



**Self-sponsored  
5-Day workshop  
(24<sup>th</sup>-28<sup>th</sup> July 2023)**

**On  
VISCOELASTIC MATERIALS AND THEIR  
APPLICATIONS IN ENGINEERING**

**Objectives**

Viscoelastic materials are finding applications in several engineering fields. Polymers and their composites have viscoelastic behaviour. These materials exhibit complex elastic constants. The aim of this workshop is to give various developments that happened in the areas of science and applications of these materials during the last few decades. The workshop will discuss the aspects of advanced analysis and design to use such materials possessing time and frequency dependent viscoelastic properties. Various applications like the use of constrained layer dampers in aerospace industry, use of viscoelastic rotors, etc. will be dealt with.

**Topics to be covered:**

- Introduction to Viscoelastic Materials
- Constitutive Relations
- Conceptual Structure of the Theory
- Solution of Problems Involving Viscoelastic Materials.
- Experimental methods including DMA analysis.
- Viscoelastic Properties of Materials
- Viscoelastic Composite Materials
- Failure Model of Viscoelastic Materials
- Applications on Engineering Components
- Computational resources

**Correspondence Address**

Department of Mechanical Engineering,  
National Institute of Technology, Rourkela,  
Rourkela-769008, Odisha, India  
*Prof. Haraprasad Roy*, Coordinator,  
Ph.+91 9437437560  
*Prof. J. Srinivas*, Co –coordinator  
Ph.+91 9556713217

Workshop Email::[vmae2023.nitrkl@gmail.com](mailto:vmae2023.nitrkl@gmail.com)

**Patron**

**Prof. K. Umamaheshwar Rao**  
Hon. Director, NIT Rourkela  
**Chairman**

**Prof. Susanta Kumar Sahoo**  
HOD, Mechanical Engineering,  
NIT-Rourkela



### About the Department

The Mechanical Engineering Department is well known for teaching and research activities. The main research activities are on Industrial vibrations and Condition Monitoring, Robotics, CAD/CAM, Precision Engineering, Metal forming, Manufacturing, CFD, Industrial Refrigeration and Cryogenics. Both core and interdisciplinary topics are included in the curriculum. The department at present has over two hundred research scholars pursuing projects in diverse fields. The faculty specializations are organized under three divisions: Machine design and analysis, Production Engineering and Thermal Engineering. There are four Post-Graduate (PG) specializations including industrial cryogenics. The department has well equipped laboratories for both PG classes and research work. Department has at present 35 faculty members and around 100 PG students in all four specializations. The department organizes several short-term courses, conferences as well as student level programs through-out the year. It has dedicated computer centre with licensed software and a workshop for fabrication activities.

### Advisory Committee

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Department of Mechanical Engineering, IIT  
Delhi.

**Prof. S P Singh**

Department of Mechanical Engineering, IIT  
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University.

**Prof. Arghya Nandi**

Department of Mechanical Engineering, Jadavpur  
University.

**Prof. Shaikh Jahangir Hossain**

Department of Civil Engineering, IIT Kharagpur

The course is open to all students and research scholars and faculty members working in the areas of damping materials, viscoelasticity and modern aspects. The lectures will be delivered by the experts from IITs and NITs. The course will be conducted in hybrid mode. The details of online medium will be intimated shortly. For Registration please visit: <https://tinyurl.com/VMAE2023>

### Registration Fees (Including GST) for Offline Participants\*:

Students and scholars: Rs. 1180  
Faculty members: Rs. 2360  
Industry Professionals: Rs. 3540

### Registration Fees (Including GST) for online Participants:

Students and scholars: Rs. 590  
Faculty members: Rs. 1180  
Industry Professionals: Rs. 1770

*\*Fees include workshop kit along with working lunch.*

### About the Institute

The National Institute of Technology (NIT) Rourkela is an Institute of national importance created under an act of parliament. NIT Rourkela has secured the 225<sup>th</sup> and 31<sup>st</sup> ranks in QS Asia University and QS Indian University Ranking 2021, respectively. It also secured the 121<sup>st</sup> position in QS BRICS category, in 2020. Times Higher Education has figured NIT Rourkela in the group of 801-1000 in World University Ranking 2022. The institute provides quality education in a diverse and multicultural environment. The mission of the institute is to become an internationally acclaimed institution of higher learning that will serve as a source of knowledge and expertise for society and be a preferred destination for undergraduate and postgraduate studies. The institute offers undergraduate, post graduate and PhD programs in 21 branches of Engineering. The departments are engaged in consultancy and research activities of several government bodies such as DST, DAE, CSIR, DRDO, BARC, ISRO and private industries. The campus has green and beautiful gardens and is around 10 km from Railway station.

*All the fee should be deposited to*  
**CONTINUING education, NIT  
Rourkela**

Bank account: **36734418111**,  
payable at SBI, NIT Campus

IFSC: SBIN0002109

Last date to apply: 21<sup>st</sup> July, 2023