

I-STEM Software Request - Guide Approval Form

User Details

- **Name of Researcher:** SHIJIN A
- **User Type:** [Yes] Ph.D. Scholar [] Postdoctoral Researcher [] Bachelor's [] Masters
- **Institution Name** : Department of Optoelectronics, University of Kerala
- **Institutional Contact No:** 0471 - 2308167
- **Research Topic:** Synthesis and characterization of certain perovskite structural materials

Software Request Details

- **Software Name:** COMSOL Multiphysics 5.6

Justification for Software Request:

My work involves the development and characterization of advanced functional materials, where understanding the coupled physical phenomena such as ionic/electronic conductivities and dielectric response is critical. The COMSOL Multiphysics software is essential for advancing the objectives of my research in the areas of dielectric properties, and solid oxide fuel cell (SOFC) applications. Access to COMSOL Multiphysics will not only enhance the depth of my study but also ensure that my research is in accordance with the international standards. COMSOL Multiphysics is uniquely suited to this research because of the following reasons:

1. **Dielectric Studies and Material Characterization:** COMSOL allows for the simulation of electrical impedance spectroscopy (EIS) and dielectric response of materials under various boundary conditions and frequencies.
2. **Solid Oxide Fuel Cell (SOFC) Applications:** It facilitates the modeling of ionic conduction, gas diffusion through porous electrodes, and electrode-electrolyte interface reactions, which are directly applicable to SOFCs and critical to evaluating cell efficiency, degradation mechanisms, and optimization of material configurations.
3. **Visualization and Result Interpretation:** COMSOL provides powerful visualization tools to analyze electric field distributions which are crucial for interpreting complex interactions in electroceramic systems.

Therefore, I respectfully request permission to access COMSOL Multiphysics as a vital tool for the successful execution of my research objectives.

Guide/Supervisor Approval

I, Dr. Sam Solomon

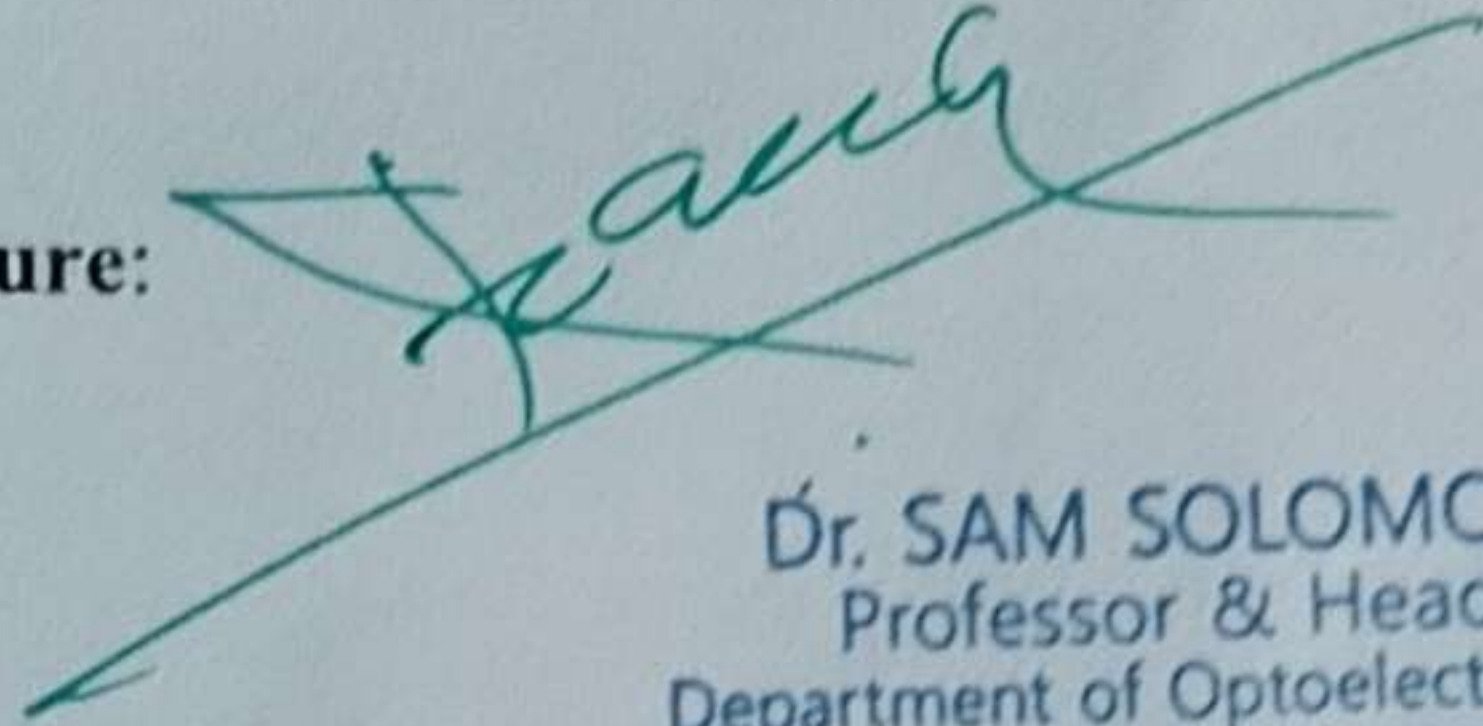
- Confirm that the above-mentioned researcher is affiliated with our institution.

- 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: 23.07.2025

Dr. SAM SOLOMON
Professor & Head
Department of Optoelectronics
University of Kerala, Kariavattom
Thiruvananthapuram- 695 581

Official Stamp/Seal:

