

I-STEM Software Request - Guide Approval Form

User Details

- **Name of Researcher:** Vikas P Kaduskar
- **User Type:** ☒ Ph.D. Scholar ☐ Postdoctoral Researcher ☐ Bachelor's ☐ Masters
- **Institution Name :** Symbiosis Institute of Technology, Symbiosis International (Deemed University), Pune (Maharashtra)
- **Institutional Contact No:** +91-7710848208
- **Research Topic:** Development of nanomaterial based patch antenna.

Software Request Details

- **Software Name:** COMSOL Multiphysics
- **Justification for Software Request:** [Provide detailed explanation of how the software supports your research objectives] The research focuses on developing nanomaterial-based patch antennas for advanced wireless applications like 5G. These antennas involve materials such as graphene and CNTs, which exhibit frequency- and temperature-dependent conductivity and anisotropic behavior.

COMSOL Multiphysics is essential for this work because it enables:

Accurate **3D electromagnetic simulation** of patch antennas (via the **RF Module**)

Coupled **thermal-electromagnetic analysis** (via the **Heat Transfer Module**)

Custom modeling of **nanomaterial properties** (e.g., Kubo formula for graphene)

Parametric and **multi-objective optimization** of antenna performance

Guide/Supervisor Approval

I, Dr. Sankit Kassa (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:

SPK2885

Date: 20/05/2025

Official Stamp/Seal:



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

