AJIT D. KELKAR

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EDUCATION:

Ph.D., Mechanical Engineering, Old Dominion University, Norfolk, Virginia, 1985
M.S., Mechanical Engineering, South Dakota State University, South Dakota, 1981
B.S., Mechanical Engineering, Poona University, Poona, India, 1975

ACADEMIC EXPERIENCE:

Professor and Chair, Nanoengineering, September 2010-Present
Director, Computational Science and Engineering, January 2005 –August 2010
Associate Director, Center for Advanced Materials and Smart Structures, May 2003-present
Professor, Mechanical Engineering, NC A&T State University, July 1996-December 2004
Associate Professor, Mechanical Engineering, NC A&T State University, July 1989-June 1996
Assistant Professor, Mechanical Engineering, NC A&T State University, August 1985-June 1989
NASA Doctoral Research Fellow, NASA Langley Research Center, August 1981-July1985
Graduate Research Assistant, South Dakota State University, August 1980-July 1981
Graduate Teaching Assistant, South Dakota State University, August 1979-July 1980

INDUSTRIAL EXPERIENCE:

Quality Control Engineer, TELCO, Poona, India, February 1979 - July 1979
Sales/Application Engineer, Cummins Diesel Sales and Service, January 1977-January 1979
Assembly Manager, Kirloskar Cummins Limited, Poona, India, September 1975-December 1977

TECHNOLOGY DISCLOSURE/PATENTS

- H-VARTM Processing, Ronnie Bolick and Ajit D. Kelkar, US Patent 9,1114,576 B2, August 25, 2015 (Licensed to ADVAERO Technologies and used by several companies)

- Production of Carbonaceous Nano-Fiber Materials with ultra-High Specific Arae from Alkali(Kraft) Lignin, Lifeng Zhang, Ajit D. Kelkar, Hao Fong, Chuillin Lai, US Patent 9,190,222 B1, November 17, 2015

- Zhang, Lifeng; Kelkar, Ajit D. Nanofiber Yarns for Textile Fabrics. Invention Disclosure, JSNN 0013 0215, NCA&TSU
- Zhang, Lifeng; Kelkar, Ajit D.; Gbewonyo, Spero. Smart Nanocapsules for Jeanswear Dyeing. Invention Disclosure, JSNN 0012 0215, NCA&TSU
- Zhang, Lifeng**; Kelkar, Ajit**. High performance and Bio/Photodegradable Nanofibrous Cigarette Filter. Invention Disclosure, JSNN 008 0114, NCA&TSU
- Kelkar, Ajit; Zhang, Lifeng. Hierarchical TEOS nanofibers for oil spill cleanup and recovery. Invention Disclosure, JSNN 0007 0713, NCA&TSU
- Zhang, Lifeng; Kelkar, Ajit. Environment-friendly, cost-effective and high-efficiency flame retardant agent for polymer fibers. Invention disclosure, JSNN 0006 0613, NCA&TSU

- Zhang, Lifeng; Kelkar, Ajit; Kimbro, Evan. Nanofiber engineered polymer resins for high performance polymer composites. Invention disclosure, JSNN 0005 0113, NCA&TSU
- Zhang, Lifeng; Kelkar, Ajit; Fong, Hao; Lai, Chuilin. Production of carbonaceous nano-fibrous materials with ultra-high specific surface area from Alkali (Kraft) lignin. Invention disclosure, JSNN 0004 0412, NCA&TSU
- Zhang, Lifeng; Kelkar, Ajit. Novel carbon nanofibers, yarns and weaves from electrospinning and their innovative composite. Invention disclosure, JSNN 0003 0212, NCA&TSU
- Novel Carbon Nanofibers, Yarns and Weaves from Electrospinning and Their Innovative Composite, Zhang, Lifeng **Ajit D. Kelkar,** *Invention disclosure*, JSNN 0003 0212, NCA&T
- Electrospun Nano Fabric for Improving Impact Resistance and Interlaminar Strength, Ronnie Bolick, **Ajit D. Kelkar**, Sachin Shendokar, Publication date: 2011-03-17 , Patent application number: 20110064949

CONSULTING EXPERIENCE:

Various litigation cases – expert witness in the area of material failure (have testified in several ladder failure cases, automobile crash analysis)
Daimler Chrysler
Safety Systems Inc., Salisbury, NC
Volvo, Greensboro, NC
CRS Technologies, Greensboro, NC
Aqualine Inc., Winston-Salem, NC
Thomas Built Buses, High Point, NC
Swanson Analysis Systems Inc. (ANSYS), Pittsburgh, CASI, Inc, Urbana, Illinois
North State Pyrophyllite Inc., Greensboro, NC
Turner Woodworks Inc., NC
Actinic Inc., Greensboro, NC
University of Illinois, Computer Science Department, Illinois
Sherwin Williams, Greensboro, NC
Purolator, Greensboro, NC
Tensar Corporation, Atlanta
Concave Research Center, Montreal, Canada
Guilford County, Emergency Medical Service
Material Innovation Technology, VA
VX Corporation, NC

RESEARCH AREAS:

Nanocomposites, Atomistic Modeling , Nano Engineered Materials, Eletrospinning, Molecular Dynamic Simulations, Nanotechnology, Multifunctional Materials, Crashworthiness, Low Cost Composite Manufacturing (VARTM Processing), Mechanical Characterization of Materials including Metals, Polymeric Composites (Tape and Textile), Ceramics and Ceramic Composites, Computer Aided Design and Modeling, Finite Element and Finite Difference Modeling, Numerical Analysis, Fatigue and Impact Modeling and Testing of Polymeric Composites, Ceramic Composites, Textile Composites, Micromechanics Modeling and Testing, Single Fiber Modeling and Testing

COURSES TAUGHT:

MEEN 335 – Statics, MEEN 336 - Strength of Materials, MEEN 337 – Dynamics, MEEN 346 - Strength of Material Lab, MEEN 564 - Engineering Design, MEEN 574 – Senior Design Project, MEEN 612 - Composite Materials, MEEN 602 - Advanced Strength of Materials, MEEN 614 - Engineering Modeling, MEEN 716 - Introduction to Finite Element Method, MEEN 618 - Numerical Analysis, MEEN 789 - Theory of Plates and Shells, MEEN 574 – Senior Design Project, MEEN 885.01 – Advanced Finite Element Method, MEEN 885.02 – Computational Methods In Mechanics, CSE 785.01 – Computational Methods for Scientist and Engineers, NANO 701 – Mathematical Methods for Nanoscience and Nanoengineering, NANO 704 – Introduction to Nanomaterials

RESEARCH PROPOSALS FUNDED: (over 35 million dollars as PI and Co-PI)

- High Performance Computing and Enabling Technologies for Nano and Bio Systems and Interfaces, DOD Army Research Office, $1,104,793, May 1, 2011-September 30, 2014, **Ajit D. Kelkar (PI)** and Ram Mohan (Co-PI)
- Nano to Continuum Multi-Scale Modeling Techniques and Analysis for Cementitious Materials under Dynamic Loading, Partnership in Research Transition Program, Army Research Office, $3,000,000, 06/2011 – 05/2016, Ram Mohan (PI) and **Ajit D. Kelkar (Co-PI)**
- Add-on Supplementary Proposal for the Investigation of High Performance Materials, DOD Army Research Office, $170,000, 02/2013 – 05/2016, Mohan, R. (Lead PI), **A. Kelkar (Co-PI)**
- Computational Modeling and HPC in Advanced Materials Processing, Synthesis and Design, Office of Naval Research, 04/2009 – 06/2012, $1,156,000 Mohan, R. (Lead PI), **A. Kelkar (Co-PI)**
- Efficient Computational Methodologies and Enabling Technologies for Large Scale High Performance Composite Process Modeling, $25,000, Clarkson Aerospace, 01/12 – 08/12, Mohan, R. (Lead PI), **A. Kelkar (Co-PI)**
- Integrating NASA Science, Technology and Research in Undergraduate Curriculum and Training (INSTRUCT), NASA Kennedy Space Center, $1,048573, 01/10-03/14, **Ajit D. Kelkar(PI)**
- Efficient Computational Methodologies and Enabling Technologies for Large Scale High Performance Composite Process Modeling, Clarkson Aerospace, $25,000, 01/12 – 08/12, Ram Mohan (PI) and **Ajit D. Kelkar (Co-PI)**
- Durability and Damage Tolerance of Ceramic Matrix Composites (CMCs),Phase II, Clarkson Aerospace, $40,000, 10/10-11/11, **Ajit D. Kelkar(PI)**
- Durability and Damage Tolerance of Ceramic Matrix Composites (CMCs),Phase I, Clarkson Aerospace, $10,566, 10/10-08/11, **Ajit D. Kelkar(PI)**
- Materials and Manufacturing Research: Fabrication, Characterization and Modeling of Swcnt Based Vartm Manufactured Composites, Clarkson Aerospace, $85,000, 09/09-08/10, **Ajit D. Kelkar(PI)**
- Advanced Epoxy System for Large Scale Composite Ship Component Manufacturing Using The Vartm Process; Triangle Polymer Technologies, $150,000 4/2008-4/2010; **Ajit D. Kelkar(PI)**
- Materials and Manufacturing Research: Fabrication, Characterization and Modeling of Swcnt Based Vartm Manufactured Composites, Clarkson Aerospace, $100,000, 09/08-08/09, **Ajit D. Kelkar(PI)**
- Materials and Manufacturing Research: Fabrication, Characterization and Modeling of Swcnt Based Vartm Manufactured Composites, Clarkson Aerospace, $95,000, 09/07-08/08, **Ajit D. Kelkar(PI)**
- Integrated Composite Technologies, Center for Nano-science and Nano-Engineering, Office of Naval Research, $2,500,000, 07/07-8/10, Sankar, J. (PI), **Ajit D. Kelkar (Co-PI)**

- Common System Visualization (CSV) Effort for Submarine Warfare Federated Tactical Systems, Lockheed Martin Corporation, 06/2008 – 12/2008, $150,000, Mohan, R. (Lead PI), **Ajit D. Kelkar (Co-PI)**
- Common System Visualization (CSV) Effort for Acoustics Rapid Insertion Program, Lockheed Martin Corporation, 02/2007 – 05/2008, $480,000, Mohan, R. (Lead PI), **Ajit D. Kelkar (Co-PI)**
- North Carolina Advanced Composites Training and Education Center, Golden Leaf Inc, 01/2007 – 06/2008, $300,000**, Ajit D. Kelkar(PI) ,** Mohan, R. (Co-PI), Bolick, R. (Co-PI).
- Low Cost Affordable Manufacturing of Damage Tolerant Complex Shapes Composites Manufactured Using Stitching And Z Pinning Technique, Air Force Research Lab (via a subcontract proposal to Universal Technology Corporation, $67,000, 07/06-04/08, **Ajit D. Kelkar(PI)**
- Common System Visualization Project – Phase 1 Continuation, Lockheed Martin Corporation, 10/2006 – 06/2007, $145,000, Mohan, R. (Lead PI), **Ajit D. Kelkar (Co-PI)**
- Integrated Composite Technologies, Center for Nano-science and Nano-Engineering, Office of Naval Research, $1.2 Million, 07/06-12/07, Sankar, J. (PI), **Ajit D. Kelkar (Co-PI)**
- Common System Visualization – Phase 1, 4/2006 – 9/2006, Lockheed Martin Maritime Systems and Sensors, $76,114, Mohan, R (Lead PI) and **Ajit D. Kelkar(PI)**
- Development of Common System Visualization of Product Hardware Design, Lockheed Martin, 8/2005-12/2005, $85,000, Mohan, R. (Lead PI) and **Ajit D. Kelkar (Co-PI)**
- Performance Evaluation of Composite Hybrid Panels Fabricated Using the 3-DEP Preforms with Existing Cloth Lay-Up; Material Innovation Technology, $20,000, **Ajit D. Kelkar(PI)**
- Characterization of Low Cost Manufactured Nanomaterial Reinforced Composites, Clarkson Aerospace, $227,950, 09/06-01/08, **Ajit D. Kelkar(PI)** and Bolick R. (Co_PI)
- Low Cost Affordable Manufacturing of Damage Tolerant Complex Shapes Composites Manufactured Using Stitching And Z Pinning Technique, Air Force Research Lab (via a subcontract proposal to Universal Technology Corporation, $27,000, 09/05-05/06, **Ajit D. Kelkar(PI)** and Stanfield, Paul (Co-PI).
- Characterization of Low Cost Manufactured Nanomaterial Reinforced Composites, Clarkson Aerospace, $50,000, 09/05-09/06, **Ajit D. Kelkar(PI)** and Bolick R. (Co_PI)
- "Performance Evaluation of Low Cost Manufactured Ceramic Matrix Composites-Phase III," subcontract through Universal Technology Corporation (Dayton, OH) Proposal to Air Force Research Lab, $28,000, 03/06-06/06 **Ajit D. Kelkar(PI)** , Bolick, R. (Co_PI)
- Feasibility Study of Airbag for Vehicular Impact, Phase III, Safety Systems Inc., $28,000, 09/05-07/06, **Ajit D. Kelkar(PI)**
- "Characterization of Structural Behavior and Properties of Braided Composites", FAA, $75,000, 9/2005-8/2006, **Ajit D. Kelkar(PI)**
- "Education Partnership Agreement Between Materials and Manufacturing Directorate Air Force Research Laboratory And North Carolina A&T State University to acquire Alpha Server", AFRL, $660,000, **Ajit D. Kelkar(PI) ,** June 2005
- Broadening Participation in Computing, National Science Foundation, 2006, **Ajit D. Kelkar**(Investigator), J. Kelly (PI), $1.2 Million, 3/05-3/07
- "Acquisition of High Performance Computing Resources in Support of the Consortium for Computational Chemistry and Materials Sciences", NSF, MRI Program, June 2004, $150,000, L. Bartolotti (ECU)- PI, **Ajit D. Kelkar** et al **(Co-PI)**
- "Aircraft Survivability of Low Cost Vartm Manufactured Sandwich Composites Made Out of Multifunctional Materials", NASA Langley Research Center, $45,000, 04/2004-03/2005, **Ajit D. Kelkar(PI)** and Craft, W. J. (Co-PI)
- "Multifunctional Materials, Structures and Sensors for Homeland Security (Center for Nanoscience and Nanomaterials)," Office of Naval Research, $3,000,000, 4/25/04 – 12/31/05 J. Sankar (PI), **Kelkar, A. D.** et al **(Co-PI)**
- "Performance Evaluation of Low Cost Manufactured Ceramic Matrix Composites-Phase II," subcontract to Universal Technology Corporation (Dayton, OH) Proposal to Air Force Research Lab, $24,124, 04/29/04 – 10/28/04 , **A. Kelkar (PI),** J. Sankar and D. Pai (CO-PI)
- "Multifunctional Materials, Structures and Sensors (Center for Nanoscience & Nanomaterials)," US Army Research Office, $1,895,000, 5/12/03 – 12/31/04, J. Sankar (PI), **A. Kelkar** et al **(CO-PI).**

- "Performance Evaluation of Low cost Manufactured Ceramic Matrix Composites- Phase I", Air Force Research Lab (via a subcontract proposal to United Technology Corporation, $43,000, 07/2003 – 04/2004, **Kelkar, A. D. (PI),** Sankar J. and Pai, D. (Co-PI).
- "High Temperature Mechanical and Microstructural Characteristics of Ceramic Materials," Lockheed Martin Energy Systems, ORNL, $75,000, 11/1/03 – 10/31/04, J. Sankar (PI), **A. Kelkar** & D. Pai **(Co-PI).**
- "High Temperature Mechanical and Microstructural Characteristics of Ceramic Materials," Lockheed Martin Energy Systems, ORNL, $75,000, 1/1/03 – 10/31/03, J. Sankar (PI), **A. Kelkar** & D. Pai **(Co-PI).**
- "Analysis of Structural Materials using Semi-atomistic Modeling", NASA Langley Research Center, $96,000, 6/2003-3/2005, **Kelkar, A. D. (PI)** and Craft, W. J. (Co-PI)
- "Sensor Network Architectures for distributed Information Extraction, Interpretation and Decision Making", CREST-NSF, $750,000, 3/03-3/07, Sankar, J. (PI) and **Kelkar, A. D.** et al **(Co-PI)**
- "Feasibility Study of Airbag for Vehicular Impact, Phase 1", Safety Systems Inc., NC, $15,000, 10/2002-3/2003, **Kelkar, Ajit D. (PI)**
- "Center for Advanced Materials and Smart Structures"; CREST-NSF; $3,750,000; 5/02-5/07, Sankar, J. (PI) and **Kelkar, A. D.** et al **(Co-PI)**
- **"**Structural Performance of Affordable Composites for Stealthy Naval Ships"; Office of Naval Research, $1,660,000, 8/02-7/05, Shivakumar, K. (PI) and **Kelkar, A. D.** et al **(Co-PI)**
- "Performance Evaluation and Modeling of Affordable Damage Tolerant Composites", NASA Headquarters, $300,000, 4/2002-3/2005, **Kelkar, Ajit D. (PI)**
- "Effect of Temperature on Fatigue Behavior of Riveted Joints and Adhesively Bonded Joints", Thomas Built Buses, $15,500, 5/02-8/03, **Kelkar, Ajit D. (PI)**
- **"**High Temperature Mechanical and Micro structural Characteristics of Ceramic Materials"**,** Lockheed Martin Energy Systems, 10/01-9/02**,** Sankar, J. (PI) and **Kelkar, A. D.** et al **(Co-PI)**
- "Characterization of Structural Behavior and Properties of Braided Composites", FAA, $606,633 9/2001-8/2004, **Kelkar, Ajit D. (PI)**
- A Pulsed Laser Deposition Facility for The Synthesis Of Novel Surface Engineered And Electronic Ceramic Materials, Army Research Office, $200,000, 06/00, Sankar, J. (PI), and **Kelkar, A. D.** et al **(Co-PI)**
- "Aircraft Survivability of Affordable Composites", Air Force Research Laboratory, $150,000, 11/99-12/02, **Kelkar, Ajit D. (PI)** and Sankar, J. (Co-PI)
- "An Experimental and Analytical Investigation of Continuous Fiber Matrix Composites Coated for High survivability," Air Force Research Laboratory, $247,552, 11/99 – 08/02, D. Pai (PI), J. Sankar & **A. D.Kelkar (CO-PI).**
- "Comparative Study of Riveted Joints vs Adhesively Bonded Joints", Thomas Built Buses, $26,500, 9/99-8/02, **Kelkar, Ajit D. (PI)**
- "NASA Research Into Undergraduate Education"; NASA Headquarters; $2,500,000; 7/98-6/03; Monroe, J. (PI), **Kelkar, A. D. (Research Co-PI)** and Cheek Eric (Education-Co-PI)
- "Center for Advanced Materials and Smart Structures"; CREST-NSF; $5,000,000; 9/97-8/01, Sankar, J. (PI) and **Kelkar, A. D**, et al **(Co-PI)**
- "Tensile Test Development for the High Performance Geotextile Reinforcements"; Tensar Corp.; Morrow, G. A; $6,000; 9/96-12/97, **Kelkar, A. D., (PI),** and Sankar J. (Co-PI)
- "High Temperature Mechanical and Microstructural Characteristics of Ceramic Materials," Lockheed Martin Energy Systems, ORNL, $500,000, October 1997 – December 1999, Sankar, J., (PI), D. Pai and **Kelkar, A. D. (Co-PI).**
- "Intelligent Resin Transfer Molding for Integral Armor Applications"; DoD U. S. Dept. of Army; $800,000; DAAH04; 9/95-9/01, **Kelkar, Ajit D. (PI),** and Sankar J. (Co-PI)
- "High Temperature Mechanical and Microstructural Characteristics of Ceramic Materials"; Lockheed Martin Energy Systems; Oak Ridge, TN; $500,000; 19X-89687C; 10/95-12/97; Sankar, J., (PI), and **Kelkar, A. D. (Co-PI).**
- "A New Mechanistic Constitutive Model for High Temperature CMC's Under Monotonic and Cyclic Loading"; NASA-Lewis RC; Cleveland, OH; $60,000;NAS3-96055;11/96-11/97; Sankar J., (PI), and **Kelkar A. D. (Co-PI).**

- "The Effect of Sample Test Volume and Geometry on the Tensile Characteristics of Continuous Fiber Ceramic Composites"; Department of Energy; $100,000; DE-FG-5-930R22119; Sankar, J., (PI), and **Kelkar, A. D. (Co-PI).**
- "A New Mechanistic Constitutive Model for High Temperature CMC's Under Monotonic and Cyclic Loading"; NASA-Lewis RC; Cleveland, OH; $50,000;NAS3-27767; 10/95-12/96; Sankar J., (PI), and **Kelkar A. D. (Co-PI).**
- "A New Mechanistic Constitutive Model For High Temperature CMCs Under Monotonic and Cyclic Loading", NASA Lewis Research Center, October 1995-September 1996, $100,000, NRA-95-LeRC1; Sankar, J. (PI), and **Kelkar, A. D. (Co-PI)**
- "Development of Frontal Barrier and Moving Frontal Barrier Finite Element Models," National Highway Traffic Safety Administration, Washington D. C., September 1994- October 1996; $75,000; DTNH22-94-G-0740; **Ajit D. Kelkar (PI),** and Mark Schulz (Co-PI)
- "3-D Micromechanical Finite Element Analysis of Composites," North Carolina Supercomputing Center, MCNC, Research Triangle Park, NC, February 1993 - February 1994, 100 Cray Y-MP hours; **Kelkar Ajit D. (PI)**
- "Finite Element Analysis of School Bus Seat," Thomas Built Buses, High Point, North Carolina, July 1992 to July 1993; $ 6,538; **Kelkar, A. D. (PI),** Craft, W. J., and Lai, H. (Co-PI)
- "Analysis of Composite Laminates Subjected to Low Velocity Impact Loading," North Carolina Supercomputing Center, MCNC, Research Triangle Park, NC, October 15 1993 - December 31, 1993, 50 Cray Y-MP hours; **Kelkar Ajit D. (PI)**
- "Effect of Sample Size and Finish on the Tensile Characteristics of Continuous Filament Ceramic Composite'; U.S. Department of Energy; September, 1993 to September, 1995; $200,000, DE-FG05-930R22119; Sankar, J. (PI) and **Kelkar, A. D., (Co-PI)**
- "Analysis of Composites Subjected to Low Velocity Impact Loading"; Wright Laboratories, WPAB; $504,084; F33615-90-C-3207; 9/91-12/97, **Kelkar, A. D., (PI),** and Sankar, J. (Co-PI)
- Travel Grant for 1991 ASEE Conference, New Orleans, Minority Institute Research Travel, Oak Ridge Associate Universities, U. S. Department of Energy, 1991, $ 1,116; **Kelkar, Ajit D. (PI)**
- "High Temperature Fatigue-Creep Tension Characteristics of Silicon Nitride; "Martin Marietta Energy Systems, Inc.; Department of Energy; November, 1990 to September, 1994; $400,000, 19X-89687C; Sankar, J. (PI) and **Kelkar, A. D., (Co-PI)**
- "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; $200,000; 19X-89687C; Sankar, J. (PI) and **Kelkar, A. D., (Co-PI)**
- "Mechanical Behavior Investigation of Advanced Ceramic Matrix Composite Materials"; U.S. Air Force Office of Scientific Research (AFOSR); September 1993, to September 1994; $139,410; F49620-93-1-0573; Sankar, J. (PI) and **Kelkar, A. D., (Co-PI)**.
- "Fracture Toughness Studies of High Strength Materials," Martin Marietta Energy Systems, Inc., February 1989 to January 1992; $100,000; 19Y-HB686C; **Kelkar, A. D., (PI),** and Sankar J. (Co-PI)
- "Investigation of Micro-Damage in Composites by Ultrasound," Battelle Pacific Northwest Laboratories, July 1988 to June 1989; $20,000; Contract No. B-U5868-A-N; **Kelkar, Ajit D. (PI)** and Dayal, Vinay (Co-PI)
- "Testing and Mechanical Properties Characterization of New High Temperature Materials," Naval Air Development Center; Department of Navy, PA; September, 1990 to August, 1994; $330,270, N62269-90-C-0268; Sankar, J. (PI) and **Kelkar, A. D., (Co-PI)**
- "Mechanical Properties Testing of Ceramic Fiber-Ceramic Matrix Composites"; Martin Marietta Energy Systems, Inc.; Department of Energy; March, 1989 to December, 1993; $200,000; 19X-SC423V; Sankar, J. (PI) and **Kelkar, A. D., (Co-PI)**
- "High Temperature Uniaxial Creep of Silicon Nitride Materials" Martin Marietta Energy Systems, Inc., Department of Energy, November 1989 - October 1990; $200,000; 19x89687C; Sankar, J. (PI) and **Kelkar, A. D., (Co-PI)**
- "Mechanical Properties Testing of Ceramic Fiber-Ceramic Matrix Composites," Martin Marietta Energy Systems, Inc., Department of Energy, March 1989 to December 1993; $200,000; 19X-SC423V; Sankar, J. (PI) and **Kelkar, A. D., (Co-PI)**

- "Uniaxial Elevated Temperature Behavior of SNW-1000 Si_3N_4 Ceramic System" Martin Marietta Energy Systems Inc., Department of Energy, October 1988 - October 1989; $200,000; 19x-89687-C; Sankar, J. (PI), Avva, V. S., and **Kelkar, A. D. (Co-PI)**
- "Room Temperature and High Temperature Tension Characteristics of Silicon Nitride," Martin Marietta Energy Systems, Inc., November 1987 to October 1988; $200,000; 19X-89687C; Sankar, J. (PI), Avva, V. S., and **Kelkar, A. D., (Co-PI)**
- "Testing and Evaluation of Dynamic Tensile Properties of Magnesium Based Metal Matrix Composite Materials," Battelle, Pacific Northwest Laboratories, February 1987 to September 1987; $25,000; B-Q7260-A-P; Sankar, J. (PI), Avva, V. S., and **Kelkar, A. D. (Co-PI)**
- "Micro/Macro Studies of Fiber-Reinforced Composite Materials," Office of Naval Research/URIP, September 1986 to September 1991, $2,207,337, N00014-86-K-0682; Avva, V. S. (PI), Filatovs, J., Kabadi, V., **Kelkar, A. D.,** Sadler, R, and Sankar, J. (Co-PI)

PRINCIPAL PUBLICATIONS:

Books:

- "Nanoengineering of Structural, Functional and Smart Materials", Mark J Schulz, **Ajit D Kelkar** and Mannur J Sundaresan, Cat. #: 1653, ISBN: 0849316537, 2005, CRC Press, 712 pages
- "Nanoscience and Nanoengineering: Advances and Applications", Ajit D. Kelkar, Daniel Herr and James Ryan, CRC Press, ISBN: 978-1-4822-3119—9, 350 Pages

Book Chapters:

- Electrospun polyacrylonitrile nanofibers surface-functionalized with amidoxime groups and their applications. Chapter 4 in Nanofibers: Synthesis, Properties, and Applications, Zhang, L; **Kelkar, A**; Zhu, Z; Fong, H. Nova Science Publishers Inc.: Hauppauge NY, ISBN is 978-1-62257-085-0, , 2012, pages 91-110
- Processing, Evaluation and Molecular Simulations in Hybrid Polymer Nanocomposites," Developments in Nanocomposites, R. Mohan, O. Akinyede, **A. Kelkar**, and J. Sankar, Research Publishing Services, Singapore, ISBN 978-981-08-3711-2
- Modeling at Nanoscale – Material Chemistry Level Modeling in Processing and Mechanics of Engineered Materials," R. Mohan and **A. Kelkar**, "Nanoscience and Nanoengineering: Advances and Applications", Taylor & Francis, ISBN: 978-1-4822-3119—9 .
- "Computational Modeling of Nano-Bio Interfaces, G. Srinivas**,** R. Mohan**, A. Kelkar,**" Nanoscience and Nanoengineering: Advances and Applications", Taylor & Francis, ISBN: 978-1-4822-3119—9
- Processing, Evaluation and Molecular Simulations in Hybrid Fiber Polymer Composites with Alumina Nanoparticles, Developments in Nanocomposites, R. Mohan **Ajit D. Kelkar**, Research Publishing Services, Singapore, ISBN 978-981-08-3711-2, 2010.
- Chapter 19: Continuum and Atomistic Modeling of Thin Films Subjected to Nanoindentation, J.D. Schall, D.W. Brenner, **Ajit D. Kelkar,** and R. Gupta, "Nanoengineering of Structural, Functional and Smart Materials", Cat. #: 1653, ISBN: 0849316537, 2005, CRC Press, 712 pages
- Chapter 20: Synthesis, Optimization and Characterization of AlN-TiN Thin Film Heterostructures, C.Waters, S.Yarmolenko, J.Sankar, S. Neralla, and **Ajit D. Kelkar,** "Nanoengineering of Structural, Functional and Smart Materials", Cat. #: 1653, ISBN: 0849316537, 2005, CRC Press, 712 pages

Journal Articles:

- Galehdari, N. A., Mani, V., Kelkar, A. D. (2016). Fabrication of Nanoengineered Radiation Shielding Multifunctional Polymeric Sandwich Composites. World Academy of Science, Engineering and Technology, International Journal of Chemical, Molecular, Nuclear, Materials and Metallurgical Engineering, 10(3), 274–277, 2016

- Sirelkhatim, N., LaJeunesse, D., **Kelkar, A. D**., Zhang, L. (2015). Antifungal activity of amidoxime surface functionalized electrospun polyacrylonitrile nanofibers. Materials Letters, 141, 217–220.
- Ghazizadeh, M., Estevez, J. E., **Kelkar, A. D**. (2015). Boron Nitride Nanotubes for Space Radiation Shielding. Int J Nano Stud Technol, 4, 1–2.
- Aboagye, A., Elbohy, H., **Kelkar, A. D.,** Qiao, Q., Zai, J., Qian, X., Zhang, L. (2015). Electrospun carbon nanofibers with surface-attached platinum nanoparticles as cost-effective and efficient counter electrode for dye-sensitized solar cells. Nano Energy, 11, 550–556.
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SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH A MEMBER:

- The American Society of Mechanical Engineers (ASME)
- American Society for Aeronautics and Astronautics (AIAA)
- SAMPE
- American Society for Engineering Education (ASEE)
- Society for Experimental Mechanics (SEM)
- The American Society for Composites (ASC)
- American Society of Metals (ASM)
- Pi-Tau-Sigma The Mechanical Engineering Honor Society
- Sigma-Xi The Scientific Research Society

HONORS AND AWARDS:

- HBCU Innovators Award at the 31st annual BEYA STEM Conference Innovations Awards Day, February 2017
- Nominated for Max Gardner Award, December 2016
- Recipient of this year's A&T 2016 Intellectual Property Award
- Member Materials Technical Committee, American Institute of Aeronautics and Astronautics (1995-)
- Editorial Board Austin Journal of Nanomedicine & Nanotechnology (November 2013-)
- Editorial Board International Journal of Nano Studies & Technology (IJNST) (November 2013-)
- Editorial Board Nanoscience & Technology (October 2013-)
- Served as a co-session organizer and session chairman for ASME 2013 International Mechanical Engineering Congress & Exposition at San Diego in November 2013
- Appointed as Secretary for NANOCON 2014 biannual conference
- Reviewer for Journal of Material Chemistry and Physics (2013)
- Reviewer Composite Structures, and Journal of Composite Materials (October and November 2013).
- Recipient of Intellectual Property Award (IP Award) , North Carolina A&T State University, 2012
- Reviewer, AIAA-SDM Conference 2005-2012
- Reviewer, ASEE- Annual Meeting, 2009-12
- Conference Organizer, NANOCON 2010 and 2012 Pune, INDIA
- Reviewer, Journal of Materials Chemistry and Physics, 2009, 2010, 2011, 2012
- Reviewer ASME-IMECE2009, 2010, 2011, 2012
- External Reviewer for Tenure Application for a faculty from National Technological University, Singapore, June 2007
- Special award from North Carolina A&T State University Division of Research and Economic Development for the "Founding Member of ADVAERO, Inc.", a first company that was spun of by A&T in the area of aerospace/composite, NC, April 2008
- Best Applied Presentation by a Student Award: Oladapo Akinyede, Modeling Determination for Composite Materials with Processing Variations - A Statistical Approach, International Conference on Advances in Interdisciplinary Statistics and Combinatorics, October 12-14, 2007, Greensboro, NC.
- Served as an external reviewer for the Computational Science and Engineering Doctoral proposal for Georgia Institute of Technology, Atlanta, Georgia, September 2007
- Reviewer for the Journal of Composite Science and Technology, November 2007
- Session Organizer and Session Chair, International Conference on Advances in Interdisciplinary Statistics and Combinatorics, Greensboro, NC , October 2007
- Reviewer, AIAA-SDM Conference, November 2007
- External Reviewer for Tenure Application for a faculty from National Technological University, Singapore, June 2007

- AIAA Materials TC Member, Schaumberg, Illinois, April 2008
- Session Chair AIAA Annual SDM Meeting-Schaumberg, Illinois, April 2008
- Session Organizer and Session Chair, Bridges to Engineering 2020 Conference, Greensboro, March 2008
- Reviewer for ASME Annual Meeting, August 2007
- Session Chair, International Conference on Future Trends in Composite Materials and Processing, Indian Institute of Technology, Kanpur, INDIA , December 2007
- Reviewer IMECE2006
- Best Finite Element Paper, ANSYS Conference, Detroit, May 2006
- NSF-SBIR Proposal Reviewer, August 2006
- Reviewer, International Journal of Fatigue, September 2006
- Reviewer, AIAA-SDM Conference, November 2006
- Reviewer, Journal of Aircraft, January 2007
- Reviewer, ASTM International Journal of Testing and Evaluation, March 2007
- AIAA Materials TC Member, April 2007
- Session Chair AIAA Annual SDM Meeting-Hawaii, April 2007
- Recipient of the Best Paper Award-Automotive Division, Ansys Conference, Pittsburg, April 2006
- Recipient of the Best FEA Image Award, CEIVIZ Conference, March 2006
- Certificate of Appreciation, NC-LSAMP, 2006
- Reviewer IMECE2005-Pressure Vessel and Piping Division
- Reviewer for Composite-A
- Appointed on Materials Technical Committee, AIAA, April 2002-present
- External Doctoral Dissertation Reviewer, Anna University, India, 2006
- Appointed as CSE Research Cluster Co-Lead
- Session Chairman, 45th AIAA/ASME/ASCE/AHS/ASC SDM Conference, Palm Springs, CA, April 2004
- Certificate of Appreciation, NC-LSAMP, April 2004
- Reviewer IMECE2004-Pressure Vessel and Piping Division, April 2004
- Book Reviewer for MECHANICS OF MATERIALS, 3/e, Beer, Johnston and DeWolf, McGraw Hill, February, 2004
- Reviewer Futures Ventures proposals, NCA&T, February 2004
- Reviewer for Journal of composite materials, January 2004
- Reviewer for U.S. Civilian Research & Development Foundation (CRDF) for the Independent States of the Former Soviet Union, November 2003
- Congressional Visits Day Committee Member, AIAA, April 2002-present
- Appointed on Materials Technical Committee, AIAA, April 2002-present
- Appointment as a Liaison for Materials TC between AIAA and ASME, April 2002-present
- Reviewer for Journal of Composites Science and Technology, January 2003
- Fifth Place Nomination for FAA Poster, Daytona Beach, November 2003
- Session Chairman, 44th AIAA/ASME/ASCE/AHS/ASC SDM Conference, Norfolk VA, April 2003
- Reviewer IMECE2003-Pressure Vessel and Piping Division, April 2003
- Appointment on Material Technical Committee, AIAA, April 2003
- Appointment as a Liaison for Materials TC between AIAA and ASME, April 2002
- Reviewer North Carolina Super Computing Center, March 2003
- Reviewer North Carolina Space Grant Competition Proposal, February 2003
- Reviewer for Journal of Composites Science and Technology, January 2003
- Reviewer for International Journal for Numerical Methods in Engineering, 2002
- Reviewer for ASME Journal of Materials and Technology, May 2002
- Second Place Award for NASA Pair Undergraduate Research, November 2002
- Session Chairman, International Congress on Fatigue, Sweden, June 2002
- Session Chairman 20th IMTDR, Ranchi India, December 2002
- Book Reviewer for MECHANICS OF MATERIALS, 3/e, Beer, Johnston and DeWolf, McGraw Hill, 2001
- Reviewer for Journal of Composites Science and Technology 01,02
- Reviewer for Journal of Composite Technology and Research, 99,00,01,02
- Reviewer for Journal of Engineering Materials and Technology, 00,01,02

- Reviewer for ASME Journal of Pressure vessel and Technology, 98, 99, 01
- Reviewer for International Journal for Numerical Methods in Engineering, 99, 00, 02
- Reviewer for Prentice Hall Book - Fundamentals of Mechanical Engineering, 2000
- Reviewer, AIAA Journal, 2002
- Reviewer for ASTM STP 1379, 2000
- Reviewer for Special Issue of Composites A (ACUN-2 Special Publications), 1999
- Reviewer for ICCM-13, Beijing, China, 2001
- Reviewer for Army Research Laboratory, RTP, North Carolina, 1998
- Reviewer for ASME 1997 International Mechanical Engineering Congress, Dallas
- Reviewer, The International Mechanical Engineering Congress and Exposition, 1994-2001
- Session Chairman ICCM-13, Beijing, China, 2001
- Session Chairman, The International Mechanical Engineering Congress and Exposition, 1994-2001
- Member, International Advisory Board of the Fourth International Conference on Composite Engineering (ICCE/4), Hawaii, 1999
- Session Organizer/Chairman for 10th ICMCM, BOSTON, 1995
- Session Chairman for ASME Winter Annual Meeting, Chicago, 1994
- Session Chairman, ASME Winter Annual Meeting, Anaheim, California, 1992
- Session Chairman for ASME Computers in Engineering Conference, 1988.
- Reviewer, Journal of Experimental Mechanics
- Reviewer, Journal of Numerical Methods in Computational Mechanics
- Reviewer, ASME Winter Annual Meeting, San Francisco, November, 1995
- Reviewer, Journal of Experimental Mechanics, 1994
- Reviewer, ASME Winter Annual Meeting, Chicago, 1994
- Reviewer, ASME Winter Annual Meeting, New Orleans, 1993
- Reviewer, ASME Winter Annual Meeting, Anaheim, California, 1992
- Reviewer for WVU Energy Research Center, 1986.
- Reviewer for ASME Twelfth Biennial Conference on Mechanical Vibrations and Noise, 1989.
- North Carolina Supercomputing Center, Allocation Committee Member, NCSC, 1994-2002
- Executive Committee Member, ASM**,** 1994
- Excellence in Research Award, Mechanical Engineering department, 1993
- Member, Technical Program Committee, The Canadian Society for Mechanical Engineers, 1992
- Who's Who in Mechanics of Composite Materials Directory, published by Wright-Patterson Air Force Base, Ohio, 1986.
- Participating faculty, in National Center for Composite Matls Res, University of Illinois, 1987.
- Member Sigma-Xi Scientific Research Society
- Member Pi Tau Sigma, National Mechanical Engineering Honor Society
- Recipient of NASA Langley Research Center Aero program Award for Doctoral Studies, 1981.
- Certificate of Merit from Mechanical Engineering Students Assoc., 1974.
- Who's Who in Micro Electronic Center of North Carolina, MCNC

GRADUATE STUDENTS SUPERVISED:

(Completed MSME degree)

B. Holakare	J. D'Costa	Chandraiyah	N. Dayananda
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R. Bolick	B. Blount	Vijay Krishnan	Evan Kimbro
S. Tammaru			

(Completed CSE degree)

Alok Shrolikar	Sheena Neely	Andrew ZaC Williams	Jeremy Kearney

Bhushan Thatte	Coney Sidberry	Abu Rasel	Riba Ibrahim
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(Completed MS Nanoengineering degree)

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(Completed Ph.D. degree- Mechanical)

J. Tate	D. Carmon	J. Mussai	P. Chaphalkar
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E. Kimbro	S. Shendokar		
R. Vaidyanathan	(Ph. D. -Co-Advisor)	J. Lang	(Ph. D. -Co-Advisor)
L. Russell	(Ph. D. -Co-Advisor)		

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