



Mr. Mohammed Sohail Bakshi

M.Tech., B.E.

PROFILE

A Mechanical Engineer specializing in the field of mechanics of engineering structures is passionate in efficient design of right material in right place for an engineering product and sustainable environment. Possess more than five years of research experience in the field of development of lightweight polymer composite foams, with static, dynamic, viscoelastic and thermal characterization of polymer composites. Very keen to work in the field of research and development of mechanics of polymer composites for the light-weight structural applications.

CONTACT

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ACHIEVEMENTS

- Member of OrbitX India Aerospace Pvt. Ltd. Programme in Reusable Launch Vehicle as a Research Intern.
- Received Doctorate fellowship from the MOE, Govt. of India.
- Teaching Assistant at BEC, BGK under TEQUIP-II for 2016 - 17 academics.
- Teaching Assistant at Dept. of Mechanical Engg., NITK Surathkal from July 2017-March 2023.
- Runners in Shuttle Badminton (Men's doubles) in Research Premier League-2020, at NITK Surathkal.

HOBBIES

- Playing Badminton
- Reading Novels
- Writing Poems
- Interact with new people and attain new domain learnings

WORK EXPERIENCE

Senior Research Fellow (July 2017 – March 2023) at Dept. of Mechanical Engg., National Institute of Technology Karnataka- (NIT-K) Surathkal

SKILLS

Experimental: Polymer Science, 3D Printing, Polymer Nanocomposite Fabrication and Testing, Characterization, Rubberized foams, Light-weight Syntactic Foams

Numerical: ANSYS Mechanical APDL and Workbench, CATIA, Finite Element Modeling, Origin, Xpert-Highscore

RESEARCH EXPERIENCE OUTCOMES

A) Fabrication

1. Proficient in the fabrication of fibre reinforced polymer composites with hand lay-up and vacuum infusion techniques.
2. Well versed with the processing (ultrasonication), and development of nanofiller reinforced thermosetting composites by solution casting route.
3. Experienced in the fabrication of natural rubber reinforced polymer composites for resilient automotive structural applications.
4. Successful in setting-up Hygrothermal Test Chamber at Computational Mechanics Lab, Dept. of Mechanical Engg., NITK Surathkal to carry out aging studies.
5. Lead the team in the successful design and fabrication of Vibration Measuring Instrument at BEC, BGK.

B) Experimental Material Characterization

1. Skilled in material property characterization by handling computerized Universal Testing Machine (UTM) and dynamic mechanical analyzer (DMA).
2. Competent in the analysis of thermo-mechanical characterization results such as mechanical testing, FTIR, XRD, TGA, DSC, LFA.
3. Well versed in thermal curing studies of thermosetting polymer and evaluation of curing impact on the thermal and mechanical properties of composites.
4. Experienced in the failure analysis and structure-property correlation study of fractured composites with Scanning Electron Microscopic imaging

INDUSTRIAL PROJECTS

Vibration and acoustics of foamed structure

Organization – *Pilikula Regional Science center, Mangalore*

The vibro-acoustic response of the dome structure made up of foamed polymer was recorded.

ACTIVITIES & WORKSHOPS

1. Department Representative (MESA; 2014-15) at Dept. of Mechanical Engg., BLDEA's V P Dr P. G. Halakatti CET, Vijayapura.
2. Organizing team member at 'International conference on Design, Materials and Manufacture -2019' at NITK Surathkal.
3. Attended short term training program on "Applied Mathematics and Mechanics of Composite and Functional Materials", organized at NIT Rourkela, Orissa, India.
4. One-day hands-on fabrication (Vacuum bagging and hand lay-up) and testing composite materials, conducted by the Dept. of Mechanical Engg., BEC Bagalkot, Karnataka, India.
5. Department Representative of Mechanical Engg. at NITK Surathkal for the year 2017-18.
6. Member of Students' Council NITK.
7. Core organizing team member of Research Premier League – 2019 and 2022, at NITK Surathkal.

REFERENCES

Dr. Subhaschandra Kattimani,
Professor,
(Prof. Satish Dhavan Awardee),
Dept. of Mechanical Engineering,
NITK, Surathkal, Karnataka,
INDIA.
Email: subhaskatti@nitk.edu.in

Dr. Ravikiran Kadoli,
Professor and Head,
Dept. of Mechanical Engineering,
NITK, Surathkal, Karnataka,
INDIA.
Email: rkkadoli@nitk.edu.in

Dr. Mohammed Khalifa,
Senior Research Scientist,
Wood KPlus - Kompetenzzentrum Holz
GmbH, Austria.
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LANGUAGES KNOWN

- English
- Hindi
- Kannada

ACADEMIC PROJECTS

1. Development and Thermo-mechanical, Viscoelastic Characterization of Lightweight Epoxy Syntactic Foam Composites Reinforced with Halloysite Nanotubes for weight sensitive structural applications

Institution- NITK Surathkal

Research outline: The Halloysite nanotubes are initially dispersed with the aid of probe sonication. The well dispersed nanotubes are mixed with epoxy resin and agitated with mechanical stirrer. Later, fly ash cenospheres are gently added to the uniform mixture containing nanotubes/epoxy. By solution casting route samples are fabricated. Different percentage addition of cenospheres allows designer the tailor ability of the thermo-mechanical properties with respect to density of syntactic foams. The viscoelasticity of reinforced foams outperforms the neat epoxies. Studies on structure-property correlation are carried to depict the nanofiller reinforcing mechanisms.

Research publications (SCI/SCIE) can be found at google scholar account
<https://tinyurl.com/yc3csdbr>

2. Dynamic Analysis of Functionally Graded Carbon Nanotube Reinforced Composite Plates

Institution- Basaveshwar Engineering College, Bagalkot (BEC)

Softwares used – MATLAB, ORIGIN, Microsoft Office (Word, Excel, PowerPoint), Math Type

3. Design and Fabrication of Pedal crank operated Paddy Threshing machine

Institution- BLDEA's Dr V. P. G Halakatti College of Engg. and Technology (Aff. VTU)

RESEARCH COLLABORATION

1. Collaborative studies with Dr. Mohammed Khalifa (*Senior Scientist, Austria*) in pipeline with the development of Rubberized Polymer composites for balanced stiffness-toughness investigations for automotive applications.
2. Collaborative studies with Dr. Vinayak B Kallannavar (*Structural Analysis Engineer, BOEING*) in the domain of hygrothermal analysis of biodegradable lightweight sandwich structures for casing of batteries in EVs.

EDUCATION

1. Doctor of Philosophy in Mechanical Engineering (Ph.D.) [2017-2023],
CGPA – **6.92 / 10.00**
Institution: National Institute of Technology Karnataka, Surathkal (NITK)
2. Master of Technology in Machine Design, Mechanical Engg. (M.Tech.) [2015-2017],
Institution: Basaveshwar Engineering College, Bagalkot (BEC), CGPA – **9.44 / 10.00**
3. Bachelor of Engineering in Mechanical Engg. (B.E.) [2011-2015],
Institution: BLDEA's Dr V. P. G Halakatti College of Engg. and Technology (Aff. VTU), CGPA – **7.3 / 10.00**

LIST OF PUBLICATIONS

SCI and SCIE indexed Journals

1. *Study of mechanical and dynamic mechanical behavior of halloysite nanotube-reinforced multiscale syntactic foam.*
Bakshi, Mohammed Sohail and Kattimani, Subhaschandra. **Journal of Applied Polymer Science**; 138; 7; 49855; 0021-8995; 2021; John Wiley & Sons, Inc. Hoboken, USA
2. *Probing the effect of post-curing and halloysite nanotube reinforcement on thermo-mechanical properties of lightweight epoxy syntactic foam composites.*
Bakshi, Mohammed Sohail and Kattimani, Subhaschandra. **IMechE, Part L: Journal of Materials: Design and Applications**; 14644207221122906; 1464-4207; 2022; SAGE Publications Sage UK: London, England.
3. *Influence of water absorption on the compressive behavior of halloysite nanotube reinforced buoyant nanocomposite foams for maritime applications.* **Polymer Composites**; doi.org/10.1002/pc.27665
Bakshi, Mohammed Sohail and Kattimani, Subhaschandra.
4. *Vibration analysis of hybrid sandwich structure with 3D printed rubberized bio nanocomposite core.*
Bakshi, Mohammed Sohail and Kattimani, Subhaschandra. (In pipeline).

Scopus indexed International Conference

1. *Flexural behavior of nanoclay filled glass fiber/epoxy polymer nanocomposites.*
Bakshi, Mohammed Sohail and Kattimani, Subhaschandra. **AIP Conference Proceedings**; 2247; 1; 020012; 0735420068; 2020; AIP Publishing LLC

DECLARATION

I hereby declare that the above-mentioned information given by me is true to the best of my knowledge.

Mohammed Sohail Bakshi