

I-STEM Software Request - Guide Approval Form

User Details

- **Name of Researcher:** Jerin Susan Joy
- **User Type:** ☐ Ph.D. Scholar ☐ Postdoctoral Researcher ☐ Bachelor's ☐ Masters
- **Institution Name** : Mar Athanasious College of Engineering, Kothamangalam
- **Institutional Contact No:** 0485 2822363
- **Research Topic:** Nanodielectrics

Software Request Details

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

The research area is polymer based nanodielectrics. COMSOL Multiphysics is essential in polymer nanocomposite dielectric material studies because it allows researchers to accurately model the complex interactions between polymer matrices, nanofillers, and interfacial regions under electrical and thermal fields. Dielectric behavior—such as electric field distribution, polarization, charge trapping, and breakdown pathways—is strongly influenced by nanoscale filler geometry, dispersion, and interface properties, which are difficult to measure experimentally. COMSOL enables the creation of realistic microstructures, simulation of coupled physics (electrostatics), and evaluation of how filler loading, shape, and interfacial permittivity affect overall dielectric performance. Also wanted to model unit cell concept as well as model containing more number of fillers according to the percentage weight loading

Guide/Supervisor Approval

I, Dr. Siny Paul (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
- The request meets the institutional research guidelines

Guide/Supervisor Signature: 

Date: 2/12/25

Official Stamp/Seal: [Space for Institutional Stamp]

