



Project Proposal for Ph.D.

Project Details	
Project Title	Developing Green Graphene based technical textiles for Biomedical applications
Project Summary	There is an increasing interest in Graphene fortified textiles for their enhanced strength, antibacterial properties and electrical conductivity. However, the current methods of Graphene production suffer from two challenges. First, the current methods for Graphene production use irritants that use harsh chemicals and are not always useful for practical applications. A Joule heating based Green Graphene synthesis method has been proposed recently at the Rice University but it does not scale beyond laboratory, wherein lies the second challenge. Therefore, in this project we propose to: - Scale up Textile suitable Green Graphene synthesis beyond laboratory scale - Develop a standard operating protocol to incorporate the produced graphene in various textiles - Demonstrate the enhanced properties of the Graphene fortified textiles for use in biomedical applications

Ph.D. Supervisors			
Role	Name of Faculty	Academic Unit in IITD/Institute/University	Email ID (Official)
Supervisor 1	Bhanu Nandan	Textile	nandan@textile.iitd.ac.in
Supervisor 2	Ishaan Gupta	DBEB	ishaan@dbeb.iitd.ac.in

Project requirements (Student qualifications, experience required, etc)
*The candidate will be shortlisted based on common shortlisting criteria decided by ScRC (SIRe)

- M.Tech in Textile/Fibre Engineering
- BS-MS, M.Sc. in Electronics with a minor in Physics or Chemistry from Central University or CFTI
- BS-MS, M.Sc. in Physics or Chemistry with a minor in Electronics from Central University or CFTI
- 1-year of hands-on experience in Graphene synthesis.

Source of fellowship/funding
(CSIR/UGC/DBT/ICMR/ICAR/NEET-PG/DST-INSPIRE/IRD/FITT Project details, if any)
Candidate with his/her own fellowship /institute assistantship/ Part-time

Role of Faculty Members involved:

Supervisor-1	Textile engineering
Supervisor-2	Biomedical engineering