



Project Proposal for Ph.D.

Project Details

Project Title	Fabrication of Functional cellulose membranes for optical purposes
Project Summary (Minimum 500 and maximum 2000 characters)	Optically responsive films find applications in sensors, window panels, and for energy harvesting applications. Petroleum based fossil fuels are being used dominantly for fabrication of these membranes. The need of the society demands a paradigm shift towards using bio-based materials and replace non-renewable fossil fuel based polymeric materials. Potential extraction and use of cellulose from various sources not only reduce pollution but also generate green alternative to synthetic fossil fuel-based materials. This proposed project aims towards using cellulose-based fibers for fabricating optically responsive membranes and films. The optical properties of the formed films are to be tuned for achieving desired transparency and photon transfer efficacy. Such films are aimed towards developing materials with controlled optical and photon transmittance properties.

Ph.D. Supervisors

Role	Faculty	Academic Unit in IITD/Institute/University	Email ID (Official)
Supervisor 1	Dr. Archana Samanta	Department of Textile and Fiber Engineering, IIT Delhi	archana@iitd.ac.in
Supervisor 2	Prof. Supravat Karak	Department of Energy Science and Engineering, IIT Delhi	supravat@dese.iitd.ac.in

Project requirements (Student qualifications, experience required, etc)

- M.Tech./M.Sc. in Textiles, Fiber Science and Engineering, Plastics, Nanotechnology, Polymer Technology, Polymer technology, Material Science, pulp and paper.
- Knowledge of cellulose processing and polymerization techniques is preferable.

Source of fellowship/funding

(CSIR/UGC/DBT/ICMR/ICAR/NEET-PG/DST-INSPIRE/IRD/FITT Project details, if any)

Candidates with their own scholarship/sponsorship will be preferred CSIR/UGC/DBT/ICMR/ICAR/NEET-PG/DST-INSPIRE.

Institute fellowship available.

Role of Faculty Members involved:

Dr. Archana Samanta will be involved in material development and imparting functional properties.
Prof. Supravat Karak will be involved in optical characterizations and analysis