division of Materials Research- Materials Research Science and Engineering Center (MRSEC) – PREM National Programs
- DoE programs and NATO proposals
- NIH - Panels as part of Bioscience and Engineering Directorate (R01, R21 etc)
- White House-STPI
- The American Society of Mechanical Engineering International Congress and Exposition- Full papers (since 2003)
- NSF programs – Major Research Instrumentation, Nanotechnolgy proposals, CREST center programs, NIRT, NER, NSF-RISE, Various NSF supplements, NSF-Small Business Research Initiative programs and many others – Many times
- NSF- LEAP-Hi

CAMSS and ERC Sponsorship of International Conferences

- ICCE/5 Fifth International Conference on Composites Engineering, Las Vegas, July, 1998
- ICCE/6 Sixth International Conference on Composites Engineering, Orlando, June, 1999
- ICCC/7 Seventh International Conference on Composites Engineering, Denver, July 2000.
- ICCE/8 Eighth International Conference on Composites Engineering, Tenerife, Spain, Aug, 2001
- ICCC/9 Nineth International Conference on Composites Engineering, San Diego, July, 2002.

- ICCE/10 Tenth International Conference on Composites Engineering, New Orleans, July, 2003
- ACUN-2 International Conference: Composites in the Transportations – Sydney, Australia, Feb 2000
- ACUN-3- International Composites meeting - Technology Convergence in Composites Applications, , University of New South Wales, Sydney Australia, Feb, 2001
- 19th All India Manufacturing Technology, Design and Research Conference, , Indian Institute of Technology, Madras, India, December, 2000
- ASMM2D "Advances in Superconductivity and Magnetism: Materials Mechanism and Devices", Mangalore, India. Organized by Tata Institute of Fundamental Research, India, September, 2001
- Advanced Research Workshop "Mixed Ionic Electronic Conducting (MIEC) Perovskites for Advanced Energy Systems" Kyiv, (along with NATO), Ukraine June, 2003
- 2004 MRS – Symposium E, " Integration Challenges in Next- Generation Oxide-Based Nanoelectronics, , San Francisco, CA, April, 2004
- NATO ARW "Fuel Cell Technologies: State & Perspectives" Kyiv, June, 2004
- International Conference on Advances in Structural Integrity, Bangalore, India, July2004.
- 2005- ICCE/12 Twelfth International Conference on Composites Engineering, Spain, August, 2005
- 2005- ASME International Mechanical Engineering Congress and Exposition, "Innovative Processing for Engineered Composites" Symposium with full peer-reviewed publication, Orlando, FL, Nov, 2005.
- 2005- "Advances in Materials, Product Design and Manufacturing Systems" Conference with full peer-reviewed proceedings, Tamilnadu, India. Dec, 2005
- ICCE-14, Boulder, CO, July 2006,
- International Conference on Advances in Manufacturing & Technology Management, ICAMTM2007, Mumbai, India, Jan 2007
- International Joint Conference on Knowledge Management for Composite Materials, KMCM 2007 Germany, July 2007.
- 2nd Biodegradable Metals Conference, Maratea, Italy, Oct 2010.
- 3rd Biodegradable Metals Conference, Quebec City, Canada, August 2011
- 4th Biodegradable Metals Conference, Maratea, Italy, Aug 2012.
- National Educators Workshop 2008, 2010, 2011, 2012, 2013, 2014, 2015
- Biometals Conference workshop, Different Years since 2010
- NanoSMAT 2013, Granada, Spain, Sep 2013
- NanoSMAT 2014, Dublin, Ireland, Sep 2014
- NanoSMAT 2015, Manchester, UK, Sep 2015
- NanoSMAT 2016, Aviero, Portugal Sep 2016
- NanoSMAT 2017, Hong Kong, Nov 2017

Graduate Students:

Dr. Sankar in the past and present served/s in numerous committees of Masters and Ph.D students and has provided both ERC/CAMSS facility and financial support to 100s of students (These student list is not provided)

NOTE: (Year of graduation/expected in parenthesis) (All titles reflect overall area of research only).

Chair/Co- Chair- Ph.D Students and Area of Research:

- Ranji Vaidyanathan (1994) – "CVI of SiC/SiC composites" (1st Ph.D student to graduate via Interdisciplinary/Joint Ph.D between NCAT and NC State University)
- Suneeta Shamana Neogi (1998, as external advisor at NC State University) – "2-D Dopant Analysis in Si by Chemical Etching and TEM"
- Qiuming Wei (1998) – "Properties of Si_3N_4 and Thin-Film DLC by PLD" Co- Advisor with NC State
- Christopher Grace (Co-advisor, 1998) – "Low velocity Impact Damage of Composite Materials"
- Pramod Chaphalkar (Co-advisor, 1999) – "Properties & Analytical Modeling of RTM Composites"
- Larry Russell (2000) – "Effect of Coatings on Monolithic Ceramics and CMCs"
- Jerry Lang (2001) – "Mechanical Behavior and Modeling of MI SiC/SiC CMCs"
- Zhigang, Xu (2002) – "Combustion CVD of YSZ for Solid Oxide Fuel Cells"
- Cindy Waters (2004) – "Developing an Understanding of Nanoengineered Ceramic Composite Materials Through PLD"
- Xinyu, Wang (2004) – " Investigation of Nanoengineered Al2O3 for Bio-dental Applications"
- Eric Jones (2006)- "TBC/ EBC for Composites"
- Gukan Rajaram (2006) - "Modeling and Optimization of CCVD in Thin Film Materials for Fuel Cell Applications" – Co-Advisor
- Sudhir Neralla (2006) – "Nanoengineered Novel materials for Homeland security"
- Ramya Vedaiyan (2007) - Filled polymer membrane and Nanoengineered Chemical and Biological sensors
- Akinyede Oladapo (2007) – " Nanoparticulate Polymer Material for Composites"
- Maliq Culbreath (2014) – "Surface Engineered Materials for Naval applications" Left – Did not complete
- Bala Kailasshankar (2014) - "Wear Resistant Coatings Using Innovative Processing" – Left to Private Company- Did not complete.
- Gregory Young (2014) - "Advances in Nanoengineered Fuel Cells" – Left to Cummins- Did not complete
- Steven Chen (2013) – "Developing Porous Mg Biometals" – Left to NC State
- Christopher, Smith (2014) – Understanding Processing of Biodegradable Metals
- Svitlana Fialkova. (2013) – Development of CNT and sensors using Magnetron Sputtering
- Leon White (2014) – Anodizing and tunable corrosion of Mg alloy systems
- Giridharan Venkataraman (2021) - Modeling for Bioengineered Nanomaterials for controlled Corrosion" Part-time
- Lumei Liu (2018) – Innovation and understanding in vivo- in vitro bio mg performance via microfluidics and bioreactor investigations
- Udhab Adhikari (2018) - Novel Material Design, Synthesis and Characterization for Peripheral Nerve Repair
- Jim Shi (2021) – Understanding Mg deformations for structure-property relationships – Part-time
- Honglin Zhang (2021) – Effect of annealing on the structure- properties of Mg- Al alloy plates through asymmetric rolling
- Christopher Hale (2021) - Tailoring Mg-alloy systems through composition/microstructure/severe plastic deformation.

- Jessica Rawles (2023) – Application and innovative manufacturing of lightweight materials

Chair/Co-Chair-MSME Students and Area of Research

- Peter Wang (1985) – "Weld property and SA fluxes",
- Peter Chander (1986) – "Mechanical properties of Ceramic Composites"
- Ranji Vaidyanathan (1988) – "Uniaxial testing of Si_3N_4"
- Kofi. Kpeglo (1988) – "High Temp Characteristics of CMCs" – Co Advisor
- Arvind Sinha (1988) – "High temp behavior of Silicon Nitrides"
- Jerry. Lang (1990) – "Testing of SiC/SiC"
- Gao Jun (1991) – "Creep of Monolithic ceramics"
- Bo Zhaoshan (1991) – "Fracture toughness of nuclear steels"
- Dwight Squire (1992) – "Design of creep Testing facility for Brittle materials"
- Srikanth Krishnaraj (1993) – "Fatigue of various Silicon Nitrides"
- Marvin Dixie (1993) – "Investigation of GTE-6 Si3N4 at elevated temperatures"
- Bo Wang (1994) – "Microchemical analysis of SNW 1000"
- Jayant Neogi (1994) – "Microstructural investigation of PY-6"
- Ling Zhao (1994) – "Investigation of SiC Reinforced Silicate glass"
- Sudarsan Srinivasan (1996) – "Creep damage mechanisms in Silicon Nitrides"
- Rajeev Krishnan (1998) – "Micromechanical modeling of Coated Fiber Composites"
- Gautam Choudhury (1999) – "Tensile Creep and Fatigue of Sintered Si_3N_4"
- Thomas Rawdanowicz (1999) – "AlN/TiN Tribological Coatings through PLD"
- Horace Dukes (2000) – "A Comparative Study of MI SiC/SiC woven CMCs"
- Abhjit Duraphe (2000) – "High Temperature Behavior of MI SiC/SiC woven CMCs"
- Varun Rao (2001) – "High Temperature Properties of Silicon Based Ceramics"
- Eric Jones (2001) – "Effect of Temperature and Fatigue Cycling on High Temperature CMCs"
- Maurice Heath (2001) – "Understanding the Process Variables for Thin-Film YSZ CVD"
- Yagya Acharya (2001) – "Experimental Investigation of Nextel 720 Fibers"
- Bala Kailasshankar (2002) – "High Temperature Behavior of Nextel 720 Fibers" Co-Advisor
- Sudhir Neralla (2002) – "Synthesis of Nano-Engineered Ductile Ceramics"
- Edwardo Freeman (2003) – Investigation of tows and minicomposites of Nextel 720 at elevated temperatures"- Co-Advisor
- Corydon Hilton (2004) – "Processing of nanoengineered electrolyte Materials"
- Bobby Watkins (2004) – "Nanosynthesized YSZ as Fuel Cell materials"
- Tamara Gogayeva (2005) – "Nano Engineered Armor Material"
- Greg Young (2006)- "Process variables in FCVD for Solid Oxide Fuel Cell System"
- Dev Ray (2007)- "Nanoscience and engineering of Hipped materials"
- Riju Kailashashanker (2008)- "Improving Textile parts by novel nanosurface technologies"
- Svitlana Fialkova (2009) – Growth of CNT via Catalysis using Magnetron Sputtering
- Ganesh Ramakrishnan (2010)- Magnetron sputtering creating combinatorial Mg alloy development
- Ashlyn Worthy (2011) – Magnetron Sputtering for Hydroxyapatite Coatings

Post-doctoral/ Research Scientists (past)

- Dr. R. Vaidyanathan (Faculty at Oklahoma State University)
- Dr. K. Dovidenko (U. of Albany)
- Dr. V. Godbole (U. of Poona, India)
- Dr. A.K. Sharma (Intel)
- Dr. Q. Wei (Faculty at UNCC)
- Dr. S. Chattopadhyay (IIT, IL)
- Dr. D. Kumar (Faculty at NCAT)
- Dr. R. Mohan (Faculty at NCAT)
- Dr. E. Dyneka (CREE, Raleigh)
- Dr. A. Pandya (NSF-STC- UNC Chapel Hill)
- Dr. X. Wang (Canada)
- Dr. J. Abiade (Faculty at Virginia Tech)
- Dr. S. Ho (Faculty at S. Korea)
- Dr. S. Ko (Faculty at S. Korea)
- Dr. C. Waters (past faculty at A&T, now Naval research Lab)
- Dr. R. Bolick (Composite Industry)
- Dr. M. Konchady (INTEL)
- Dr. R. Gupta (Faculty at Pittsburg State University)
- Dr. G. Banerjee (Retd.)
- Dr. Y. Chen (Sikorsky)
- Dt. M. Kojo (Faculty at KNUST, Ghana)
- Dr. Y. Jang (Faculty at S. Korea)
- Dr. Y. Koo (S. Korea)
- Dr. R. Kotoka (RAEK Innovation Corporation)

Senior Research Scientists (present)

- Dr. S. Yarmolenko
- Dr. Z. Xu
- Dr. B. Collins
- Dr. S. Fialkova
- Dr. S. Neralla (Vishay Inc and part-time at A&T)

Leadership activities - MOUs, NDAs and University, Industry Connectivity

- Between NC State University and NC A&T State University (Special Memorandum to take courses at NC State University for NSF-CAMSS students at no charge as part of this new Center partnership) Partnership resulted through NSF –CREST Center - NC A&T State University and NCSU: 69 joint publications; co-edited Composites B Engineering Journal, Vol. 30 B, 1999; joint proposals, new courses and student advising.
- Educational Partnership Agreement Between Naval Undersea Warfare Center, NUWC and NC A&T State University (research funding and employer of 2 CAMSS supported PhD minority students)
- Between NC A&T State University and Northwestern Polytechnical University, Xian, People's Republic of China, 2000
- Between NC A&T State University and University of New Orleans (led to a Congressional line item), 2000

- MOU between NC A&T State University and Inha University, S. Korea, (2003) (A faculty and a MS student spent Sabbatical, Various research proposal and papers (2005-2006).
- MOU between NC A&T SU and Bannari Amman Institute of Technology, India (2005)
- MOU between NC A&T SU and TamilNadu Agricultural University (TNAU) (2006)
- MOU between NC A&T SU and IIT- Madras (2006)- Partner in the NSF-ERC
- MOU between NC A&T SU and n Coat (2008) – ERC Partner
- MOU between NC A&T SU and U. of Pittsburgh (2009) – ERC Partner
- MOU between NC A&T SU and U. of Cincinnati (2009) – ERC Partner
- MOU between NC A&T SU and Hannover Medical School (2010) – ERC Global Partner
- MOU between NC A&T SU and Hitachi International (2009) – ERC Partner
- MOU between NC A&T SU and Johnson & Johnson (2009) – ERC partner
- MOU between NC A&T SU and Covidien (2010) – ERC partner
- MOU between NC A&T SU and the Ohio State University (2014)
- MOU University of Ulster, N. Ireland (2018)
- Industries, NDA, Contracts, Connectivity etc.
    - Ex-One
    - Acell
    - Dentsply,
    - Cook Medical
    - Evonik
    - Tribogenics
    - TransTech Pharma
    - Jet Hot
    - Boston Scientific
    - NanoMAG
    - inCube Labs
    - Orthokinetics Inc
    - General Nano
    - W.L. Gore
    - Ft. Wayne Metals
    - Luminal Solutions

Selected institutional service done over the years at different times:

- Director, NSF - Engineering Research Center (ERC)
- Director, Center for Advanced Materials and Smart Structures (an interdisciplinary, inter-institutional research/educational motherhood center encompassing major national materials centers from NSF, Army, Navy etc)
- Co-ordinator and Co-PI for NC A&T SU, NSF-Nanoscale Science and Engineering Center (NSEC)- Lead Institution, University of Illinois-UC along with Stanford and Cal-Tech
- Graduate Program Director, Mechanical Engineering, NC A&T State University, 1985-1998
- Member – Interinstitutional/ joint Ph.D Program establishment with NC State University
- Member – Autonomous Ph.D Program establishment in Mechanical engineering at NCAT
- Numerous Committees at all levels (example; Chair of Promotion, Tenure in College of Engineering, Dean, Chair, Faculty selections, Ph.D and Co-op Ph.D Program development for NC A&T SU, Chancellor's Futures Committee , and other various Ad hoc committees Chancellors, Provost, VC levels and many at other levels).

- Member -Redesigning with Architects the Old Bluford library to Interdisciplinary Research Center (IRC) Building. Worked all the infrastructure to establish the interdisciplinary materials research activities at IRC (NCAT)
- Key committee member – Initiation of Joint School of nanoscience and Nanoengineering (JSNN)
- Cluster Lead-Advanced Materials and Nanotechnology for the University
- COE Tenure, Promotion & Reappointment Committee (Chair 3 different times and member 2 other times)
- COE Common Course Committee on Materials Science
- Member - University Research Council
- Member - Greensboro University Research Park (Millennium) Charter Activities
- Member - External Reviewer for Promotion/ Tenure – U. of Tennessee, U. of Cincinnati etc
- Member – NCAT/Asso. VC for Research and Dean of Graduate School Selection Committee
- Member – NCAT/Dean of Engineering selection Committee
- Member-ME department – new faculty selection committee
- Chair – A&T/University Research Awards Committee – twice (2)
- Chair – A&T/Director for Research Services – DoR/University Committee
- Chair – A&T/Director for Outreach, Tech Transfer – DoR/University Committee
- Chair – A&T/Director for Research administration & Special assistant to VC – DoR/University committee
- Member – A&T/ VC for Research and Economic Development selection Committee
- Numerous presentations and meetings on behalf of the university and CoE's broad-based materials research activities, Advanced manufacturing for visitors (USA and abroad)

PUBLICATIONS

Journals and Book Chapters:

1. Knudsen W., Sankar J., McQueen H.J., Jonas J., and Hawkins D., "*Simulation of Rolling Schedules for HSLA Steels*," in *Hot Working and Forming Processes*, C.M.S.a.G.J. Davies, Editor. 1979, The Metals Society: London. p. 51-56.
2. McQueen H., Sankar J., and Fulop S., "*Fracture under hot forming conditions*," in *Mechanical Behavior of Materials (ICM3)*. 1979, Pergamon Press, Oxford. p. 675-684.
3. Sankar J., Hawkins D., and McQueen H., "*Behaviour of low-carbon and HSLA steels during torsion-simulated continuous and interrupted hotrolling practice,"* Metals Technology, 6 (1979), 325-331.
4. Sankar J. and Williams D.B., "*Analytical Electron-Microscopy of Pressure-Vessel Steel Weldments,"* Scanning Electron Microscopy, (1981), 159-168.
5. Sankar J., Williams D.B., and Pense A.W., "*Fractography of Pressure Vessel Steel Weldments*," in *Fractography of Modern Engineering Materials: Composites and Metals*, J.E.M.a.J.J. Au, Editor. 1987, ASTM International. p. 295-316.
6. Sankar J., Krishnaraj S., Vaidyanathan R., and Kelkar A.D., "*Elevated temperature behavior of sintered silicon nitride under pure tension, creep, and fatigue*," in *Life prediction methodologies and data for ceramic materials*, S.F.D. C. R. Brinkman, Editor. 1994, ASTM International. p. 19-35.
7. Wei Q., Narayan R.J., Narayan J., Sankar J., and Sharma A.K., "*Improvement of wear resistance of pulsed laser deposited diamond-like carbon films through incorporation of metals,"* Materials Science and Engineering B-Solid State Materials for Advanced Technology, 53 (1998), 262-266.

8. Godbole V.P., Narayan R., Xu Z., Narayan J., and Sankar J., "*Diamond films and composites on cobalt-chromium alloys,"* Materials Science and Engineering B-Solid State Materials for Advanced Technology, 58 (1999), 251-257.
9. Rawdanowicz T.A., Godbole V., Narayan J., Sankar J., and Sharma A., "*The hardnesses and elastic moduli of pulsed laser deposited multilayer AlN/TiN thin films,"* Composites Part B-Engineering, 30 (1999), 657-665.
10. Sankar J., Hui D., Narayan J., Johnson R., Sibley W., and Pasto A., "*Special Issue: Interdisciplinary Approach to Smart Composite Structures and Materials - Foreword,"* Composites Part B-Engineering, 30 (1999), Iii-V.
11. Wei Q., Narayan R.J., Sharma A.K., Sankar J., and Narayan J., "*Preparation and mechanical properties of composite diamond-like carbon thin films,"* Journal of Vacuum Science & Technology a-Vacuum Surfaces and Films, 17 (1999), 3406-3414.
12. Wei Q., Sankar J., Kelkar A.D., and Narayan J., "*Microstructure evolution accompanying high temperature; uniaxial tensile creep of self-reinforced silicon nitride ceramics,"* Materials Science and Engineering a-Structural Materials Properties Microstructure and Processing, 272 (1999), 380-388.
13. Wei Q., Sharma A.K., Sankar J., and Narayan J., "*Mechanical properties of diamond-like carbon composite thin films prepared by pulsed laser deposition,"* Composites Part B-Engineering, 30 (1999), 675-684.
14. Kumar D., Sankar J., Cho K.G., Craciun V., and Singh R.K., "*Enhancement of cathodoluminescent and photoluminescent properties of Eu : Y2O3 luminescent films by vacuum cooling,"* Applied Physics Letters, 77 (2000), 2518-2520.
15. Wei Q., Sankar J., Sharma A.K., Oktyabrsky S., Narayan J., and Narayan R.J., "*Atomic structure, electrical properties, and infrared range optical properties of diamondlike carbon films containing foreign atoms prepared by pulsed laser deposition,"* Journal of Materials Research, 15 (2000), 633-641.
16. Chattopadhyay S., Kvit A., Kumar D., Sharma A.K., Sankar J., Narayan J., Knight V.S., Coleman T.S., and Lee C.B., "*Low temperature synthesis and electrical properties of epitaxial Sr0.8Bi2.2Ta2O9 thin films,"* Applied Physics Letters, 78 (2001), 3514-3516.
17. Katiyar P., Kumar D., Nath T.K., Kvit A.V., Narayan J., Chattopadhyay S., Gilmore W.M., Coleman S., Lee C.B., Sankar J., and Singh R.K., "*Magnetic properties of self-assembled nanoscale La2/3Ca1/3MnO3 particles in an alumina matrix,"* Applied Physics Letters, 79 (2001), 1327-1329.
18. Kumar D., Chattopadhyay S., Gilmore W.M., Lee C.B., Sankar J., Kvit A., Sharma A.K., Narayan J., Pietambaram S.V., and Singh R.K., "*Structural and magnetoresistance properties of La2/3Ca1/3MnO3 thin films on buffered silicon substrates,"* Applied Physics Letters, 78 (2001), 1098-1100.
19. Kumar D., Narayan J., Kvit A.V., Sharma A.K., and Sankar J., "*High coercivity and superparamagnetic behavior of nanocrystalline iron particles in alumina matrix,"* Journal of Magnetism and Magnetic Materials, 232 (2001), 161-167.
20. Wei Q., Sankar J., and Narayan J., "*Structure and properties of novel functional diamond-like carbon coatings produced by laser ablation,"* Surface & Coatings Technology, 146 (2001), 250-257.
21. Wei Q., Sankar J., and Narayan J., "*Microstructural changes due to heat-treatment of annealing and their effect on the creep behavior of self-reinforced silicon nitride ceramics,"* Materials Science and Engineering a-Structural Materials Properties Microstructure and Processing, 299 (2001), 141-151.
22. Wei Q., Sankar J., Sharma A.K., Yamagata Y., and Narayan J., "*Effect of chamber pressure and atmosphere on the microstructure and nanomechanical properties of amorphous carbon films prepared by pulsed laser deposition,"* Journal of Vacuum Science & Technology a-Vacuum Surfaces and Films, 19 (2001), 311-316.

23. Kumar D., Pietambaram S.V., Craciun V., Singh R.K., Perriere J., and Sankar J., "*Ultraviolet-assisted pulsed laser deposition of La0.7Ca0.3MnO3 thin films with improved oxygen content, crystallinity and magnetoresistive properties,"* Journal of Vacuum Science & Technology a-Vacuum Surfaces and Films, 20 (2002), 198-201.
24. Kumar D., Sankar J., Narayan J., Singh R.K., and Majumdar A.K., "*Low-temperature resistivity minima in colossal magnetoresistive La0.7Ca0.3MnO3 thin films,"* Physical Review B, 65 (2002), 094407, 1-6.
25. Chipara M., Hui D., Notingher P.V., Chipara M.D., Lau K.T., Sankar J., and Panaitescu D., "*On polyethylene-polyaniline composites,"* Composites Part B-Engineering, 34 (2003), 637-645.
26. Gilmore W.M., Chattopadhyay S., Kvit A., Sharma A.K., Lee C.B., Collis W.J., Sankar J., and Narayan J., "*Growth, characterization,, and electrical properties of PbZr0.52Ti0.48O3 thin films on buffered silicon substrates using pulsed laser deposition,"* Journal of Materials Research, 18 (2003), 111-114.
27. Chipara M., Hui D., Sankar J., Leslie-Pelecky D., Bender A., Yue L., Skomski R., and Sellmyer D.J., "*On styrene-butadiene-styrene-barium ferrite nanocomposites,"* Composites Part B-Engineering, 35 (2004), 235-243.
28. Hui D., Chipara M., Lau K.T., Sankar J., Chipara M.D., Notingher P., and Panaitescu D., "*Investigations on polyvinyl chloride - Carbon black blends,"* Science and Engineering of Composite Materials, 11 (2004), 19-26.
29. Hui D., Chipara M., Sankar J., and Lau K.T., "*Mechanical Properties of Carbon Nanotubes Composites,"* Journal of Computational and Theoretical Nanoscience, 1 (2004), 204-215.
30. Kumar D., Yarmolenko S., Sankar J., Narayan J., Zhou H., and Tiwari A., "*Pulsed laser deposition assisted novel synthesis of self-assembled magnetic nanoparticles,"* Composites Part B (Engineering), 35B (2004), 149-55.
31. Neralla S., Kumar D., Yarmolenko S., and Sankar J., "*Mechanical properties of nanocomposite metal-ceramic thin films,"* Composites Part B-Engineering, 35 (2004), 157-162.
32. Sankar J., Hui D., and Lau A.K.T., "*Nanocomposites: Foreword,"* Composites Part B-Engineering, 35 (2004), 75-77.
33. Wills R.R., Peirson M.H., Ferber M.K., Tennery V., Sankar J., Yarmolenko S., Thadhani N.N., Velez M., and Karakus M., "*Digital library of ceramic microstructures: part 1 - Digital library,"* American Ceramic Society Bulletin, 83 (2004), 9301-9305.
34. Wills R.R., Peirson M.H., Ferber M.K., Tennery V., Sankar J., Yarmolenko S., Thadhani N.N., Velez M., and Karakus M., "*Digital Library of Ceramic Microstructures. Part 2. Virtual Experiments Laboratory,"* American Ceramic Society Bulletin, 83 (2004), 25-25
35. Xu Z., Sankar J., and Yarmolenko S., "*Yttria-stabilized zirconia coatings produced using combustion chemical vapor deposition,"* Surface & Coatings Technology, 177 (2004), 52-59.
36. Orlovskaya N., Lugovy M., Subbotin V., Radchenko O., Adams J., Chheda M., Shih J., Sankar J., and Yarmolenko S., "*Robust design and manufacturing of ceramic laminates with controlled thermal residual stresses for enhanced toughness,"* Journal of Materials Science, 40 (2005), 5483-5490.
37. Orlovskaya N., Nicholls A., Yarmolenko S., Sankar J., Johnson C., and Gemmen R., "*Microstructural characterization of La-Cr-O thin film deposited by RF magnetron sputtering on the stainless steel interconnect materials for SOFC application,"* Fuel Cell Technologies: State and Perspectives, 202 (2005), 355-371.
38. Orlovskaya N., Steinmetz D., Yarmolenko S., Pai D., Sankar J., and Goodenough J., "*Detection of temperature- and stress-induced modifications of LaCoO3 by micro-Raman spectroscopy,"* Physical Review B, 72 (2005), 014122, 7 pages.

39. Orlovskaya N., Steinmetz D., Yarmolenko S., Pai D., Sankar J., and Goodenough J., "*Structure, structural phase transitions, mechanical properties, defects-Detection of temperature-and stress-induced modifications of LaCoO3 by micro-Raman spectroscopy,"* Physical Review-Section B-Condensed Matter, 72 (2005),)14122, 7 pages.
40. Waters C.K., Yarmolenko S., Sankar J., Neralla S., and Kelkar A.D., "*Synthesis, Optimization, and Characterization of AlN/TiN Thin Film Heterostructures*," in *Nanoengineering of Structural, Functional and Smart Materials*, A.D.K. Mark J. Schulz, Mannur J. Sundaresan, Editor. 2005, CRC Press, 530-582.
41. Xu Z., Yarmolenko S., and Sankar J., "*Exploration of combustion CVD method for YSZ thin film electrolyte of solid oxide fuel cells,"* Fuel Cell Technologies: State and Perspectives, 202 (2005), 49-57.
42. Kumar D., Sankar J., and Narayan J., "*Synthesis and characterization of metal-ceramic thin-film nanocomposites with improved mechanical properties*," in *Nanoengineering of Structural, Functional, and Smart Materials*, A.D.K. Mark J. Schulz, Mannur J. Sundaresan, Editor. 2006, CRC Press, 247-261.
43. Lau K.-T., Sankar J., and Hui D., "*Enhancement of the mechanical strength of polymer-based composites using carbon nanotubes*," in *Nanoengineering of Structural, Functional, and Smart Materials*, A.D.K. Mark J. Schulz, Mannur J. Sundaresan, Editor. 2006, CRC Press. p. 327-346.
44. Lua J., Gregory W., and Sankar J., "*Multi-scale dynamic failure prediction tool for marine composite structures,"* Journal of Materials Science, 41 (2006), 6673-6692.
45. Orlovskaya N., Lugovy M., Ko F., Yarmolenko S., Sankar J., and Kuebler J., "*SiC/SiCwoven (fabric) laminates: Design, manufacturing, mechanical properties,"* Composites Part B-Engineering, 37 (2006), 524-529.
46. Orlovskaya N., Lugovy M., Kuebler J., Yarmolenko S., and Sankar J., "*Design of tough ceramic laminates by residual stresses control*," in *Ceramic-Matrix Composites*. 2006, Woodhead Publishing, 178-215.
47. Rajaram G., Xu Z.G., Jiang X.C., Pai D.M., Desai S., and Sankar J., "*A statistical approach to the design and fabrication of anode material for solid oxide fuel cells - A case study,"* International Journal of Industrial Engineering-Theory Applications and Practice, 13 (2006), 349-356.
48. Sankar J., Hui D., Lau A.K.T., Orlovskaya N., and Yarmolenko S., "*Special issue: JCOM 731 "Nanoengineered Composites and Ceramic Laminates" - Foreword,"* Composites Part B-Engineering, 37 (2006), 379-381.
49. Xu Z.G., Rajaram G., Sankar J., and Pai D., "*Electrophoretic deposition of YSZ electrolyte coatings for solid oxide fuel cells,"* Surface & Coatings Technology, 201 (2006), 4484-4488.
50. Yun Y., Shanov V., Tu Y., Schulz M.J., Yarmolenko S., Neralla S., Sankar J., and Subramaniam S., "*A multi-wall carbon nanotube tower electrochemical actuator,"* Nano Letters, 6 (2006), 689-693.
51. Xu Z., Rajaram G., Sankar J., and Pai D., "*Electrophoretic deposition of YSZ electrolyte coatings for SOFCs,"* Fuel Cells Bulletin, 2007 (2007), 12-16.
52. Abiade J.T., Sang Ho O., Kumar D., Varela M., Pennycook S., Haizhong G., Gupta A., and Sankar J., "*The effect of matrix and substrate on the coercivity and blocking temperature of self-assembled Ni nanoparticles,"* Journal of Applied Physics, 104 (2008), 073910, 6 pages
53. Desai S., Mohan R., Sankar J., and Tiano T., "*Understanding conductivity in a composite resin with single wall carbon nanotubes (SWCNTs) using design of experiments,"* International Journal of Nanomanufacturing, 2 (2008), 292-304.
54. Haywood T., Oh S.H., Kebede A., Pai D.M., Sankar J., Christen D.K., Pennycook S.J., and Kumar D., "*Structural and flux-pinning properties of laser ablated YBa(2)Cu(3)O(7-delta)*

thin films: Effects of self-assembled CeO(2) nanodots on LaAlO(3) substrates," Physica C-Superconductivity and Its Applications, 468 (2008), 2313-2316.
55. Herndon N.B., Oh S.H., Abiade J.T., Pai D., Sankar J., Pennycook S.J., and Kumar D., "*Effect of spacer layer thickness on magnetic interactions in self-assembled single domain iron nanoparticles,"* Journal of Applied Physics, 103 (2008), 07D515.
56. Kim H.S., Kim J., Jung W., Ampofo J., Craft W., and Sankar J., "*Mechanical properties of cellulose electro-active paper under different environmental conditions,"* Smart Materials & Structures, 17:1 (2008), 015029.
57. Konchady M.S., Yarmolenko S., Pai D.M., Sankar J., and Kvit A.V., "*Nanoscratch behaviour, structure and nanoindentation of multilayer TiN/CrN coatings,"* International Journal of Surface Science and Engineering, 2 (2008), 439-456.
58. Orlovskaya N., Yarmolenko S., Sankar J., Kuebler J., and Lugovy M., "*Effects of rolling and hot pressing on mechanical properties of boron carbide-based ceramics,"* Journal of Materials Science, 43 (2008), 5942-5947.
59. Rajaram G., Desai S., Zhigang X., Pai D.M., and Sankar J., "*Systematic studies on Ni-YSZ anode material for solid oxide fuel cell (SOFCs) applications,"* International Journal of Manufacturing Research, 3 (2008), 350-359.
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08/1983 - 08/1984.
Principal Investigators. S. Avva (PI) and J. Sankar $50 000 + Use of DoE Facilities at Oak Ridge National Laboratory, TN.

Acquisition of a New Scanning Electron Microscope; North Carolina State Appropriation; North Carolina A & T State University;
07/1983 - 06/1984.
Principal Investigators: J. Sankar (PI) and W. Collis.
$40,000

"Shared Research Equipment Travel Support", Processing Science and Technology Section.
ORNL, TN.
10/1984 - 09/1985
Principal Investigators: J. Sankar (PI) and V. S. Awa
$1,500

Acquisition of Advanced Accessories for the New Scanning Electron Microscope ISI-5540;
North Carolina State Appropriation; North Carolina A & T State University;
07/1984 - 06/1985.
Principal Investigator: J. Sankar
$20,000

Acquisition of an Optical Microscope with Photomicrographic Facility:
Polaroid Foundation, Inc.;
09/1984- 09/1985
Principal Investigator: J. Sankar
$2,500

Instrumentation for Materials Research, Office of Naval Research (DoD),
01/1984-10/1985.
Principal Investigators: V. S. Avva (PI), J. Sankar and H. S. Tzou
$160,000

"Testing and Evaluation of Advanced Ceramics at High Temperature in Uniaxial Tension",
Martin Marietta Energy Systems, lnc; Department of Energy;
10/1984 - 10/1986.
Principal Investigators: J. Sankar (PI) and V. S. Avva
$400,000

"Effect of Fatigue and Thermal Loads on Graphite Fiber Reinforced Glass Matrix Composites";
Sponsored by NASA (Langley Research Center);
09/1983 - 10/1987.
Principal Investigators: V. S. Avva (PI), J. Sankar and W. J. Craft
$375,000

"Effect of Thermal and Cyclic Loads on Silicon Carbide Yarn Reinforced Glass Matrix
Composites"; Department of Energy;
08/1984 – 02/1988.
Principal Investigators: V. S. Avva (PI) and J. Sankar
$195,000

"Testing and Evaluation of Advanced Ceramics at High Temperature in Uniaxial Tension";
Martin Marietta Energy Systems, lnc; Department of Energy;
10/1986 – 10/1987.
Principal Investigators: J. Sankar (PI) and V. S. Awa
$200,000

"Testing and Evaluation of Dynamic Tensile Properties of Magnesium Based Metal Matrix
Composite Materials"; Battelle, Pacific Northwest Laboratories;
02/1987 – 02/1988.
Principal Investigator: J. Sankar (PI), V. S. Awa and A. D. Kelkar

$25,000

"Micro/Macro Studies of Fiber-Reinforced Composite Materials"; Office of Naval Research /URlP;
09/1986 - 09/1992.
Principal Investigators: V. S. Avva (PI), G. J. Filatovs, V. Kabadi, A. D. Kelkar, R. Sadler and J. Sankar
$2,250,000

"Room Temperature and High Temperature Tension Characteristics of Silicon Nitride"; Martin Marietta Energy Systems, Inc.; Department of Energy;
10/1987 - 10/1988.
Principal Investigators: J. Sankar (PI), V. S. Awa and A. D. Kelkar
$200,000

"Fracture Toughness Studies of High Strength Materials", Martin Marietta Energy Systems, lnc;
02/1989 – 09/1990.
Principal Investigator: A. D. Kelkar (PI) and J. Sankar
$100,000

"High Temperature Uniaxial Creep Studies in Silicon Nitride Materials"; Martin Marietta Energy Systems, Inc.; Department of Energy;
10/1989 – 10/1990.
Principal Investigators: J. Sankar (PI) and A. D. Kelkar
$200,000

"A Study on the Yield Phenomenon of Tantalum"; U. S. Army; ARDEC;
08/1992 – 12/1992.
PrincipaI Investigators: J. Sankar
$25,000

"Mechanical Properties Testing of Ceramic Fiber-Ceramic Matrix Composites"; Martin Marietta Energy Systems, Inc; Department of Energy;
03/1989 – 12/1993.
Principal Investigators: J. Sankar (PI) and A. D. Kelkar
$200,000

"High Temperature Fatigue-Creep Tension Characteristics of Silicon Nitride"; Martin Marietta Energy Systems, Inc.; Department of Energy;
10/1990 - 09/1994.
Principal Investigators: J. Sankar (PI) and A. D. Kelkar
$400,000

"Testing and Mechanical Properties Characterization of New High Temperature Materials"; Naval Air Development Center; Department of Navy, PA;
09/1990 - 08/1994.
Principal Investigators: J. Sankar (PI) and A. D. Kelkar
$140,000

"Analysis of Composite Laminates Subjected to Low Velocity Impact Loading"; Wright Laboratories, WPAB;

08/1990 – 05/1994.
Principal Investigators: A. D. Kelkar (PI), J. Sankar and W. J. Craft
$365,000

"High Temperature Creep and Cyclic Behavior of PY6-Silicon Nitride at Elevated Temperature"; Martin Marietta Energy Systems; Department of Energy;
10/1993 – 09/1994.
Principal Investigators: J. Sankar (PI) and A. D. Kelkar
$200,000

"Effect of Sample Size and Finish on the Tensile Characteristics of Continuous Filament Ceramic Composites", U. S. Department of Energy;
09/1993 – 09/1995.
Principal Investigators: J. Sankar (PI) and A. D. Kelkar
$100,000

"Mechanical Behavior Investigation of Advanced Ceramic Matrix Composite Materials"; U. S. Air force Office of Scientific Research (AFOSR);
09/1993 – 09/1994.
Principal Investigators: J. Sankar (PI) and A. D. Kelkar
$139,410

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10/1992 to 10/1994,
Principal Investigators: J. Sankar (PI) and A. D. Kelkar
$400,000

"Testing and Evaluation of Advanced Ceramics at High Temperatures in Uniaxial Tension," Martin Marietta Energy Systems, Inc., Department of Energy, Oak Ridge, TN
10/1994 to 10/1995
Principal Investigators: J. Sankar (PI) and A. D. Kelkar
$200,000

"High Temperature Mechanical and Microstructural Characteristics of Ceramic Materials; Lockheed Martin/DoE,
10/1995-10/1997.
Principal Investigators: J. Sankar (PI) and A. D. Kelkar
$500,000

A New Mechanistic Constitutive Model for High Temperature CMC's Under Monotonic and Cyclic Loading; NASA-Lewis;
10/1995 – 12/1997.
Principal Investigators: J. Sankar (PI) and A. D. Kelkar
$50,000

A New Mechanistic Constitutive Model for High Temperature CMC's Under Monotonic and Cyclic Loading;; NASA- Glenn,
10/1997 – 09/1999.
Principal Investigators: J. Sankar (PI) and A. D. Kelkar
$60,000

Ronald E. McNair Graduate Research Fellows Program; NASA;
08/1995 – 08/1998.
Principal Investigators: C. Meyers (PI), C., Kelly, and J. Sankar
$970,500

Analysis of Composites Laminates Subjected to low Velocity Impact Loading; Wright Laboratories,
09/1991 – 12/1997.
Principal Investigators: A.D. Kelkar (PI) and J. Sankar,
$504,084

High Temperature Mechanical and Microstructural Characteristics of Ceramic Materials; Lockheed Martin/DoE;
10/1997 – 10/1999.
Principal Investigators: J. Sankar (PI), A. D. Kelkar and D. Pai
$500,000

CREST/MRSEC Connectivity Research on Defect Reduction and Ohmic Contacts in III-V Nitrides and Related Compounds, NSF,
09/1997- 02/1999.
Principal investigators: J. Sankar
$100,000

CREST/MRSEC Connectivity Research on Defect Reduction III-V Nitrides and Compounds, NSF,
02/1998 – 02/2000.
Principal Investigators: J. Sankar
$50,000

Center for Advanced Materials and Smart Structures. CREST-NSF,
09/1997 - 08/2002
Principal Investigators: J. Sankar, (PD and P1), D. Pai, G. Filatovs, M. Schulz, S. Ofori, W. Craft, D. Klett, D. Dunn, A. Kelkar, W. Collis, C. Lee, C. Yu and S. Iyer et al
$5,000,000.

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09/1995 – 08/2001.
Principal Investigators: A.D Kelkar (P1), and J. Sankar
$800,000

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12/1999 – 05/2001
Principal Investigators: J. Sankar (P1), A.D. Kelkar, and D. Pai.
$200,000

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10/1999- 09/2002
Principal Investigators: A.D. Kelkar (P1) and J. Sankar.
$75,000

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09/2001 - 09/2002
Principal Investigators: J. Sankar (PI)
$10,000

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10/1999 – 08/2002
Principal Investigators: D. Pai (PI), J. Sankar and A.D. Kelkar.
$247,539

A Pulsed Laser Deposition Facility for the Synthesis of Novel Surface Engineered and Electronic Ceramic Materials, AFOSR,
08/2000 – 08/2001
Principal Investigators: J. Sankar (PI) et al from CoE and Arts and Sciences
$200,000

Fatigue Life Prediction of Welds, Hamilton-Sandstrand / UT,
10/2000 - 6//2003
Principal Investigators: D. Dunn (PI), J. Sankar, S. Ofori
$63,900

A Digital Library of Ceramic Microstructure, NSF,
01/2002-12/2003
Principal Investigators: J. Sankar (PI) and S. Yarmolenko
$176,000

An Improved Sensor System for the Monitoring of Critical Components in Nuclear Reactors, Department of Energy,
10/2002 - 10/2003,
Principal Investigators M. Sundaresan, D. Pai, W. Craft, and J. Sankar
$60,000

Center for Advanced Materials and Smart Structures. NSF,
09/2002 - 08/2008
Principal Investigators: J. Sankar (PD and PI), D. Pai, A.D Kelkar, M. Schulz, S. Iyer, D. Dunn. C. Lee, C. Yu, M. Sundaresan et al
$3,750,000

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05/2003 – 05/2005
Principal Investigators: J. Sankar, (PD and PI)
$1,875,000

Processing and Characterization of Structural and Functional Materials for Heavy Vehicle Applications." Heavy Vehicle Propulsion Materials Program, DoE,
09/2002 - 08/2003
Principal Investigators: J. Sankar (PI), S. Yarmolenko, D. Pai and A. D. Kelkar
$80,000

Performance Evaluation of Low cost Manufactured Ceramic Matrix Composites: Phase I, Air Force Research Lab (via a subcontract to United Technology Corporation)
07/2003 - 04/2004,
Principal Investigators: A.D. Kelkar (P1), J. Sankar, and D. Pai.
$43,000

Processing and Characterization of Structural and Functional Materials for Heavy Vehicle Applications." Heavy Vehicle Propulsion Materials Program, DoE,
11/2003 – 10/2004
Principal Investigators: J. Sankar (PI), S. Yarmolenko, D. Pai and A. D. Kelkar
$75,000

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Principal Investigators: A.D. Kelkar (P1), J. Sankar, and D. Pai.
$24,124

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02/2003 -01/2004
Principal Investigators: J. Sankar (PI) and D. Kumar
$100,000

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12/2003 - 09/2005
Principal Investigators: R. Mohan (PI) and J. Sankar
$310,000

Center for Nanoscience and Nanomaterials, Office of Naval Research,
04/2004 - 12/2005,
Principal Investigators: J. Sankar (PI), A. Kelkar, D. Pai, S.Yarmolenko, J.Lou, D.Kumar, M. Sundaresan, G. Filatovs and W. Craft.
$2,750,000

Faculty and Student Team (FaST); NSF,
05/2005 – 05/2006
Principal Investigators: D. Kumar (PI) and J. Sankar
$25,000

Processing and Characterization of Structural and Functional Materials for Heavy Vehicle Application, Heavy Vehicle Propulsion Materials Program, US-DoE,
11/2004 – 10/2006
Principal Investigators: J. Sankar (PI) and D. Pai, S. Yarmolenko and Z. Xu
$75,000

Heat Treat Standardization, UTC – Pratt & Whitney,
01/2005 – 12/2007
Principal Investigators: D. Pai (PI) and J. Sankar
$25,000

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02/2005 – 12/2006
Principal Investigators: J. Sankar (PI), R. Mohan, and S. Desai
$20,000

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11/2004 – 10/2006
Principal Investigators: J. Sankar (PI), D. Pai, S. Yarmolenko and Z. Xu
$75,000

Multifunctional for Naval structures, U. of Pittsburgh, Kansas, (ONR sub),
10/05 - 07/2006
Principal Investigators: J. Sankar (PI), A. Kelkar and R. Mohan
$45,000

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10/2006 – 12/2007
Principal Investigator from A&T: J. Sankar (PI) and D. Pai, S. Yarmolenko and Z. Xu
$46,300

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09/06 – 08/2007
Principal Investigators: J. Sankar (PI), D. Kumar, E. Deyneka, D. Pai, J. Lou, Z. Xu, and S. Yarmolenko
$210,076

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10/2004 – 12/2008
Principal Investigators: J. Sankar (PI) and D. Kumar
$300,000

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04/2006 – 04/2008
Principal Investigators: J. Sankar (PI) and A. Kelkar, D. Pai, S. Yarmolenko, D. Kumar, M. Sundaresan, J. Lou, L. Uitenham, R. Mohan, W. Craft,
$1,200,000

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06/2007 -06/2008
Principal Investigators: S. Desai (PI), J. Sankar et al
$320,000

Nanoscale Science and Engineering Center, NSF (lead University of Illinois-Urbana Champagne)
Principal Investigators: J. Sankar (PI), D. Pai, S. Desai, J. Lou and S. Yarmolenko

10/2003 - 09/2008
$1,017,500

Self-organized nano structured thin films for catalysis in perovskite related membrane reactors; NSF,
09/2005 – 02/2009
Principal Investigators: J. Sankar (PI) and S. Yarmolenko
$420,000

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08/2008 - 04/2009
Principal Investigators: J. Sankar (PI), and S. Yarmolenko,
$40,000

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06/2004 – 12/2009
Principal Investigator from A&T: D. Kumar (PI) and J. Sankar, L. Uitenham, Hebard, J. Narayan
$1,400,000

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01/07 – 12/2009,
Principal Investigators: D. Pai (PI), D. Kumar, S. Desai, J. Lou, J. Sankar, S. Yarmolenko, C. Waters, K. Roberts and R. Mohan
$200,000

Development of Fourth Generation High Temperature Materials, Performance Polymers-SBIR Phase 2/NSF,
01/2007 - 08/2009
Principal Investigators: J. Sankar (PI), and J. Lou
$105,000

NSF- Nanoscale Science Engineering Research Center (NSEC), NSF
10/2008- 09/2013
Principal Investigators: J. Sankar (PI), D. Pai, S. Yarmolenko, S. Desai and J. Lou
$300,000

Center for Nanoscience and Nanomaterials - added to the already exiting on-going research; Office of Naval Research,
04/2008 – 12/2010
Principal Investigators: J. Sankar (PI) and A. Kelkar, D. Pai, S. Yarmolenko, S. Desai, R. Mohan, Z. Xu and C. Banerjee
$1,040,000

Office of Naval Research, Defense University Research Instrumentation Proposal (DURIP) Acquisition of a Field Emission Scanning Electron Microscopy System for Interdisciplinary Materials Research, Education and Training,
04/2009 - 07/2010
Principal Investigators: J. Sankar
$558,210

NSF- MRI-R2, Acquisition of a Nanotom Computed Tomography System for Revolutionizing Metallic Biomaterials Research, Education and Training,
02/2010 - 05/2011
Principal Investigators: J. Sankar, D. Pai and S. Yarmolenko
$683,000

ONR-Development of Novel Photo-Electrocatalyst Nanocomposite Systems for Safer Navy and Environmental Application,
01/2011- 12/2014
Principal Investigators: Y. Yun and J. Sankar
$450,000

NSF -Nano-Chemical-Electrical-Mechanical Manufacturing Systems (Nano-CEMMS)
NSF-NSEC (lead institution UIUC)
09/2010 - 08/2011
Principal Investigators: J. Sankar (PI), D. Pai, S. Desai, J. Lou and S. Yarmolenko
$101,750

NSF - MRI: Acquisition of Integrated Research Instrument for Large Animal Testing Investigation
10/2012 - 12/2016
Principal Investigators: J. Sankar, Y. Yun, D. Pai and T. Hanner
$1,112,786

NSF-Small Business SBIR with Orthokinetics Inc: Biological and Biomechanical Assessment of Magnesium as a Possible Bioresorbable Material for Intervertebral Spinal Fusion
10/2011– 09/2013
Principal Investigators: J. Sankar (PI), D. Pai, Y. Yun and S. Yarmolenko
$200,000

NSF- ERC-SECO Phase award with nanoMAG LLC for Mg implant translation
01/2013- 04/2014
Principal Investigators: Y. Yun (PI) and J. Sankar
$47,838

ERC Various Industrial Contracts
Dentsply Sirona, Cook Medical, NanoMAG, Fort Wayne Metals Inc, Tulsa Dental, Tribogenic, Shefabone, etc through Center scientists
Since 08/2011
Principal Investigators: various ERC Scientists and J. Sankar (Director)
Industries
~$200,000

NSF- ERC, Engineering Research center for “Revolutionizing Metallic Biomaterials”
08/2008 - 07/2020
Principal Investigators: J. Sankar (PI), W. Wagner (U Pitt), M. Schulz (UC), D. Pai, S. Yarmolenko, Y. Yun, Z. Xu et al
$36,683,000

NSF Veterans support Grants - NSF Supplement funding to the existing ERC –RMB at NCAT for research experience to veteran undergraduate students and veteran teachers (REV and RET)
09/2012 – 08/2017
Principal Investigators: J. Sankar (PI) and D. Pai
$60,000

NSF HBCU Supplement: Strengthening Research Capacity at HBCUs
10/2016-07/2020
Principal Investigators: J. Sankar
$550,000

US-Ireland R&D Partnership Programme: Centre to Centre (C2C) Proposal - Bioresorbabale Mg for the promotion of Regenerative Orthopedic Implant Devices
10/2016 – 07/2020
NSF ERC Supplement
Principal Investigators: J. Sankar
$876,000

Army - JHU: Tailoring Mg-alloy Systems through Composition/Microstructure/Severe Plastic Deformation for Army Extreme Dynamic Environment Applications
01/2017 - 03/2020
Principal Investigator: J. Sankar (PI), Z. Xu and S. Yarmolenko
$620,126

NSF EAGER: Nanostructured porous and laminate for biodegradable magnesium-based implants with unable water permeability and improved mechanical properties
10/2018 – 09/2020
Principal Investigators: J. Sankar (PI) and S. Yarmolenko
$190,000

Planning Grant: Engineering Research Center for Transformational Science and Manufacturing Innovation on Heterogeneous Materials Joining - ERC-TRANSMI-HMJ
Principal Investigator: A. Ramirez (PI, OSU), G. Daehan (OSU), J. Sankar (NC A&T) P. Dong (UM) and C. Fink (OSU)
NSF ERC-Gen 4 Planning Grant
06/2018 – 03/31/2020
$100,000

- 06/2019, submitted to NSF a white paper on *"Artificial Intelligent -Enabled Manufacturing of Next Generation Multi-Materials Systems (AIM-NEXT)"* for organizing a workshop and to create a national research Center. (Lead: U of Michigan and A&T, others to be added)
- 07/2019, submitted to Office of Naval Research, a multi- million dollar proposal on *"High-Yield LaBoratory-based ManufactuRing EducatIon for US InDustry and Defense (HYBRIDD)"* Manufacturing Center (Lead: U of Tennessee, A&T, ORNL, Industries, etc).
- 08/2019 submitted to NASA, a multi-million dollar pre-proposal concept under University Leadership Initiative for initiating a national center in Metamorphic manufacturing (Lead: the OSU, A&T, Purdue, UCSB, UT, Industries) Title*: "Cognitive Manufacturing Systems for High-Rate Production of Aerospace Quality Components"*

Disclosures and Patents:

- K. Bala, J. Sankar and D. Pai, "To Develop a sub surface or "below-the-surface" localized hard coating based on ceramics and metals by impregnation", a technology invention disclosure including preliminary U. S. Patent Application
- A. Pandya and J. Sankar, " Resorcinol-ketone polymers", a technology invention disclosure
- V. Harinath, C. Banerjee and J. Sankar, "Synthesis of gold metal oxide catalyst for catalytic oxidation of carbon monoxide to carbon dioxide by vapor deposition of gaseous ammonia", a technology invention disclosure
- E. Deyneka, C. Banerjee, J. Sankar and A. V. Harinath, "An Improved Process for Fabrication of Gold-Alumina and Gold-Titania Nanocomposites for Carbon Monoxide Removal at Room Temperature", a technology invention disclosure.
- V. Harinath, C. Banerjee and J. Sankar, "Encapsulation of Catalyst in Inert Porous Matrices for Removal of Carbon Monoxide from Aerosol", a technology invention disclosure
- S. Ko, C. Banerjee, Y. Yun and J. Sankar, "Sunlight induced highly active multi-component photocatalyst nanocomposition; a technolgy Invention disclosure
- J. Sankar, Z. Xu and S.Yarmolenko "Development of Mg-based biodegradable wires and use thereof in median sternotomy closure and other bone fixations", a technology invention disclosure
- J. Lou, V. Harinath, S. Ilias, J. Sankar, "Ultrahigh selectivity oxygen enrichment filled elastomeric silicone polymer membrane incorporating nanofillers", U. S. Patent # 7264650, 2005
- Y. Koo, Y. Yun and J. Sankar, CNT Sheet Substrate and Transition Metals Deposited on Same, U.S. Patent Publication No. 2016/0351918, USSN 15/116,708 (2016)
- J. Sankar, Z. Xu, S. Yarmolenko, "Mg-Based Biodegradable Wires for Bone Fixation Devices", U.S. Patent Provisional Serial No. 62/665,921(2018)

OTHER EDUCATIONAL OUTREACH AND COMMUNITY SERVICE

- Routine advanced materials and nanotechnology tour of ERC/CAMSS for the Guilford County and other K-12 students
- Summer workshop at ERC/CAMSS on Bio/nanotechnology for K-12 Guilford County Schools
- Supporting and training of Guilford and other County school Teachers in Advanced materials and bio/nanotechnologies every year since 2004
- Support K-12 in science projects and competitions
- Visitation of ERC/CAMSS team to various Schools to promote advance materials, bio/nanotechnology and to excite students in Science and Engineering for future carrier
- Supported many Research Experience for Undergraduates (REUs) at ERC/CAMSS for many years
- Greensboro Urban Ministry Volunteer (since 2000)
- Hindu Society of NC, President, Board of Directors, Co-Chair-Construction and other community service (different years)
- India Association Greensboro (President, Secretary etc at different years, Charter member of Gov. Hunt's Adopt –a- Highway Program, leader for March of Dime etc different years

PS: Please excuse any inadvertent and unforeseen errors.