

I-STEM Software Request - Guide Approval Form

User Details

- **Name of Researcher:** Ankush Mondal
- **User Type:** ☒ Ph.D. Scholar ☐ Postdoctoral Researcher ☐ Bachelor's ☐ Masters
- **Institution Name:** Indian Institute of Technology Jodhpur
- **Institutional Contact No:** 0291-280-1195
- **Research Topic:** Organic Electrochemical Transistor (OECT) based platform for Terahertz detectors for Bioimaging and Security applications.

Software Request Details

- **Software Name:** COMSOL Multiphysics 5.6
- **Justification for Software request:** Modelling **Organic Electrochemical Transistors (OECTs)** requires separate representation of the gate electrolyte and the semiconducting channel formed by Organic-Mixed Ionic Electronic Conductors (OMEICs). Unlike traditional semiconductors, OECTs function through charge carrier generation by redox reactions rather than inversion layer formation. Accurate device simulation involves incorporating the Nernst-Planck equation into drift-diffusion models to capture electrolyte-OMEIC interactions, necessitating physics-based software such as COMSOL. This approach is critical for effective modelling and device design, underpinning further research.

Guide/Supervisor Approval

I, Akshay Moudgil,

- 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: 08/12/2025

Official Stamp/Seal:

