

I-STEM Software Request - Guide Approval Form

User Details

- **Name of Researcher:** Biswajeet Nayak
- **User Type:** [-] Ph.D. Scholar
- **Institution Name** : Indian Institute of Technology Kharagpur
- **Institutional Contact No:** 9658561188
- **Research Topic:** Fabrication and Simulation of 2D Transition Metal Dichalcogenide heterostructure

Software Request Details

- **Software Name:** COMSOL
- **Justification for Software Request:** COMSOL Multiphysics offers a powerful and flexible platform for simulating the coupled physical phenomena that govern the behavior of 2D lateral heterostructure devices such as MoSe₂-WSe₂ junctions. Given the atomically thin nature and anisotropic material properties of transition metal dichalcogenides (TMDs), accurate modeling requires the self-consistent solution of Poisson's equation, drift-diffusion transport, and, where relevant, thermal conduction or optical generation terms. COMSOL allows these equations to be coupled within a single finite element framework, enabling spatially resolved simulations of electrostatic potential, carrier density, current distribution, and temperature gradients across the heterojunction

Guide/Supervisor Approval

I, Dr. Prasana Kumar Sahoo (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: 25.06.25

Official Stamp/Seal:



Dr. Prasana Kumar Sahoo
Assistant Professor
Materials Science Centre
Indian Institute of Technology Kharagpur
Kharagpur - 721302, India

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