

I-STEM Software Request - Guide Approval Form

User Details

- **Name of Researcher:** Ateed Ahmad
- **User Type:** ☒ Ph.D. Scholar ☐ Postdoctoral Researcher ☐ Bachelor's ☐ Masters
- **Institution Name** : University of Hyderabad
- **Institutional Contact No:** 040 2313 0000
- **Research Topic:** Magnetoelectric Nano Laminates for Microwave Applications

Software Request Details

- **Software Name:** COMSOL Multiphysics
- **Justification for Software Request:** [Provide detailed explanation of how the software supports your research objectives]

Experimental research seldom requires some type of theoretical justification either through simulations or first principal calculations for its greater acceptability. And through the requested software the same is being aimed at. Our research area includes the studies of piezoelectric and magnetostrictive material which are both available in COMSOL Multiphysics in combination with AC/DC and structural mechanics module. Our research targets at fabricating a piezoelectric and magnetostrictive laminate structure to induce magnetoelectric coupling mediated by interfacial strain and the efficiency of tuning magnetic properties via electric field and vice versa will be determined to compute magnetoelectric coupling coefficient.

The COMSOL Multiphysics software has the capability to simulate both piezoelectric and magnetostrictive effects individually and therefore we aim to simulate both the effect together and to determine magnetoelectric coupling. The idea is to simulate strain in a magnetostrictive material in response to applied magnetic field and feed this strain to the piezoelectric material kept in contact with magnetostrictive material to ultimately determine the voltage developed across piezoelectric effect via inverse piezoelectric effect. Although no direct module is available to determine ME coupling coefficient in COMSOL Multiphysics, yet we believe by running aforementioned Multiphysics models separately and feeding one's output to the input of another, we should be able to determine the efficiency of tuning electrical properties via magnetic field. This will help us greatly in justifying our experimental results.

Guide/Supervisor Approval

I, **Dr. K. C. James Raju** (Guide/Supervisor Name),

- Confirm that the above-mentioned researcher is affiliated with our institution
- Have reviewed the software request and its relevance to the researcher's academic work
- Approve the software request for research purposes

Approval Confirmation

- I approve the software request
- The software aligns with the researcher's research objectives

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- The request meets the institutional research guidelines

Guide/Supervisor Signature: 

Date: 10/11/2025

Official Stamp/Seal: [Space for Institutional Stamp]

Important Notes

1. This form must be signed and scanned
2. The scanned copy must be uploaded with the software request
3. Electronic signatures are acceptable if from an official institutional email

Dr. K.C. James Raju
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