Draft Bio only (Needs updates and corrections)

Distinguished University Professor Jagannathan Sankar

Mechanical and Chemical 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
Director -Center for Advanced Materials and Smart Structures (CAMSS)
Director – Navy – Center for Nanoscience and Nanomaterials (CNN) 2003-2011
A&T Site Co-ordinator – NSF /Nanoscale Science and Engineering Center (UIUC Lead – 2002-2012)

DEGREES:
Ph.D, Metallurgy and Materials Engineering, Lehigh University, PA, 1983
M.S., Materials Engineering, Concordia Univ- McGill U 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 in the history of NCA&T SU)*
- NC Interinstitutional Adjunct Faculty, Materials Engineering, North Carolina State University, Raleigh, NC. 1988- 2007
- Honorary Professorship title, Chonbak University, S. Korea. 2009

OTHER RELATED EXPERIENCE

- 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

RESEARCH AND EDUCATIONAL AREAS:

Engineered Advanced Materials, Multifunctional and Nanoengineered Materials, Structure-Property Relationships, Electron Microscopy, Materials Processing, Coatings and Surface Engineering of Materials, Novel Composite and Ceramic Materials, Multi-Disciplinary Approach to Advanced Materials and Nano/Biotechnology Revolution, Innovation in manufacturing,

Innovation in education, outreach and broadened participation for next generation USA's global workforce for knowledge economy and economic ecosystem.

Courses taught include: Materials science, Metals, Ceramics and Polymers, 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

DISTINGUISHED AWARDS and SELECTED MAJOR ACCOMPLISHMENTS:

- 2015, received the North Carolina's highest civilian honor given by the Governor "the Order of the Long Leaf Pine".
- Invited Address at the ASEE for Research Deans of Engineering Colleges of the USA, March 2016
- Invited talk at the USA- Ireland C2C global innovation ecosystem convergence, March 2016
- 2015, Invited Address to the National Research Council, National Academy of Engineering and Academy of Sciences" FUTURE Center based model for the USA" Washington, Dc
- 2015, NSF -ERC's activity as "Science Nation" for the global audience; narrated CNN Science/PBS Frontline/Science hour/Nova anchor, Emmys and Peabody winner Miles O'Brien
- 2015 Most Influential Person Honor – Business Journal – Piedmont Triad of NC
- Key Board Member, UNC System- Partnership for National Security United States Army Special Operations Command (USASOC) - Charter Blue Ribbon Member, Defense Applications Group - UNC System. (since 2011).
- Scientific Advisory Board, NSF-CREST, Alabama State University, Al (since 2008)
- UNC TV Featuring ERC-RMB/Sankar, UNC TV PBS. (April 2014).
- Featured Article - Catalyzing Commercialization, The National Science Foundation and Chemical Engineering Progress. (December 2014)
- 2014 Inducted into College of AIMBE Fellows – The American Institute for Medical and Biological Engineering (AIMBE) College of Fellows. March 2014.
- ERC on NC TV – 7 minutes coverage on North Carolina Now, Wednesday, 04/09/2014 http://science.unctv.org/content/medical-metals
- 2014 Most Influential Person Honor – Business Journal – Piedmont Triad of NC
- 2013 One of the Key driving members of the Development of Absorbable Metal Standards – Global Think –Tank Team along with industries and FDA member.
- 2013 Most Influential Person Honor – Business Journal – Piedmont Triad of NC
- 2013 Nov 1, Invited Panelist- National Academy of Engineering- Global Grand Challenges- Manufacturing
- Commercialization Agreement – ERC with InCube labs, CA for translating Mg biodegradable processing for Orthopedic Implant technologies
- 2013 Feb 7th: Invited address at the National Academies- Board on Science, Technology and Economic Policy, Washington DC.
- 2012 Most Influential Person Honor – Business Journal – Piedmont Triad of NC
- 2012 UNC Educational System- Research Strategic Direction - Key Selected Member
- 2012 March, Co-Organizer: NSF/FDA/ERC Biodegradable Think-Tank Workshop, DC,
- 2011 Most Influential Person Honor – Business Journal – Piedmont Triad of NC

- 2011 January "Hind Rattan Award" - Honored during the India's Republic Day Eve function - a high recognition for the Non Resident Indians of the world.
- 2010 Member – STPI/White House Review
- 2010 Most Influential Person Honor – Business Journal – Piedmont Triad of NC
- 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")*
- 2010 Scientific Advisory Board, COIN, NC Biotechnology Center, NC
- 2009 Most Influential Person Honor – Business Journal – Piedmont Triad of NC
- Honorary Professorship recognition, 2009, Chonbuk National University, S. Korea
- 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.(2009)
- 2009, Special Invitee for National Academies Meeting at Washington, DC and Special Invitee -University Industry Demonstration Project (UIDP) of the National Academies meeting at Atlanta (2009-2010)
- 2009, Invited along with CEOs of Greensboro-area colleges, universities, companies and industries and he presented the ERC perspective on why Google should locate its super-fast fiber-optic network in Greensboro (please see http://www.youtube.com/watch?v=T-_v_-h5yL8)
- 2008 Most Influential Person Honor – Business Journal – Piedmont Triad of NC
- 2005 Awarded one of the First Distinguished University Professor Title (at NCAT)
- 2005 Awarded -American Association for Advancement of Science AAAS National Mentor Award (Publisher of *Science* magazine)
- Fellow- National Institute of Aerospace (NIA)
- Board Member (scientific advisor) of the Enhanced Biofuels and Technologies, UK (EBT-UK).
- 2007 - Appointed to evaluate nano proposals and to a special standing committee to evaluate and introduce nanoengineering in NIH- Directorate for Biological Sciences and Engineering
- 2007 - NSF- MRSEC-PREM Program evaluator
- 2008- NSF - MRSEC-PREM Program evaluator
- 2006 - Member of the NC Biotechnology Center Advisory committee on Medical Devices for NC
- 2005 -Member of the Nanotechnology Advisory Science Board for the Governor of North Carolina (Developed the State of North Carolina's nanotechnology Roadmap)
- 2002 Awarded- White House Millennium Research award national Title (HBCU)- Department of Education
- 2001 Awarded- ORNL-HBCU National project of the year (J. Sankar)
- 2001 Awarded- Outstanding Senior Researcher of NC A&T State University
- 2001 Awarded- Faculty of the year (ME) – College of Engineering /Engineers week
- 1994 Awarded- Teachers Excellence award- Mechanical Engineering
- Supported and mentored more than 100 undergraduate students in education and materials research
- Consistent high score in students performance evaluations in all years (Highest Score in the College of engineering in 1999)
- Interinstitutional Adjunct Faculty: Dept. of Materials Science and Engineering; North Carolina State University; Raleigh, NC; 1990 onwards.

- Graduate Program Director, Mechanical Engineering, NC A&T State University, 1985 – 1998
- Selected as a participating faculty member in the National Center for Composite Materials Research; University of Illinois, Urbana, Champaign; 1987.
- 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.
- Proficiency Prize, University of Madras, 1976.
- Jawaharlal Nehru Memorial Award for Academic Achievement and Honor, University of Madras, 1976.
- One of ten (10) people selected from different U. S. Universities to receive a scholarship grant and to attend 'all expense' paid Alloy Rods/Allegheney Ludlum Industries, Inc., Special Seminar "Weld Tech 80"; Hanover, PA; 1980

Plenary/Keynote/Special Invited Address

Numerous Nationally and Internationally at Government Labs, Universities, Technical Societies, Industries, and other organizations and major get-togethers. FEW SELECTED INCLUDE SINCE 2000.

- ACUN-2- International Composites meeting - Composites in the Transportation Industry - Feb 14 - 18, 2000, University of New South Wales, Sydney Australia. (Plenary talk)
- 19th All India Manufacturing Technology, Design and Research Conference, December 14-17, 2000, Indian Institute of Technology, Madras, India. (Invited Distinguished talk)
- ICCE/8 Eighth International Conference on Composites Engineering, Tenerife, Spain, Aug4-11, 2001(Invited Distinguished talk)
- NSF- Joint Annual Program Conference (3 times)
- Action Greensboro, NC
- Advanced Research Workshop "Mixed Ionic Electronic Conducting (MIEC) Perovskites for Advanced Energy Systems" Kyiv, Ukraine June 1-5, 2003 (along with NATO)
- 2005- "Advances in Materials, Product Design and Manufacturing Systems" Conference with full peer-reviewed proceedings, Dec12-14, 2005, Tamilnadu, India.
- 2005 December at TamilNadu Agricultural University, India
- 2006 Spring-Final FUTURES meeting of NCAT for the entire attendees
- 2006 March, University of Science and Technology, Accra, Ghana (initiation of nano activities at Ghana and to connect USA-Ghana)
- International Conference on Advances in Manufacturing & Technology Management 2007, Jan 2007, Mumbai, India (nano in India)
- 2006 July at TamilNadu Agricultural University, India (nano in agriculture and to connect USA-India)
- 2007 Spring - special invited address at Nanotech 2007 for the entire attendees for promoting economic development for NC via CAMSS nano activities
- Invited-International Joint Conference on Knowledge Management for Composite Materials 2007 Germany, July 2007 (to connect USA- Germany in automotive nanomaterials backed by NSF, Govt. of Germany and industries)
- Keynote-National Educators Worshop-2007 on K-12 education, Oct 2007, WA

- Keynote-ICAM 2008, India – to connect USA and India in nanotechnology, Feb 2008
- MFMS 2008, Hong Kong- NSF- ERC on " Revolutionizing Metallic Biomaterials" July 2008
- Invited-NanoSMAT 2008, Barcelona - NSF- ERC on " Revolutionizing Metallic Biomaterials" Oct 2008
- NSF-ERC –RMB, Hannover Medical School, GKSS, Germany, NSF and other places, 2008-2009
- Plenary-2009 NCJSHS Awards and Recognition Banquet, March 2009
- Invited-2009 NC Nanotechnology Commercialization Conference, March 2009.
- Keynote-ICCE 17, Hawaii on ERC and Opportunities
- Invited-Hong Kong Polytechnic University on "Nano Bio Revolution"
- Keynote-MFMS 2009, Qingdao, China on Nanobiotechnology, Oct 2009
- Keynote-World Class University, BIN Fusion Technology, Oct 2009
- Keynote-ICCE 18, Anchorage, Alaska, 2010.
- Invited-2nd International Biodegradable Conference, Maratea, Italy, 2010
- Keynote-BEYA 2011 on Next Generation Workforce and Millennium Universities, DC 2011
- Invited- 2012 NSF Workshop on Partnership with Tier 1 Universities- Strategy Workshop, Miami
- Keynote-2012 Australian Composite Annual Event/Conference, Leura, Australia
- Invited -2012 NSF – ERC Annual workshop, Nov 2012, DC
- Keynote-The National Academies, Washington DC, Feb, 2013.
- Keynote -The TMS 2013, San Antonio, TX
- Plenary -ICANMEET 2013
- Keynote Speaker: Federal Advanced Technologies - Advanced Materials & Manufacturing, Raleigh, NC. May 9, 2013
- Keynote speaker: "ERC/CAMSS Advanced materials research, Innovation and Translation" National SBIR Conference, Washington , DC. May, 15, 2013. On ERC-RMB Science, Innovation and Translation through SBIR Initiative for National Economic Impacts
- Invited Address and Symposium Organizer: NanoSmat 2013 International Get-together September 24, 2013. For Global leadership in transformational activities in Biometallic materials.
- Invited Address: Materials Science 2013, Los Vegas, Oct 7-9, 2013. On ERC-RMB Science, Innovation and Impacts
- Invited- One of Three Panelists: The National Academy of Engineering; October 31st, 2013. For Grand Challenges- Manufacturing, building bridges for Innovation- based on the impact of ERC at the national and global levels
- Plenary Keynote Address, Maha Barathi Engineering College and Educational Trust. (February 2015), Chinasalem, India
- Plenary Keynote Address, Materials Science 2014. (October 2014), San Antonio, TX
- Invited Address, 9th NANOSMAT 2014 International Conference. (September 2014), Dublin, Ireland
- Keynote Address, The Emerging Frontier Research Initiatives National NSF workshop, The National Science Foundation. (August 2014), Arlington, VA.
- Keynote Address, 22nd International Composites Conference and Nanoengineering. (July 2014, Malta.

- Plenary-ICANMEET 2015, India
- Invited address- 2015, NanoSMAT 2015
- Invited Address - National Research Council, National Academy of Engineering and Academy of Sciences" FUTURE Center based model for the USA" Washington, DC
- Invited address- ICMG 2016, Bangalore, India
- Invited Address at the ASEE for Deans of Engineering Colleges of the USA, March 2016
- Invited talk at the USA-Ireland C2C initiative at DC as part of St. Patricks' week , March 2016

AFFILIATIONS WITH SCIENTIFIC AND PROFESSIONAL SOCIETIES OVER THE 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

Editorial Board

- Composites Part B Engineering Journal (formerly Journal of Composites Engineering), Elsevier Publication.
- World Journal of Engineering (WJOE).
- ISRN Journal Mechanical Engineering, The International Scholarly Research Network
- Journal of Nanogenomics and Nanomedicine (NGNM) (08/2012)
- Journal Recent Patents on Materials Science (02/2013*)*
- Journal of Multifunctional Composites (from 04/2013)

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- Symposium person

- The Proceedings of the Science and Technology Alliance/Materials Conference '93, Department of Energy Sponsorship. Technomic publication, PA (447 pages)

- 2001 ASME International Mechanical engineering Congress and Exposition, New York, " Processing and Understanding of Structural and Electronic Ceramic Materials"(Full Peer Reviewed Proceeding) ASME – International Congress / MD-Volume 95, 2001
- 2002 ASME International Mechanical engineering Congress and Exposition, New Orleans, "Processing, Characterization and Modeling of Novel Nanoengineered and Surface Engineered Materials" (Full Peer Reviewed Proceeding) ASME-IMECE publication, CD-Volume, 2002
- 2003 ASME International Mechanical engineering Congress and Exposition, Washington D C, "Processing, Characterization and Modeling of Multifunctional Materials" (Full Peer Reviewed Proceedings) ASME –IMECE publication.
- 2004 ASME International Mechanical engineering Congress and Exposition, "Processing, Characterization and Modeling of Multifunctional Materials" Anaheim, CA, (Full Peer Reviewed Proceeding- CD volume) ASME-IMECE publication
- 2005 ASME International Mechanical Engineering Congress and Exposition, Orlando, FL, "Innovative Processing for Engineered Composites" (Full Peer Reviewed Proceeding) ASME publication
- 2006 ASME International Mechanical Engineering Congress and Exposition, Chicago, Il "Advances in Processing of Advanced Materials for challenging Environments" (Full Peer Reviewed Proceeding) ASME-IMECE publication
- 2007 –3 special sessions and on the full peer reviewed volume, ASME-IMECE, Seattle, WA.
- 2008 ASME International Mechanical engineering Congress and Exposition, Symposium Organizer and Co-Chair, "Processing, Characterization and Modeling of Advanced Materials for Challenging Environments," ASME IMECE, Boston, MA, Nov 2008 (Full Peer Reviewed Proceeding) ASME publication
- 2009 ASME International Mechanical engineering Congress and Exposition, Symposium Organizer and Co-Chair, "Processing, Characterization and Modeling of Advanced Biomaterials for Challenging Environments," ASME IMECE, Orlando, Fl, Nov 2009 (Full Peer Reviewed Proceeding) ASME publication
- **2008, 2009, 2010, 2011, 2012, 2013, 2014, and 2015** ASME International Mechanical Engineering Congress & Exposition – Each year Symposium on Bioengineered materials, Applications, Processing etc
- Organizer: National Educators Worshop-2010 on Translational Biotechnology – University/ Community college workforce development, March 2010, NC
- Organizer: National Educators Worshop-2011 on Convergence of Technologies – University/ Community college workforce development, Nov 2011, NC
- Organizer: NSF/FDA/ERC Biodegradable Think-Tank Workshop, DC, March 2012
- Sponsor: Biometals Conference workshop, Different Years since 2010
- Sponsor: NanoSMAT 2013, Granada, Spain, Sep 2013
- Sponsor: NanoSMAT 2014, Dublin, Ireland, Sep 2014
- Sponsor: NanoSMAT 2015, Manchester, UK, Sep 2015

Organizer and conductor of Govt. Plenary Workshop (A major one day event as part of the conference to promote interdisciplinary materials research and cross cutting programs

between funding agencies and universities- attended by more than 300 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 2nd - 8, 2000.
- ICCC/9 Ninth International Conference on Composites Engineering, Denver, San Diego, July 1st- 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)

Major International Workshop /Conference /Symposium/ Co-Organizer/Leader:

- Conference Chairman: Science and Technology Alliance/Materials Conference '93, Department of Energy Sponsorship, Greensboro, NC, 1993.
- 2001 ASME International Mechanical engineering Congress and Exposition, New York, " Processing and Understanding of Structural and Electronic Ceramic Materials"(Full Peer Reviewed Proceeding- ASME / MD-Volume 95, 2001)
- 2002 ASME International Mechanical Engineering Congress and Exposition, "Processing, Characterization and Modeling of Novel Nanoengineered and Surface Engineered Materials" Symposium with full peer-reviewed ASME –IMECE publication, New Orleans, Nov 17-22, 2002.
- 2003 ASME International Mechanical engineering Congress and Exposition, Washington D C, "Processing, Characterization and Modeling of Multifunctional Materials" (Full Peer Reviewed Proceeding) ASME –IMECE publication, Washington, DC.
- 2004 ASME International Congress and Exposition, "Processing, Characterization and Modeling of Multifunctional Materials**"** Anaheim, CA
- 1997 Joint ASME/ASCE/SES Summer Meeting, Chicago, "Processing, Characterization and Modeling of High Temperature Monolithic and Composite Materials."
- 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, Dec12-14, 2005, Tamilnadu, India.

- 2006 ASME International Mechanical Engineering Congress and Exposition, Chicago," Advances in Processing of Advanced Materials for challenging Environments" (Full Peer Reviewed Proceeding)
- 2007 –3 special symposia sessions "Processing, Characterization and Modeling of Advanced Materials for Challenging Environments," and on the full peer reviewed volume, ASME-IMECE, Seattle, WA.
- 2007- , Symposium Organizer and Co-Chair, "Processing, Characterization and Modeling of Advanced Materials for Challenging Environments," ASME IMECE, Seattle, WA, Nov 2007 (Full Peer Reviewed Proceeding) ASME publication
- 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)
- National Educators Worshop-2007 on K-12 education, Oct 2007, WA
- Co-Organizer:National Educators Worshop-2007 on Bioengineering education – University/ Community college workforce development, Oct 2008, CT
- ICAM 2008, India – Workshop to connect USA and India in nanotechnology
- 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015 ASME International Mechanical Engineering Congress & Exposition – Each year
- Co-Organizer: National Educators Worshop-2010 on Translational Biotechnology – University/ Community college workforce development, March 2010, NC
- Co-Organizer: National Educators Worshop-2011 on Convergence of Technologies – University/ Community college workforce development, Nov 2011, NC
- Co-Organizer: NSF/FDA/ERC Biodegradable Think-Tank Workshop, DC, March 2012
- Organizer: Symposium on Biodegradable Metallic Implant, NANOSMAT 2013, Granada, Spain Sep 2013.
- Member, Organizing Committee, Design, Analysis, and Manufacturing Technologies for Aerospace and Automotive Engines, 02/21-24/2014, Chennai, India
- UPDATE Remaining

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 14 - 18, 2000
- International Composites meeting – Technology Convergence in Composites Applications – Sydney, Australia, ACUN-3, Feb 6 - 9, 2001
- 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 2nd - 8, 2000.
- ICCE/8 Eighth International Conference on Composites Engineering, Tenerife, Spain, Aug4-11, 2001
- ICCC/9 Nineth International Conference on Composites Engineering, San Diego, July 1st- 6, 2002.
- ICCE/10 Tenth International Conference on Composites Engineering, New Orleans, July 20-26, 2003
- ICCE/11 Eleventh International Conference on Composites 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 Composite/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.
- Multi Functional Materials and Structures 2008, Hong Kong, July 2008
- Multi Functional Materials and Structures 2009, Hong Kong, July 2008
- BioMg09 Think Tank get-together, Greensboro, NC, Nov 2009.
- National Educators Workshop 2010, Greensboro, NC 27411, March 2010
- National Educators Worshop-2010 on Translational Biotechnology – University/ Community college workforce development, March 2010, NC
- National Educators Worshop-2011 on Convergence of Technologies – University/ Community college workforce development, Nov 2011, NC
- NSF/FDA/ERC Biodegradable Think-Tank Workshop, DC, March 2012
- National Educators Worshop-2012 on Convergence of Technologies – University/ Community college workforce development, Nov 2011, NC.
- Scientific Program Organizer with Dr. Witte of Biodegradable Metals Symposium at 9th World Biomaterials Congress (WBC) Chengdu, China, 1-5 June, 2012
- Advisory Board (VelTech University) - International conference on "Design, Analysis, and Manufacturing Technologies for Aerospace and Automotive Engines" on February 21-24, 2014, India

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
- American Society for Materials International, Annual meeting, 1997 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 2nd - 8, 2000, ICCE/8 Eighth International Conference on Composites Engineering, Tenerife, Spain, Aug4-11, 2001, ICCC/9 Ninth International Conference on Composites Engineering, Denver, San Diego, July 1st- 6, 2002, ICCE/10 Tenth

International Conference on Composites Engineering, New Orleans, July 20-26, 2003, ICCE/11 Eleventh International Conference on Composites Engineering, Hilton Head, SC, August 8-13, 2004, ICCE/12 Twelfth International Conference on Composites/Nano Engineering, Spain, August 2-7, 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 14 - 18, 2000
- Department of Energy, Science &Technology Alliance Materials Conference '93
- ICAMTM2007, Jan 2007, Mumbai, India
- Workshop Organizer and Sessions- National Educators Workshop 2007, 2010, 2011 , 2012 Seattle, WA and Greensboro, NC respectively on K-12 education, Oct 2007
- 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 6 - 9, 2001
- ICCE/5, ICCE/6, ICCE/7, ICCE/8, ICCE/9, and ICCE/10 (abstracts)
- 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
- DoE programs and NATO proposals
- NSF Division of Materials Research- Materials Research Science and Engineering Center (MRSEC) – PREM National Programs
- NIH - Panels as part of Bioscience and Engineering Directorate (R01, R21 etc)

- White House-STPI

CAMSS and ERC Sponsor of International Conferences

- 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 2nd - 8, 2000.
- ICCE/8 Eighth International Conference on Composites Engineering, Tenerife, Spain, Aug4-11, 2001
- ICCC/9 Nineth International Conference on Composites Engineering, San Diego, July 1st-6, 2002.
- ICCE/10 Tenth International Conference on Composites Engineering, New Orleans, July 20-26, 2003
- ACUN-2 International Conference: Composites in the Transportation s – Sydney, Australia
- ACUN-3- International Composites meeting - Technology Convergence in Composites Applications, Feb 6 -9, 2001, University of New South Wales, Sydney Australia.
- 19th All India Manufacturing Technology, Design and Research Conference, December 14-17, 2000, Indian Institute of Technology, Madras, India.
- ASMM2D "Advances in Superconductivity and Magnetism: Materials Mechanism and Devices" September 25-28, 2001, Mangalore, India. Organized by Tata Institute of Fundamental Research, India.
- Advanced Research Workshop "Mixed Ionic Electronic Conducting (MIEC) Perovskites for Advanced Energy Systems" Kyiv, Ukraine June 1-5, 2003 (along with NATO)
- 2004 MRS – Symposium E, " Integration Challenges in Next- Generation Oxide-Based Nanoelectronics, April 12-16, 2004, San Francisco, CA.
- NATO ARW "Fuel Cell Technologies: State & Perspectives" Kyiv, June 06-10, 2004
- International Conference on Advances in Structural Integrity, 2004, July 14-17, Bangalore, India.
- 2005- ICCE/12 Twelfth International Conference on Composites Engineering, Spain, August 2-7, 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, Dec12-14, 2005, Tamilnadu, India.
- ICCE-14, Boulder, CO, July 2006,
- ICAMTM2007, Jan 2007, Mumbai, India
- 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
- Nanosmat 2013,2014, 2015

Graduate Students:

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

Dr. Sankar in past and present served/s in the committee of many Masters and many Ph.D students and has provided both ERC/CAMSS facility and financial support to many. (THIS ARE NOT LISTED HERE BELOW)

Ph.D Students Worked and Areas 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"
- B. Kailasshankar (2014)- "Wear Resistant Coatings Using Innovative Processing" – Left to Private Company
- Gregory Young (2014) - "Advances in Nanoengineered Fuel Cells" – Left to Cummins
- S. Chen (2013) – "Developing Porous Mg Biometals" – Left to NC State
- C. Smith (2014) – Understanding Processing of Biodegradable Metals
- F. Svitlana (2013) – Development of CNT and sensors using Magnetron Sputtering
- L. White (2014) – Anodizing and tunable corrosion of Mg alloy systems
- V. Giritharan (2017) – "Modeling for Bioengineered Nanomaterials for controlled Corrosion"
- L. Lumei (2017) – Innovation and understanding in vivo- in vitro bio mg performance via microfluidics and bioreactor investigations
- J. Shi (2018) – Understanding Mg deformations for structure-property relationships

MSME Students

- 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"
- Y. Acharya (2001) – "Experimental Investigation of Nextel 720 Fibers"
- B. 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"
- F. Svitlana (2009) – Growth of CNT via Catalysis using Magnetron Sputtering
- R. Ganesh (2010)- Magnetron sputtering creating combinatorial Mg alloy development
- Ashlin Worthy (2011) – Magnetron Sputtering for Hydroxyapatite Coatings

Post-doctoral/ Research Scientists Sponsored (past)

- Dr. R. Vaidyanathan (Manager, Adv. Materials, ACR, Arizona)
- Dr. K. Dovidenko (U. of Albany)
- Dr. Vijay Godbole (U. of Poona, India)
- Dr. A.K. Sharma (Intel)
- Dr. Q. Wei (Professor at UNCC)
- Dr. S. Chattopadhyay (IIT, IL)

- Dr. D. Kumar (Faculty at NCAT)
- Dr. Ram Mohan (Faculty at NCAT)
- Dr. E. Dyneka (CREE, Raleigh)
- Dr. Ashish Pandya (NSF-STC- UNC Chapel Hill)
- Dr. Xinyu Wang (Canada)
- Dr. Abiade (Assistant professor- Virginia Tech)
- Dr. Song Ho (Faculty at S. Korea)
- Dr. S. Ko (Faculty at S.Korea)
- Dr. Cindy Waters (faculty at NCAT)
- Dr. Ron Bolick (Composite Industry)
- Dr. Manohar Konchady (INTEL)
- Dr. Ram Gupta (University Assistant Professor)
- Dr. Banerjee (Retd)
- Dr. Chen (Sikorsky)
- Dt. Menza Kojo (Faculty, KNUST, Ghana)
- Dr. Jiang (Faculty, S. Korea)

Post-doctoral/ Senior Research Scientists Sponsored (present)

- Dr. Yarmolenko
- Dr. Xu
- Dr. Collins
- Dr. Koo
- Dr. Fialkova
- Dr. Kotoka

INVOLVED AND COMPLETED MEMORANDUM OF UNDERSTANDING

- Partnership – ORNL: Direct leveraging research funding, joint faculty, joint proposals, joint journal editing, undergraduate and graduate students summer internship at ORNL, joint publications with ORNL scientists.
- Between NC A&T State University and University of New Orleans (co-sponsored and co-organized international conferences ICCE/5, ICCE/6, ICCE/7, ICCE/8, ICCE/9, ICCE/10, ICCE/11, ICCE/12, ICCE14; co-edited special Composites B Engineering; joint proposals and joint new journal editions)
- From NC State University to 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 - 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
- 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 IIT- Madras (2006)- Partner in the NSF-ERC
- MOU between NC A&T SU and TamilNadu Agricultural University (TNAU) (2006)

- MOU between NC A&T SU and nCoat (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
- OTHER Industries NDA signed and Industrial Advisory Board
- Dentsply,
- Cook Medical
- Jet Hot
- Boston Scientific
- NanoMAG
- inCube Labs
- Orthokinetics Inc
- General Nano
- W.L. Gore
- many small materials and biotech innovation companies as part of ERC

SELECTED INSTITUTIONAL SERVICE OVER THE YEARS

- 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 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)
- Director - CAMSS (presentations, facility tours for various external visitors, routinely)
- Various quick response leadership activities with Chancellor, Provost, VC of Research, Dean/CoE, etc. routinely and as needed
- 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 - Blue Ribbon Committee for Governor Easley for NC Nanotech Roadmap
- Member - Blue Ribbon Committee for NC Bio Center/ Medical devices for the State of NC
- 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
- Chair – NCAT/University Research Awards Committee – twice (2)
- Chair – NCAT/Director for Research Services – DoR/University Committee
- Chair – NCAT/Director for Out Reach, Tech Transfer – DoR/University Committee
- Chair – NCAT/Director for Research administration & Special assistant to VC – DoR/University committee
- Member – NCAT/ VC for Research and Economic Development Committee
- Numerous presentations and meetings on behalf of the university and CoE's materials research activities for visitors (USA and abroad)

PUBLICATIONS

NOTE: (Below includes -- Journals, Book chapters and proceedings- list not complete)

1. J. Sankar, D. Hawkins and H. J. McQueen, "Behavior of Low-Carbon and HSLA Steels During Torsion-Simulated Continuous and Interrupted Hot Rolling Practice", Journal of Metals Technology, Vol. 6, pp. 325-331,1979.
2. H.J. McQueen, J. Sankar and S. Fulop, "Fracture Under Hot Forming Conditions", Mechanical Behavior of Materials, 2, ICM3 K.J. Miller and R. F. Smith, eds., Pergamon Press, Proceedings 3rd International Conference on Mechanical Behavior of Materials, England, pp. 675-684, 1979.
3. W.Knudsen, J. Sankar, H. J. McQueen, J. Jonas and D. Hawkins, "Simulation of Rolling Schedules for HSLA Steels", Hot Working and Forming Processes, C. M. Sellars and G. J. Davies, eds., The Metal Society, pp. 51-56, 1979.
4. J. Sankar and D. B. Williams, "The Effect of Microstructure and Microchemistry on the Notch Toughness Behavior of Pressure Vessel Steel Weldments", Journal of Electron Microscopy, Vol. 1, pp. 172-173, 1980.
5. J. Sankar and D. B. Williams, "Analytical Electron Microscopy of Pressure Vessel Steel Weldments", Journal- Scanning Electron Microscopy, pp.159-168, 1981.
6. J. Sankar, D. B. Williams and A. W. Pense, Fractography of Pressure Vessel Steel Weldments, "Fractography of Modern Engineering Materials", J. E. Masters and J. J. Au, eds., The American Society for Testing Materials STP, 948, pp. 295-316, 1985.
7. R. Vaidyanthan, J. Sankar and V. S. Avva, "Uniaxial Tensile Characteristics of Silicon Nitride at Room Temperature", Annual Cocoa Beach Engineering and Science Proceedings, Vol. 9, pp. 1383-1392, 1988.
8. R. Vaidyanathan, J. Sankar, J. Kelkar, D. P. Stinton, and M. H. Headinger, "Investigation of Mechanical Properties of Chemically Vapor Infiltrated (CVI) Ceramic Matrix Composites", 17th Annual Cocoa Beach Ceramic Engineering and Science Proceedings, 14, [9-10], pp. 1016-1027, 1993.
9. R. Vaidyanathan, A. D. Kelkar, J. Sankar, "Prediction of Elastic Properties of Ceramic Matrix Composites using a Plain Weave/Classical Laminate Theory", 17th Annual Cocoa Beach Ceramic Engineering and Science Proceedings, 14[9-10], pp. 1066-1076, 1993.
10. J. Sankar, S. Krishnaraj, R. Vaidyanathan and A. D. Kelkar, "Elevated Temperature Behavior of Sintered Silicon Nitride Under Pure Tension, Creep and Fatigue", Life Prediction Methodologies and Data for Ceramic Materials, ASTM STP 1201, C. R. Brinkman and S. F. Duffy, eds., American Society for Testing Materials, Publication, pp. 19-35, 1993.

11. D. Kelkar, M. Takle, and J. Sankar;"Effect of Uneven Fiber Spacing on the Thermal Characteristics of Composites Using Finite Element Micromechanics Model", American Institute of Aeronautics and Astronautics Publication, 1993.
12. R. Vaidyanathan, J. Sankar, A. D. Kelkar, A. D. Stinton and B. L. Weaver, "Mechanical properties of NextelTM Fiber Reinforced SiC Matrix Composites in Tension", Eighteen Annual conference on Composites and Advanced Ceramics, Cocoa Beach, Florida, January 1994; Ceramic Engineering and Science Proceedings, Vol. 15, pp. 251-261, 1994.
13. J. Sankar, J. Neogi, M. T. Dixie and R. Vaidyanathan, "Effect of Thermal and Loading on the Mechanical Properties of a Hot-Isostatic Pressed (HIPed) Silicon Nitride Used for Heat Engine Applications", International Gas Turbine Institute/ASME Turbo and Conference at The Hague, Netherlands, 94-GT- 397, 1994
14. Neogi, J., Neogi, S., Sankar, J., and Vaidyanathan, K. R., "High Resolution Electron Microscopy of Pre-cycled Samples of Sintered Silicon Nitride," 18th Annual Cocoa Beach Proceedings of the Ceramic Engineering and Science, Vol. 15, pp. 605-6 16, 1994.
15. Vaidyanathan, K. R., Sankar, J., Kelkar, A. D., and Narayan, J., "Investigation of Mechanical Properties of Chemically Vapor Infiltrated (CVI) Ceramic Matrix Composition", 18th Annual Cocoa Beach Ceramic Engineering and Science Proceedings, Vol. 15, pp. 281-290, 1994.
16. Kelkar, A. D., Takle, M., and Sankar, J., "Three Dimensional Finite Element Micromechanical Analysis of Unidirectional Composites", Recent Advances in Structural Mechanics, PVP-VOL 295/NE-Vol. 16, ASME, pp. 87-92, 1994.
17. Neogi, J., Sankar, J., and Kelkar, A. D., "Effect of Sample Test Volume and Geometry on the Tensile Characteristics of SiC/SiC Continuous Fiber Ceramic Composites", Proceedings of the 37th AIAA- SDM Conference, Salt Lake City, Utah, April, # AIAA-96-1376, 1996.
18. Kelkar, A. D., Chaphalkar, P., and Sankar, J., "Nonlinear Deformations of a Rectangular Plate Using Plate-Membrane Coupling Model with Finite Difference Method", Journal of Mathematical Modeling and Scientific Computing, Volume 6, 1996.
19. Sankar, J., Kelkar, A. D., and Neogi, J., "Fatigue, Creep and Fracture Behavior of Silicon Nitride Ceramics", Proceedings of ASME Winter Annual Meeting, # AD Vol. 50/1995, pp. 101-112, 1995.
20. Kelkar, Ajit D., Chaphalkar, Pramod, and Sankar, J., "Nonlinear Deformations of a Rectangular Plate Using Plate-Membrane Coupling Model with Finite Difference Method", Journal of Mathematical Modeling and Scientific Computing, Vol. 6, 1996.
21. Kelkar, Ajit D., Sankar, J., Subodh P., and Pai, D., "Finite Element Analysis of Biaxially Loaded Composite Laminates With A Central Hole", Journal of Mathematical Modeling and Scientific Computing, Vol. 6, 1996.
22. Kelkar, A. D., Chaphalkar, P., and Sankar, J., "Finite Element Analysis of a Biaxially Loaded Woven Fabric Composite Laminate with a Central Hole," PVP-3; Symposium on Recent Advances in Mechanics of Solids and Structures-I, 1996 International Mechanical Engineering Congress and Exposition, ASME International, Atlanta, GA, Nov. 1996, Book GOI 01 7.
23. Wei, Q., Sankar, J., Narayan, J., and Kelkar, A. D., "Morphology Changes Accompanying Creep of Sintered Si_3N_4 for Hot Turbine Engine Application," Paper AIAA-97-1 376-CP, pp. 515-524, 1997.
24. Q.Wei, J.Sankar, J. Narayan and A.D.Kelkar, "Morphology Changes Accompanying Creep of Sintered Si_3N_4 for Hot Turbine Engine Application", Proc. 38th AIAA SDM, 1997, p. 478.
25. Q.Wei, A.K. Sharma, R.J. Narayan, S. Oktyabrsky, J. Sankar, and J. Narayan, "Doping Induced Internal Stress Reduction in Diamondlike Carbon Films Deposited by Pulsed

Laser Deposition", in "Covalently Bonded Disordered Thin-Film Materials", edited by J.Jaskie, D. McKemzie, W. Milne, M. Siegal, Mater. Res. Soc. Proc., Boston, MA, 1997.

26. Q. Wei, A.K. Sharma, R.J. Narayan, S. Oktyabrsky, J. Sankar, and J. Narayan, "Microstructure and Wear Resistance of Doped Diamondlike Carbon Films Prepared by Pulsed Laser Deposition", in "Thin Films - Stresses and Mechanical Properties", edited by R. Cammarata, M. Nastasi, E. Busso, W. Oliver, Mater. Res. Soc. Proc., Boston, MA, 1997
27. Ajit D. Kelkar, J. Sankar, Pramod Chaphalkar, C. Grace, S.N. Yarmolenko, Shankar Mall, U. K. Vaidya, "Fatigue Behavior Of Resin Infusion Processed S2-Glass Woven Composites", International Mechanical Engineering Congress and Exposition, ASME International, Dallas, TX, Nov. 1997.
28. Ajit D. Kelkar, J. Sankar, C. Grace, R.J. Aschenbrenner, and G. Schoeppener, "Behavior of Tensile Preloaded Composites Subjected to Low-Velocity Impact Loads", Internatioanal Mechanical Engineering Congress and Exposition the 1997 Winter Annual Meeting of the ASME, November, 1997.
29. Ajit D. Kelkar, J. Sankar, C. Grace, R.J. Aschenbrenner, and G. Schoeppener, "Behavior of Tensile Preloaded Composites Subjected to Low-Velocity Impact Loads", Internatioanal Mechanical Engineering Congress and Exposition the 1997 Winter Annual Meeting of the ASME, November, 1997
30. Q.Wei, J. Sankar, J. Narayan and A. Kelkar, "Transmission Electron Microscopy of the Microstructural Changes of a Sintered Si_3N_4 Associated with High Temperature Soaking in Air", 39th AIAA SDM, 1998, April 20-23, Long Beach, CA, pp.1721-1729.
31. Q. Wei, J. Sankar, V. Vijayrao and J. Narayan, "The Effect of High Temperature Soaking on the Microstructure and Properties of a Sintered Silicon Nitride", Ceramics Science and Engineering Proc., 22nd Cocoa Beach Annual Conference of the American Ceramic Soc., Jan. 18-22, 1998.
32. Q.Wei, R.J. Narayan, A.K. Sharma, S. Oktyabrsky, J. Sankar and J. Narayan, "Microstructure and Wear Resistance of Doped Diamond-Like Carbon Prepared by Pulsed Laser Deposition", Mat. Res. Soc. Sym. Proc., Vol. 505, 1998.
33. Q.Wei, J. Narayan, R.J. Narayan, J. Sankar and A.K. Sharma, "Improvement of Wear Resistance of Pulsed Laser Deposited Diamond-Like Carbon Films Through Incorporation of Metals", J. Mat. Sci. and Eng. B53 (1998) 262–266.
34. Q. Wei, A.K. Sharma, R.J. Narayan, N.M. Ravindra, S. Oktyabrsky, J. Sankar, and J. Narayan, "Microstructure and IR Range Optical Properties of Pure DLC and DLC Containing Dopants Prepared by Pulsed Laser Deposition", in "Advances of Laser Ablation of Materials", edited by R. Singh, D. Lowndes, D. Chrisey, J. Narayan, T. Kawai, E. Fogarassy, Mater. Res. Soc. Proc., Vol. 526, San Francisco, CA, 1998
35. J. Lua, V. Isgro, J. Lang, J. Sankar, and A.D. Kelkar, "Three-Dimensional Finite Element Characterization of Woven Fabric Composites", Ceramics Science and Engineering Proc., 22nd Cocoa Beach Conference of the Am. Ceram. Soc., Jan. 24, 1998, Cocoa Beach, FL
36. Ajit D. Kelkar, J. Sankar, K. Rajeev, R.J. Aschenbrenner, and G. Schoeppener, "Analysis of Tensile Preloaded Composites Subjected to Low-Velocity Impact Loads", Proceedings of 39th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Long Beach, CA, April, 1998.
37. Q. Wei, A. K. Sharma, R. J. Narayan, N. M. Ravindra, S. Oktyabrasky, J. Sankar, J. F. Muth, R. M. Kolbas and J. Narayan, "Microstructure and IR Range Optical Properties of Pure DLC and DLC Containing Dopants Prepared by Pulsed Laser Deposition", in "Advances in Laser Ablation of Materials", eds. by R. Singh, et al., Mater. Res. Soc. Proc., Vol. 526, pp. 331-336, Warrendale, PA, 1998

38. Q. Wei, J. Sankar, V. Vijayrao and J. Narayan, “The Effect of High Temperature Soaking on the Microstructure and Properties of a Sintered Silicon Nitride”, Ceramic Eng. & Science Proc., Vol.19(4), Issue: 4, pp. 3-10, 1998
39. Ajit D. Kelkar, J. Sankar, K. Rajeev, R.J. Aschenbrenner, and G. Schoeppener, “Analysis of Tensile Preloaded Composites Subjected to Low-Velocity Impact Loads”, Proceedings of 39th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Long Beach, CA, April, 1998.
40. Q. Wei, J. Narayan, R. J. Narayan, J. Sankar and A. K. Sharma, “Improvement of Wear Resistance of Pulsed Laser Deposited Diamond-Like Carbon Films Through Incorporation of Metals”, Mat. Sci. and Eng. B., Vol. 53, pp. 262-266, May 22, 1998.
41. Q. Wei, R. J. Narayan, A. K. Sharma, S. Oktyabrsky, J. Sankar and J. Narayan, “Microstructure and Wear Resistance of Doped Diamond-Like Carbon Prepared by Pulsed Laser Deposition”, Mat. Res. Soc. Sym. Proc., Vol. 505, pp. 331-336, 1998, Warrendale, PA.
42. Q. Wei, R. J. Narayan, A. K. Sharma, J. Sankar and J. Narayan, "Doping Induced Internal Stress Reduction in Diamondlike Carbon Films Deposited by Pulsed Laser Ablation", in Covalently Bonded Disordered Thin-Film Materials, eds. By M. Siegal, et al., Mater. Res. Soc. Proc., Vol. 498, pp. 61-66, 1998.
43. Q. Wei, A. K. Sharma, R. J. Narayan, N. M. Ravindra, S. Oktyabrsky, J. Sankar, J. F. Muth, R. M. Kolbas and J. Narayan, "Microstructure and IR Range Optical Properties of Pure DLC and DLC Containing Dopants Prepared by Pulsed Laser Deposition", in Advances in Laser Ablation of Materials, eds. by R. Singh, et al., (Mater. Res. Soc. Proc., Vol. 526, pp. 331-336, Warrendale, PA, 1998.
44. Q. Wei, J. Sankar, V. Vijayrao and J. Narayan, "The Effect of High Temperature Soaking on the Microstructure and Properties of a Sintered Silicon Nitride", Ceramic Eng. & Science Proc., Vol.19, pp. 3-10, 1998.
45. Q. Wei, J. Sankar, J. Narayan and A. Kelkar, "Transmission Electron Microscopy of the Microstructural Changes of a Sintered Si3N4 Associated with High Temperature Soaking in Air", Collection of Technical Papers (AIAA/ASME/ASCE/AHS/ASC-Structures, Structural Dynamics and Materials Conference, Vol. 2, 1998, AIAA, Reston, VA, USA, pp. 1721-1729 AIAA-98-1903.
46. Lua, V. Isgro, J. Lang, J. Sankar, and A. D. Kelkar, "Three-Dimensional Finite Element Characterization of Woven Fabric Composites", Ceramics Science and Engineering Proc., 22nd Cocoa Beach Conference of the Am. Ceram. Soc., Vol. 19 (3), 1998.
47. Q. Wei, R. Narayan, A.K. Sharma, J. Sankar and J. Narayan, “Micro- and Nano-mechanical Behavior of Diamondlike Carbon Films Containing Foreign Atoms Prepared by Pulsed Laser Deposition” in “Properties and Processing of Vapor-Deposited Coatings”, edited by R. Johnson, W. Lee, M. Pickering and B. Sheldon, Mater. Res. Soc. Proc., Vol. 555, Boston, MA, pp. 303-308, 1998.
48. Z. Xu, J. Narayan, J. Sankar "The Characteristics of DC Glow Discharge and Its Effects on Enhancement of Diamond Nucleation in HF-CVD System", Proceedings of Mater. Res. Soc. Symposium, Boston, MA, (Nov. 29-Dec. 03, 1998).Vol.555, pp. 233-239, 1999
49. Q. Wei, J. Sankar, A. D. Kelkar and J. Narayan, "High Temperature Uniaxial Creep Behavior of a Sintered in situ Reinforced Silicon Nitride Ceramics, Ceramic Eng. & Science Proc., Vol. 20 (3), pp. 463-470, 1999.
50. J. Sankar, G. Choudhury, Q. Wei, V. Vijay Rao and A. D. Kelkar, “A Comparative Study of The Tensile, Fatigue and Creep Properties of Sintered (SNW-1000 and GS44) and HIPed (PY-6) silicon nitride ceramics”, Ceramic Eng. & Sci. Proc., 1999, Vol. 20 (4), pp. 133-140.
51. R. Krishnan, A.D. Kelkar and J. Sankar, “Thermal Expansion Characteristics of Coated Fiber Composites”, Ceramic Eng. & Sci. Proc., 1999, Vol. 20 (4), pp. 395-402.

52. Kelkar Ajit D., K. Rajeev, and J. Sankar, North Carolina A&T State Univ., Greensboro, NC," Effect of Fiber Coating on Transverse Mechanical Properties of Ceramic Composites", 40th AIAA/ASME/ ASCE/ AHS/ ASC Structures, Structural Dynamics, and Materials Conference and Exhibit, St. Louis, MO 12-15 April1999, Publication #AIAA-99-1335.
53. D. Kelkar, P. Chaphalkar, and J. Sankar, North Carolina A&T State Univ., Greensboro, NC, " Fatigue Behavior of Resin Infusion and Resin Transfer Molding S2-Glass Twill-Woven Composites ", 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference and Exhibit, St. Louis, MO 12-15 April 1999, Publication #AIAA-99-1438.
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173. Pai, D., Rajaram, G., and Sankar, J., "Exposing High School Students to the Role of Engineering and Advanced Materials in Developing Alternative Energy Sources", ASEE Conference and Exposition (CD-ROM) (2007)
174. Desai S., Pai D., Sankar J., "Introducing Nanotechnology Education within Industrial Engineering Curriculum", Annual Conference ASEE (2007)

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176. Gukan Rajaram, Salil Desai, Zhigang Xu, Devdas M. Pai, Jagannathan Sankar , "Systematic studies on NI-YSZ anode material for Solid Oxide Fuel Cell (SOFCs) applications", International Journal of Manufacturing Research (2008), Vol. 3(3), 350-359
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187. Z. Xu, S. Chen, C. Smith, J. Sankar, Development and Microstructural Characterizations of Mg-Zn-Ca Alloys, presented to the 2010 2nd Symposium on Biodegradable Metals, August 31-September 3, 2010, Maratea, Italy.
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189.

Full length Technical Reports- Few are listed as examples (some are open literature publications_-(written more than 40 similar to the ones shown below)

1. J. Sankar, V. S. Avva, and R. Vaidyanathan, "Testing and Evaluation of Advanced Ceramics at High Temperature in Uniaxial Tension", Ceramic Technology for Advanced Heat Engines, D. R. Johnson, ed., ORNL/TM-10308, pp. 296-300, U. S. Department of Energy. Also Published by National Technical Information Service, U. S. Department of Commerce, VA, 1987.
2. J. Sankar, V. S. Avva and R. Vaidyanathan, D. R. Johnson, ed., ORNL/TM-10469, pp. 343-357, U. S. Department of Energy. Also Published by National Technical Information Service, U. S. Department of Commerce, VA, 1987.
3. J. Sankar, V. S. Avva and A. Sinha, ORNL/TM 347-360, U. S. Department of Energy. Also Published by National Technical Information Service, U. S. Department of Commerce, VA, 1988.
4. J. Sankar, V. S. Avva and R. Vaidyanathan, D. R. Johnson, ed., ORNL/TM 10705, 372-381, U.S. Dept of Energy'. Also Published by National Technical Information Service, U. S. Department of Commerce, VA, 1988.
5. J. Sankar, A. D. Kelkar, V. S. Avva and Jun Gao, ORNL/TM-11489, pp. 433-439, DoE, Also Published By NTIS, Dept. of Commerce, 1990
6. J. Sankar, A. D. Kelkar, V. S. Avva and Jun Gao, "Ceramic Technology for Advanced Heat Engines, ORNLITM-11586, pp. 440-446, DoE, Also Published By NTIS, Dept. of Commerce, 1990
7. J. Sankar, A. D. Kelkar and S. Krishnaraj, Ceramic Technology for Advanced Heat Engines, ORNL/TM-11859, pp. 424-427, DoE, Also Published By NTIS, Dept. of Commerce, 1991.
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9. J. Sankar, A. D. Kelkar and S. Krishnaraj, "Ceramic Technology for Advanced Heat Engines, ORNL/TM-12363, pp. 332-339, NTIS, Dept. of Commerce Publication, 1992.
10. Sankar et al., DOE Ceramics Technology Projects, Published by DOE/ORNL/Lockheed Martin Energy Systems and NTIS, in # ORNL/TM 12428, 1993
11. Sankar et al., DOE Ceramics Technology Projects, Published by DOE/ORNL/Lockheed Martin Energy Systems and NTIS, in # ORNL/TM 12778, 1994
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19. Sankar et al, "Processing and Characterization of Structural and Functional Materials for Heavy Vehicle Applications", for the *Heavy Vehicle Propulsion Materials Program* 2005 Annual Report, ed. Edward Wall, Rogelio Sullivan, and Sidney Diamond, US Department of Energy.
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21. Sankar et al,, "Fabrication and Characterization of Advanced Materials for Energy Applications", Annual Progress Report of HBCU/MI ETC program of DoE, December 14, 2006.

RESEARCH GRANTS AND CONTRACTS OVER THE YEARS (Only funded are listed – list not complete)

Effect of Fatigue and Thermal Loads on SiC/GI Matrix Composites; Department of Energy; August, 1983 to August, 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; FY1983-1984.
Principal Investigators: J. Sankar (PI) and W. Collis.
$40,000

"Shared Research Equipment Travel Support", Processing Science and Technology Section. ORNL, TN; FYI 984.
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; FYI984-1985.
Principal Investigator: J. Sankar
$20,000

Acquisition of an Optical Microscope with Photomicrographic Facility: Polaroid Foundation, Inc.; FYI984.
$2500

Instrumentation for Materials Research, Office of Naval Research (DoD); FYI 984/FYI 985.
Principal Investigators: V. S. Avva (PI), J. Sankar and H. S. Tzou
$160000

"Testing and Evaluation of Advanced Ceramics at High Temperature in Uniaxial Tension", Martin Marietta Energy Systems, lnc; Department of Energy; October, 1984 to October, 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); September, 1983 to December, 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; August, 1984 to February, 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; October, 1986 to October, 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; February, 1987 to January 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; September 1986 to September, 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; November, 1987 to October, 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; February, 1989 to September, 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; November 1989 to October, 1990.
Principal Investigators: J. Sankar (PI) and A. D. Kelkar
$200,000

"A Study on the Yield Phenomenon of Tantalum"; U. S. Army; ARDEC; August, 1992 to December, 1992.
PrincipaI Investigators: J. Sankar
$25,000

"Mechanical Properties Testing of Ceramic Fiber-Ceramic Matrix Composites"; Martin Marietta Energy Systems, Inc; Department of Energy; March, 1989 to December, 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; November, 1990 to September, 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; September, 1990 to August, 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; August, 1990 to May, 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; October, 1993 to September, 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; September, 1993 to September, 1995.
Principal Investigators: J. Sankar (PI) and A. D. Kelkar
$100,000

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

"High-Temperature Fatigue-Creep Tension Characteristics of Silicon Nitride," Martin Marietta Energy Systems, Inc., Department of Energy; November, 1992 to November, 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; November, 1994 to December, 1995
Principal Investigators: J. Sankar (PI) and A. D. Kelkar
$200,000

"High Temperature Mechanical and Microstructural Characteristics of Ceramic Materials; Lockheed Martin/DoE, October 1995-December 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; October 1995-December 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, November 1997- August 1999.
Principal Investigators: J. Sankar (PI) and A. D. Kelkar
$60,000

Ronald E. McNair Graduate Research Fellows Program; NASA; August 1995-August 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, September 1991-December 1997.
Principal Investigators: A.D. Kelkar (PI) and J. Sankar,
$504,084

High Temperature Mechanical and Microstructural Characteristics of Ceramic Materials; Lockheed Martin/DoE; October 1997-December 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, .Sep 1997- Feb 1999.
Principal investigators: J. Sankar
$100,000

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

Center for Advanced Materials and Smart Structures. CREST-NSF, Sept 1997-August 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.
$5,000,000.

Intelligent Resin Transfer Molding for Integral Armor Applications, Department of Defense; September 1995-August 2001.
Principal Investigators: A.D Kelkar (P1), and J. Sankar
$800,000

High Temperature Mechanical and Microstructural Characteristics of Ceramic Materials, Lockheed Martin/DoE; December 1999 – May 2001
Principal Investigators: J. Sankar (P1), A.D. Kelkar, and D. Pai.
$200,000

Survivability of Affordable Aircraft Composites Structures, WPAFB, OH, Oct 1999- Sept 2002
Principal Investigators: A.D. Kelkar (P1) and J. Sankar.
$75,000

Study of Joining of Ceramic/Metals, Army Research Lab, 9/10/2001-9/30/2002

Principal Investigators: J. Sankar (PI)
$10,000

An Experimental and Analytical Investigation of Continuous Fiber Matrix Composites Coated for High survivability, Wright -Patterson AFB, OH, Nov 1999 - Aug 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, Sep 2000 – Aug 2001
Principal Investigators: J. Sankar (PI) and et al from the CoE and Arts and Science
$200,000

Fatigue Life Prediction of Welds, Hamilton-Sandstrand / UT, 10/01/2000-6/30/2003
Principal Investigators: D. Dunn (PI), J. Sankar, S. Ofori
$63,900

A Digital Library of Ceramic Microstructure, NSF, Jan 2002-Dec 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- 10/03,
Principal Investigators M. Sundaresan, D. Pai, W. Craft, and J. Sankar
$60,000

Center for Advanced Materials and Smart Structures. NSF, Sept 2002-August, 2008
Principal Investigators: J. Sankar (PD and PI) et al
$3,750,000

Center for Multifunctional Materials for Homeland Security, Approved under President Bush's Special Congressional Appropriation Budget, Army Research Lab, May 2003 – May 2005
Principal Investigators: J. Sankar, (PD and PI) et al
$1,875,000

Processing and Characterization of Structural and Functional Materials for Heavy Vehicle Applications." Heavy Vehicle Propulsion Materials Program, DoE, 9/01/2002-8/31/2003
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) 07/29/2003-04/28/2004,
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, 11/01/2003 – 10/30/2004
Principal Investigators: J. Sankar (PI), S. Yarmolenko, D. Pai and A. D. Kelkar
$75,000

Performance Evaluation of Low cost Manufactured Ceramic Matrix Composites: Phase I, Air Force Research Lab (via a subcontract to United Technology Corporation)
04/29/2004-10/28/2004
Principal Investigators: A.D. Kelkar (P1), J. Sankar, and D. Pai.
$24,124

Pulsed laser deposition assisted fabrication and characterization of the two-dimensional quantum wells, DOE/Howard University, 02/1/2003-01/31/2004
Principal Investigators: J. Sankar (PI) and D. Kumar
$100,000

Flow process modeling in VARTM composites, Army Research Lab, 12/05/03- 09/30/04
Principal Investigators: R. Mohan (PI) and J. Sankar
$310,000

Center for Nanoscience and Nanomaterials, Office of Naval Research, 4/25/2004-12/31/2005,
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, June, 2005
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, 11/01/2004 – 10/30/2006
Principal Investigators: J. Sankar (PI) and D. Pai, S. Yarmolenko and Z. Xu
$75,000

Heat Treat Standardization, UTC – Pratt & Whitney, 01/01/2005 – 12/31/2007
Principal Investigators: D. Pai (PI) and J. Sankar
$25,000

Characterization and Modeling of Single Wall Nano Tubes in Polysulfide Matrix; DOD Contractor, Foster-Miller, 02/01/2005 – 12/31/2006
Principal Investigators: J. Sankar (PI), R. Mohan, and S. Desai
$20,000

Processing and Characterization of Structural and Functional Materials for Heavy Vehicle Application, Heavy Vehicle Propulsion Materials Program, US-DoE, 11/01/2004 – 10/30/2006
Principal Investigators: J. Sankar (PI), D. Pai, S. Yarmolenko and Z. Xu
$75,000

Multifunctional for Naval structures, U. of Pittsburgh, Kansas, (ONR sub), 10/31/05-07/31/2006
Principal Investigators: J. Sankar (PI), A. Kelkar and R. Mohan
$45,000

Processing and Characterization of Structural and Functional Materials for Heavy Vehicle Application, Heavy Vehicle Propulsion Materials Program, US-DoE, 10/30/2006 – 12/31/2007
Principal Investigator from A&T: J. Sankar (PI) and D. Pai, S. Yarmolenko and Z. Xu
$46,300

Acquisition of a Combined Raman - FTIR Micro-Spectroscopy System for Advanced Interdisciplinary Materials Research, Education and Training, NSF, 09/01/06 – 08/31/2007
Principal Investigators: J. Sankar (PI), D. Kumar, E. Deyneka, D. Pai, J. Lou, Z. Xu, and S. Yarmolenko
$210,076

Pulsed Laser Deposition Assisted Fabrication and Characterization of Advanced Materials for Energy Applications; Department of Energy, 10/01/2004 – 12/31/2008
Principal Investigators: J. Sankar (PI) and D. Kumar
$300,000

Center for Nanoscience and Nanomaterials - added to the already exiting on-going research; Office of Naval Research, 4/25/2006 – 04/30/2008
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

Instrumentation for Nanomanufacturing- Nanolithography, DoD, 06/30/2007-06/30/2008
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
10/01/2003-09/30/2008
$1,017,500

Self-organized nano structured thin films for catalysis in perovskite related membrane reactors; NSF, 09/01/2005 – 02/28/2009
Principal Investigators: J. Sankar (PI) and S. Yarmolenko
$420,000

Charecterizing CMC s for Foreign Object Damage, UDRI, 08/01/2008- 04/30/2009
Principal Investigators: J. Sankar (PI), and S. Yarmolenko,
$40,000

Science and Technology of Self-Assembled Magnetic and Superconducting Nano Arrays, NSF-NIRT, July, 2004 – December, 2009
Principal Investigator from A&T: D. Kumar (PI) and J. Sankar, L. Uitenham, Hebard, J. Narayan
$1,400,000

NUE: Transitioning Nanoscale Research to the Undergraduate Classroom at NC A&T State University, NSF, 01/01/07 – 12/31/2009,
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, 01/01/2007- 08/15/2009
Principal Investigators: J. Sankar (PI), and J. Lou
$105,000

NSF- Nanoscale Science Engineering Research Center (NSEC), NSF 10/01/2008- 09/30/2013
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, 4/30/2008 – 12/31/2010
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, 4/15/2009-7/15/2010
Principal Investigators: J. Sankar
$558,210

NSF- MRI-R2, Acquisition of a Nanotom Computed Tomography System for Revolutionizing Metallic Biomaterials Research, Education and Training, 2/28/10- 5/31/11
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, 01/01/11- 12/31/14
Principal Investigators: Y. Yun and J. Sankar
$450,000

NSF - MRI: Acquisition of Integrated Research Instrument for Large Animal Testing Investigation10/01/12- 12/31/16 Principal Investigators: J. Sankar, Y. Yun, D. Pai and T. Hanner $ 1,112,786.00

NSF- ERC, Engineering Research center for "Revolutionizing Metallic Biomaterials" NSF, 08/01/2008- 09/30/2016 Plus special supplement for commercialization
Principal Investigators: J. Sankar (PI), D. Pai, S. Yarmolenko, S. Desai, D. Kumar, R. Mohan, Z. Xu,. Banerjee et al
$31,000,000

Various NSF Veterans support Grants Total: $60,000

DISCLOSURES FILED

- 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." *U. S. Patent Application,* draft completed by patent attorney representing A&T
- A. Pandya and J. Sankar, " Resorcinol-ketone polymers" A new technology disclosure has been filed

- 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", technical invention disclosure at NCAT
- J. Lou, V. Harinath, S. Ilias, J. Sankar, "An ultrahigh selectivity oxygen enrichment filled polymer membrane", *U. S. Patent # 7264650*
- Eugene Deyneka, Chandra K. Banerjee, Jag Sankar, Arvind Vyas Harinath, "An Improved Process for Fabrication of Gold-Alumina and Gold-Titania Nanocomposites for Carbon Monoxide Removal at Room Temperature," (A&T technical Disclosure)
- V. Harinath, C. Banerjee and J. Sankar, "Encapsulation of Catalyst in Inert Porous Matrices for Removal of Carbon Monoxide from Aerosol", invention disclosure completed at NCAT

- Seonghyuk Ko, Chandra K. Banerjee, Yeoheung Yun and Jag. Sankar, "Sunlight highly active multi-component photocatalyst nanocomposite
- Seonghyuk Ko, Chandra K. Banerjee and Jag. Sankar, "Highly efficient visible light responsive photocatalyst", NC A&T State University
- Application of Carbon Nanotube Fiber for In-body Biomedical Devices
- Highly Efficient Visible Light Responsive Phototcatalyst
- Photocatalyst for the Degradation of Organic Contaminants by Sunlight

UPDATE all IPs and Provisional patents (2014 onwards)

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

DR. SANKAR'S LEADERSHIP EFFORTS HAVE RESULTED IN FRONTIER RESEARCH INFRASTRUCTURE FOR ADVANCED, BIO/NANO & BROAD-BASED MATERIALS

NSF/ERC and CAMSS is housed in the Fort Interdisciplinary Research Center (IRC) at NCAT. The IRC is a modern research facility formed from a complete redesign and modeling of the campus's old library. The IRC houses the Office of the Vice Chancellor for Research and Economic Development and provides on a highly competitive basis, research space for major funded research programs. ERC/CAMSS laboratories occupy 25,000 sq. ft. of this location. The fourteen current ERC/CAMSS lab and facilities are interconnected and span 4 floors of this building, providing a seamless state of-the-art research infrastructure for interdisciplinary knowledge for innovation and converges technologies. Equipment capabilities are documented at http://erc.ncat.edu


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Coatings Synthesis Laboratory
Bio/Polymer Laboratory
Materials Processing and Sample Preparation Laboratory
Microscopy and Surface Analysis Facility
Computational modeling and Visualization Lab
Nanoindentation Facility
Mechanical Testing /High-Temperature Testing Facility
X-ray Diffraction Facility
Physical Property Measurement Lab
Catalysis Facility
Magnetron Deposition Facility
Clean Room with Ink Jet, High Speed Camera and Nanolithography
Micro-Raman facility
Bioengineering ERC facility
FSEM, AFM, Nanotomography CT
Mg Processing and Device Fabrication Facility
Bioreactor with mechanical loadings – 100k,
Multi-photon, confocal optical microscope system – 700k,
Laser Ablation (LA) Inductively Coupled Plasma Mass Spectrometry (ICP-MS)- 500K,
In vivo Micro CT with XRF -$600K
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