

I-STEM Software Request - Guide Approval Form

User Details

- **Name of Researcher:** Maanasi Rajesh Phanse
- **User Type:** ☐ Ph.D. Scholar ☐ Postdoctoral Researcher ☒ Bachelor's ☐ Masters
- **Institution Name:** Indian Institute of Technology, Roorkee
- **Institutional Contact No:** 8879390277
- **Research Topic:** Design and Application of Heat Pipe for Electronic Cooling
- **Software Request Details**
- **Software Name:** COMSOL Multiphysics
- **Justification for Software Request:**

COMSOL Multiphysics is required for our project titled "Design and Application of Heat Pipe for Electronic Cooling" because heat pipe operation involves strongly coupled multiphysics phenomena that cannot be accurately studied using experiments alone. The software will allow us to simultaneously model heat transfer from electronic components, vapor flow inside the heat pipe, liquid return through the porous wick, phase change processes, and thermal stresses in the pipe structure. Using the Heat Transfer, CFD, Porous Media Flow, and Structural Mechanics capabilities of COMSOL, we will be able to predict temperature reduction, evaluate heat removal capacity, and optimize the geometry and materials of the heat pipe through parametric studies. This integrated simulation approach will significantly reduce experimental cost and enable the development of an efficient and reliable cooling solution for high-power electronics.

- **Guide/Supervisor Approval**

I, Prof. Sushanta Dutta,

- 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: _____

S. Dutta

Date: 18/02/2026

Dr. Sushanta Dutta

Professor

Official Stamp/Seal:

*Deptt. of Mechanical & Industrial Engg.
Indian Institute of Technology Roorkee
Roorkee-247 667 (Uttarakhand) 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