

I-STEM Software Request - Guide Approval Form

User Details

- **Name of Researcher:** P Athira
- **User Type:** Ph.D. Scholar
- **Institution Name:** Kelappaji College of Agricultural Engineering and Food Technology, Kerala Agricultural University
- **Institutional Contact No:** 0494 268 6214
- **Research Topic:** Electrostatic pollen collector for coconut

Software Request Details

- **Software Name:** I-STEM COMSOL Multiphysics
- **Justification for Software Request:**

The proposed research focuses on the development and optimization of an electrostatic pollen collector for coconut, which requires accurate modelling and simulation of electric field distribution, charge particle motion, and electrostatic forces under varying environmental and geometric conditions. COMSOL Multiphysics is essential for this work due to its powerful multiphysics simulation capabilities, especially in Electrostatics (AC/DC Module). The software allows coupling of electrostatic fields with particle tracing, airflow, and charge transport phenomena, which are critical for understanding pollen collection efficiency and optimizing electrode design.

Key reasons for requesting COMSOL Multiphysics:

1. **Electric Field Simulation:** Enables precise modelling of electrostatic field intensity, potential distribution, and charge behaviour around collector electrodes.
2. **Design Optimization:** Supports parametric studies of electrode geometry, applied voltage, and spacing to maximize pollen capture efficiency while minimizing power consumption.
3. **Multiphysics Coupling:** Allows integration of electrostatic, fluid flow, and particle dynamics models to simulate realistic pollen movement in air.
4. **Validation Tool:** Facilitates pre-experimental validation of design parameters, reducing material cost and experimentation time.

Given that experimental trials in field conditions are complex and resource-intensive, simulation through COMSOL Multiphysics will significantly enhance the precision, safety, and efficiency of the research process, ensuring a robust and optimized design for the electrostatic pollen collector.

Guide/Supervisor Approval

I, Dr. Dhalin D,

- 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: 28/10/2023

Prof. (Dr.) DHALIN. D.
DEPT. OF FARM MACHINERY &
POWER ENGG.
KCAET, TAVANUR - 679 573
KERALA AGRICULTURAL UNIVERSITY



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