Kishore Babu Kancherla

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LinkedIn | GitHub | Google Scholar | Research Gate

Professional Experience

Integrative Multi-scale Engineering Materials and Systems (iMEMS) Lab
Department of Aerospace Engineering, Indian Institute of Science (IISc), Bangalore, KA, India

Project Scientist – III *Apr 2024 – till date*
Project Scientist – II *June 2022 – Mar 2024*
Project Scientist – I *Apr 2022 – May 2022*
Project Associate *May 2015 – Nov 2019*
Research Associate – II *Dec 2019 – Sep 2020*
Research Associate – III *Oct 2020 – Mar 2022*

Experienced professional with about a decade of proven expertise in Project coordination, Grant writing, and Experimental design. Skilled in Testing, Quality optimization, Stakeholder management, Technical documentation, Lab development and Asset maintenance with a strong focus on adopting lean methodologies, Six Sigma principles, and agile project management for projects funded by Boeing, Shell, ISRO, SERB, ADA, DRDO, and others.

Cognizant Technical Solutions India Pvt Ltd., *Chennai, TN, India*

Programmer Analyst *Jan 2015 – Mar 2015*
Software quality assurance: Designing, Planning, and Executing test cases, Collaborating with developers and product managers

Educational Credentials

Integrated Dual Degree
MTech and BTech (Hons.)
IIT (BHU), Varanasi, 2014

Materials Science and Technology
Thesis: 'Synthesis, Characterization and Microwave Absorption Properties of Nanocrystalline Perovskites'

Skills and Competencies

Technical

→ Process Design and Data Analysis	• Root Cause Analysis • FMEA, Measurement System Analysis (MSA) • Hypothesis testing, ANOVA • Design of Experiments (DoE)	• SWOT analysis • Graphical Tools • Statistical Process Control (SPC) • Value Stream Mapping (VSM)
→ Functional Testing	• Material Property Characterization – Physical, Microstructure, Phase, Mechanical, Thermal, Electro-magnetic, Non-destructive (NDT) as per ASTM, ISO, IEEE, ASME, MIL, FAA standards	
→ Advanced Manufacturing	• Advanced Polymer Composites (CFRP, GFRP, Sandwich, Hybrid, Natural) • Additive Manufacturing (FDM, LIM, LPBF)	• Nanomaterial Synthesis etc. (Sol-gel, GNP) • Sensor Manufacturing (PZT, PVDF, CNT)
→ Grant Writing	• Comprehensive literature reviews • Identification of technology gaps • Formulation of objectives and methodologies • Drafting detailed project proposals	• Collaboration with interdisciplinary teams • Preparation of budget estimates • Compliance with submission guidelines
→ Software	• Technical documentation (MS O365) • Project Management (SharePoint, Planner, Trello, Jira)	• Data Analysis (MATLAB, Excel, Minitab, SQL) • Data Visualization (MATLAB, ORIGIN, Excel, Power BI)
Management	• Waterfall, Agile (Scrum, Kanban) • Critical Thinking • Problem Solving • Planning, Execution, Monitoring & Control	• Effective Communication • Cross-functional Team Management • Continuous Process Improvement • Cost Benefit Analysis
Professional Certifications	• Lean Six Sigma Black Belt (The Council for Six Sigma Certification, USA) • Chat-GPT for Six Sigma: AI Visualization Proficient (AIGPE) • Mastering ISO 9001:2015 – QMS (QG), AS9100D (Alison)	• Product Management – Basics (Udemy), PLM (Great Learning) • Project Management (Ivan, Udemy) • Practical Leadership Skills (Chris Croft, Udemy)

Awards and Achievements

- → Published 4 Peer Reviewed Research Papers, 10+ Conference Proceedings and Presentations and 8 Technical Project Reports.
- → Best paper award in 'SAE Aerocon-2024' conference for 'Assessing the Structural Feasibility and Recyclability of Flax/PLA Bio-Composites for Enhanced Sustainability'
- → Presented Research work on 3D printed Functionally graded composites at Siemens Conference Center, Berlin, Germany in ASME AMRGT-2019.
- → Trained more than 100 junior researchers in Research Planning, Execution, Delivery, Asset maintenance, Safety and Technical documentation.
- → AIR 36 and AIR 42 in GATE 2017 and GATE 2014 respectively and IIT-JEE 2009 rank holder.

Projects – Roles, Responsibilities and Key Outcomes

→ *Sponsored Projects (Industry/Government)*

Roles	Responsibilities	Key Outcomes
Development of Algorithms and Testing Tools for Directed Energy System on Long-range and Agile Aerial Targets: Target Tracking, Accurate Pointing, Beam Stabilization, and High Lethality *Directorate of Futuristic Technology Management (DFTM), Defence Research & Development Organisation (DRDO), Ministry of Defence, Govt. of India.* (2024 – ongoing)		
Technical contributor	• Design of Experiments using in-house designed and developed Directed Energy (DE) system on laser-material interactions in adverse atmospheric conditions to enhance lethality	• Optimized DE system parameters by studying high energy laser and material interactions on UAV structures (alloys/composites) to enhance extent of damage
Selective Laser Melting Process Modelling, Diagnostics, and Tool Enhancement *Boeing Research and Technology Centre, The Boeing Company, USA.* (2023 –2025, Completed)		
Project coordinator & Technical contributor	• Design of Experiments, Development of Process diagnostic methodology and Hardware set-up	• Developed a novel method of closed loop monitoring of powder bed fusion process based on multiple diagnostic techniques
Remaining Life Assessment of Non-Metallic GRP Pipeline in the Oil and Gas Industry *Shell India Pvt. Ltd., India.* (2024 – ongoing)		
Technical contributor	• Design of Experiments, Development of testing methodology of GRE pipes for remaining useful life	• Developed accelerated fatigue methodology to estimate remaining useful life of oil and gas GRP pipelines
Multi-scale Design of Advanced Composites and Development of New Manufacturing Technologies *SERB (currently ANRF), DST, Govt. of India.* (2020-2023, Completed)		
Project coordinator & Technical contributor	• Multi-scale design, Selection of materials, Development of advanced manufacturing processes, Thermo-mechanical testing	• Developed an advanced multi-scale composite by optimization of fillers at different length scales with enhanced thermo-mechanical performance
Thermo – mechanical Fatigue Analysis of Solar Panels *UR Rao Satellite Centre (URSC), ISRO, Govt. of India.* (2019 – ongoing)		
Technical contributor	• Design of Experiments, Fatigue analysis of space deployable solar panels in the extreme temperature conditions ranging from -150^{o}C to 100^{o}C	• Developed a new accelerated methodology of thermo-mechanical fatigue testing & analysis to estimate RUL of solar panels • Determined material-wise thermo-mechanical fatigue life of solar panel components
ADA-IISc Joint Design and Development of Carbonaceous Radar Absorbing Structures *Aeronautical Development Agency (ADA), Ministry of Defence, Govt. of India.* (2019-2022, Completed)		
Project coordinator & Technical contributor	• Design and development of Multi-scale EM FGM and Sandwich composite, Theoretical optimization of material composition, Advanced manufacturing process, EM/Mechanical Testing and analysis, NDT manufacturing inspection	• Optimized RAM composition and performance in the desired frequency band of 2-18 GHz • Developed sandwich composite with 3D printed PEEK honeycomb core • Developed functionally graded composites with graded RAM and fabric architecture • Established Microwave co-axial waveguide testing facility at Aerospace department, IISc
ADA-IISc Joint Design and Development of Scaled Model of UAV for Radar Scattering Studies and Related Technologies, *Aeronautical Development Agency (ADA), Ministry of Defence, Govt. of India.* (2018-2021, Completed)		
Project coordinator & Technical contributor	• Design and Development of Multi-scale EM fabric and sandwich composite, Optimization of manufacturing process, EM/Mechanical Testing and analysis, Development of NDE manufacturing inspection	• Developed scaled model of next generation UCAV with stealth capabilities in collaboration with ADA • Developed full-proof manufacturing inspection for RAM composites for varying compositions
Development of Nano-Composite Structures with Enhanced Thermo-Mechanical Properties, Damping, and Self-Sensing Capabilities, *ACECOST Phase-III, AR&DB, DRDO, Govt. of India.* (2014-2018, Completed)		
Technical contributor	• Nano-material synthesis and characterization, Development of new manufacturing methods for nanocomposites by optimizing processing parameters, Thermo-mechanical characterization	• Developed an optimized nano-additive dispersed composite for thermo-mechanical applications • Embedded piezo based sensors in composites for structural health monitoring applications

→ *In-house Projects*

Roles	Responsibilities	Key Outcomes
Development of sustainable composites and their enhanced recyclability		

Technical contributor	• Fabrication of composites using natural fibers and bio degradable polymers, Mechanical performance of sustainable composites, Enhanced recyclability of the composites	• Developed sustainable composites using flax fiber and bio-degradable PLA • Manufactured novel sustainable composites by re-using the shredded composites
Laser damage on composites		
Project coordinator & Technical contributor	• Impingement of pulsed laser onto carbon fabric composites by varying laser parameters, Analysis of degree of material damage and correlation with the laser parameters	• Established comparative landscape of mechanical performance degradation of composites exposed to laser by varying parameters
Recycling of fiber reinforced polymer matrix composites		
Project coordinator & Technical contributor	• Recycling of GFRP/CFRP using ball milling in a cryo-environment., Particle size determination using optical microscopy	• Developed a novel method to recycle existing fabric composites by optimizing process parameters
Development of strain sensors using Additive manufacturing techniques		
Project coordinator & Technical contributor	• Design and development of 3D printed strain sensor using Liquid injection molding tool and sensor characterization	• Developed new piezo sensors through solvent route, evaluated the piezo coefficient and compared with the standard piezo sensors
Thermal barrier coatings/Plasma coating		
Project coordinator & Technical contributor	• Collaboration with BrahMos research team in selection of thermal barrier coating material composition, Material synthesis and Coating on Inconel alloy using plasma coating	• Identified suitable TBCs for scramjet applications, Developed manufacturing process for TBCs and coated TBCs on Inconel substrate for thermal characterization
Synthesis and characterization of ZnO nanostructures		
Project coordinator & Technical contributor	• Magnetic field assisted sol-gel based autoclave synthesis process	• New synthesis process for sensing and biological applications

Research Grants

Conducted comprehensive literature reviews, identified research gaps, formulated research objectives and methodologies, drafted detailed project proposals and collaborated with interdisciplinary teams. Also, managed proposal revisions based on feedback, prepared budget estimates, and ensured compliance with submission guidelines.

→ *Sanctioned*

Research Proposal	Funding agency	Total sanction
Development of Algorithms and Testing Tools for Directed Energy System on Long-range and Agile Aerial Targets: Target Tracking, Accurate Pointing, Beam Stabilization, and High Lethality,	DFTM, DRDO	INR 193.1 Lakhs
Development of Advanced Composites with Integrated Battery and Photovoltaic Cells	ANRF-CRG, DST	INR 86.12 Lakhs
Enhanced Insight into Remaining Useful Life Combined with Chemical-Free Self-Healing Capability in High-Energy Density Solid Electrolyte Composite Battery, SERB-SUPRA (INR 53.55 lakhs)	ANRF-SUPRA, DST	INR 53.55 Lakhs
Remaining life assessment of non-metallic GRP pipeline in the oil and gas industry	Shell India Pvt. Ltd.	INR 125.96 Lakhs
Selective Laser Melting Process Modeling, Diagnostics, and Tool Enhancement	The Boeing Company, US	USD 240,000
Multiscale design of advanced composites and development of new manufacturing technologies, SERB-CRG	ANRF-CRG, DST	INR 42 Lakhs
ADA-IISc design and development of carbonaceous radar absorbing structures	ADA	INR 46 Lakhs
ADA-IISc joint design and development of scaled model of UAV for Radar scattering studies and related technologies	ADA	INR 45.84 Lakhs

→ *Under Review*

Research Proposal	Funding agency	Total sanction
Advanced Multi-functional Polymer Composites for Air-borne Applications,	DFTM, DRDO	INR 191.9 Lakhs
Life Extension Studies of Rubber Based Fuel Tanks Used in Helicopter	HAL	INR 427.29 Lakhs
Advanced Light-weight and Self-sustainable Robots with Distributed Sensing, Actuation and Control	Sony research	USD 149,850
Structurally Integrated Radar Absorbing Features Design and Manufacturing Process Development	ADA	INR 318.90 Lakhs
Composite Material Characterization and Evaluation Study	Bhor Chemicals and Plastics Pvt. Ltd.	INR 119.39 Lakhs

Research Publications

→ *Peer Reviewed Research Journal Articles*

- Subbappa, D.B., **Kancherla, K.B**., Raju, B. et al. Enhancing Toughness and Thermal Stability Using YSZ Nanoparticle in Glass Fabric Composites. Appl Compos Mater 32, 909–935 (2025). https://doi.org/10.1007/s10443-024-10301-5.

- Raju B, **Kancherla KB**, Subbappa DB, Roy Mahapatra D. Optimization of CNT-carbon fabric composites for enhanced mechanical and thermal properties, and improved fracture toughness: Finite element simulation and experimental validation. Journal of Composite Materials 59 (10), 1307-1330 (2024). https://doi.org/10.1177/00219983241310300.
- Chawla, K, Raju, B, Subbappa, DB, **Kancherla, KB**, Roy Mahapatra, D. "Micromechanical effect of pores on elastic properties of polymer matrix composites." Polymer Composites. 2021; 42: 1497– 1518. https://doi.org/10.1002/pc.25919
- **Kishore Babu Kancherla**, Dakshayini B. S, S. R. Hiremath, Benjamin Raju, D. Roy Mahapatra "Enhancing mechanical properties of glass fabric composite with surfactant treated zirconia nanoparticles." Composites Part A 118 (2019) 131–141. https://doi.org/10.1016/j.compositesa.2018.12.023

→ *Peer Reviewed Conference Proceedings*

- **Kancherla, K. B**., Dakshayini, B. S., Raju, B., & Mahapatra, D. R. (2024). "A Methodology for Accelerated Thermo-Mechanical Fatigue Life Evaluation of Advanced Composites" (No. 2024-26-0421). SAE Technical Paper. https://doi.org/10.4271/2024-26-0421
- Raju, B., **Kancherla, K. B.,** Dakshayini, B. S., & Mahapatra, D. R. (2024). "Selective Laser Melting based Additive Manufacturing Process Diagnostics using In-line Monitoring Technique and Laser-Material Interaction Model" (No. 2024-26-0420). SAE Technical Paper. https://doi.org/10.4271/2024-26-0420
- Dakshayini, B. S., **Kancherla, K. B**., Raju, B., & Mahapatra, D. R. (2024). "Assessing the Structural Feasibility and Recyclability of Flax/PLA Bio-Composites for Enhanced Sustainability" (No. 2024-26-0407). SAE Technical Paper. https://doi.org/10.4271/2024-26-0407
- Benjamin Raju**, Kishore Babu Kancherla**, B. S. Dakshayini, Nitin Balajee Ravi, Rushal Patil, Debiprosad Roy Mahapatra, "Additively Manufactured Sensors for SHM of Composite Structures", IWSHM 2019, The 12th International Workshop on Structural Health Monitoring 2019, Stanford, California, USA. https://doi.org/10.12783/shm2019/32359

→ *Peer Reviewed Conference Presentations*

- **Kishore Babu Kancherla**, Benjamin Raju, Dakshayini B Subbappa, D Roy Mahapatra, Om Prakash, Jeffrey Hunt, "Monitoring and Diagnostics of Selective Laser Melting in Powder Bed Fusion Process", ASME AM 3D AERO 2023, Bengaluru.
- D. Roy Mahapatra, **Kishore Babu Kancherla,** Dakshayini B Subbappa, Benjamin Raju, "Nano-Additives based Fabric Composite Design, Manufacturing and Performance Enhancement Strategies", INCCOM-2019, ISAMPE, Sep 20-21, Thiruvananthapuram, India.
- **K Kishore Babu**, Benjamin Raju, Dakshayini B S, D Roy Mahapatra, Thermo-mechanical Performance of Functionally Graded Composites, International Conference on Advance materials and processes (ADMAT- 2019), Sep 23-25, 2019, Hyderabad, India.
- **K Kishore Babu**, Dakshayini B S, Benjamin Raju, Rushal Patil, D Roy Mahapatra, Functionally Graded Composites with 3D Printed Cooling Channels, AMRGT 2019, March 19-20, 2019, Siemens Conference Centre, Berlin, Germany.
- **K Kishore Babu**, Dakshayini B S, S. R. Hiremath D Roy Mahapatra, "Nano Ceramic Reinforced Polymer Matrix Composites for Enhanced Thermo-Mechanical Stability", International Conference on Composite Materials and Structures, Dec 27-29,2017, IIT- Hyderabad, India.
- **K Kishore Babu,** Dakshayini B S, S. R. Hiremath D Roy Mahapatra, "Nano-Ceramic Reinforced Polymer Matrix Composites for Mechanical Property Enhancement", Nineteenth National Seminar on Aerospace Structures, Feb 23-25, 2017, VIT –Vellore, India.