I-STEM Software Request - Guide Approval Form

User Details

- **Name of Researcher**: __Mushfique Ahmed_____
- **User Type**: [ ] Ph.D. Scholar [ ] Postdoctoral Researcher [ ] Bachelor's [ ] Masters
- **Institution Name** :__National Institute of Technology Meghalaya_____
- **Institutional Contact No**: __9531732716_____
- **Research Topic**: __Microplastics separation from Potable water in Microfluidics_____

Software Request Details

- **Software Name**: _COMSOL Multiphysics 5.6_____
- **Justification for Software Request**:The software is required to perform advanced particle tracing simulations for microfluidic separation processes based on both density differences and dielectrophoresis (DEP). It enables accurate modeling of fluid flow within the microchannel and allows individual particles (such as PE and PET microplastics) to be tracked under the influence of multiple forces, including drag, gravity, buoyancy, and electric field–induced DEP forces.

  For density-based separation, the software calculates the net gravitational force acting on particles by accounting for the density difference between the particle and the suspending fluid. This allows evaluation of sedimentation behavior and the resulting trajectory variations within the serpentine microchannel. For DEP-based separation, the software solves the electric field distribution and computes the dielectrophoretic force acting on particles based on their electrical properties, enabling selective manipulation and separation.

Guide/Supervisor Approval

I, __Dr Subhendu Maity_____ (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: 02/03/2026

Official Stamp/Seal:

National Institute of Technology Meghalaya