PMRF-ISSS Teaching Programme

Prime Minister Research Fellowship students' teaching requirement facilitated by the Institute of Smart Structures and Systems

Module PMRF-ISSS118/II/2024

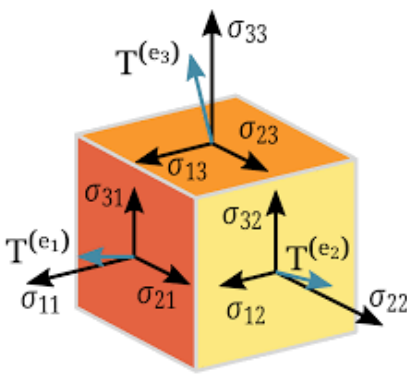
Tensors in Materials Science

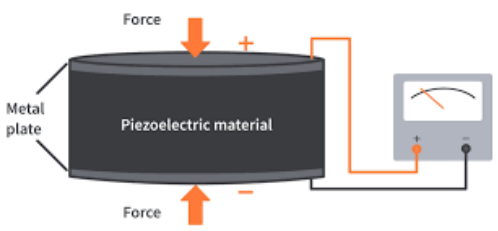
Name of the PMRF student

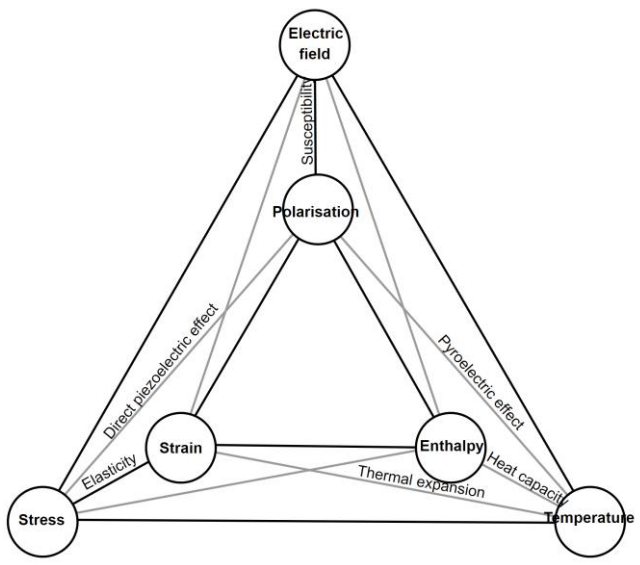
Akshay Mahajan

Required background of the students taught

Undergraduate/Graduate students of Materials Science/Materials Engineering or similar background. The students are expected to have some basic knowledge of crystallography.







Details of the content of the module

This is an introductory course on the basics of tensors and their applications in understanding materials properties. The students will learn -:

1. What are tensors and their application in materials science?
2. Foundational topics to learn about tensors and their application in materials science (ex-: vector and matrix algebra, tensors notation, concept of anisotropy in materials)
3. Mathematics of tensors (topics like representation surface of a tensor, finding the principal values and axes of a tensor, transform tensors from one frame to another)
4. Using the tensor mathematics to understand materials properties like electrical conductivity, piezoelectricity, and elastic constants.

Schedule of the module

Start Date -: 03-09-2024

Live lectures will be conducted (or recorded lectures uploaded) on Tuesday, Wednesday and Thursday from 6 PM to 7 PM (24 lectures)

End Date -: 24-10-2024 (Tentative)

Total lecture hours -: 24

Meeting link : Will be shared later

Link

Contact email ID: isss.forum@gmail.com

Registration link: https://forms.gle/yJwC3ECEivLaXxBh9