



Project Proposal for Ph.D.

Project Details	
Project Title	Fatigue crack detection and analysis of high strength alloys
Project Summary (Minimum 500 and maximum 2000 characters)	Fatigue failures are common in structural materials and therefore to prevent these failures it is crucial to detect cracks using appropriate techniques. Probability of detection (POD) of non-destructive technique (NDT) is needed to apply the damage tolerant technique to advanced structures. High strength alloy materials will be studied as they are commonly used in high performance structures. This project will study the POD of a few NDT techniques to compare the sensitivity of the NDT techniques in detecting fatigue cracks. After testing, analysis of the fatigue crack growth mechanisms will be studied after examining the fracture surface.

Ph.D. Supervisors			
Role	Name of Faculty	Academic Unit in IITD/Institute/University	Email ID (Official)
Supervisor 1	Naresh V Datla	Mechanical Engineering	datla@mech.iitd.ac.in
Supervisor 2	R.Lakshmi Narayan	Materials Science and Engineering	rlnarayan@mse.iitd.ac.in

Project requirements (Student qualifications, experience required, etc) *The candidate will be shortlisted based on common shortlisting criteria decided by ScRC (SIRe)
- Completed undergraduate and master’s degree in mechanical, Material Science or allied departments - Desirable to have knowledge of mechanics and material aspects of material failure

Source of fellowship/funding (CSIR/UGC/DBT/ICMR/ICAR/NEET-PG/DST-INSPIRE/IRD/FITT Project details, if any)
Institute Fellowship/ Project Fellowship

Role of Faculty Members involved:	
Supervisor-1	Guide the student in failure testing, finite element simulations, and NDT evaluations
Supervisor-2	Guide the student in fatigue testing, microstructure analysis, material characterization, fractography, and other material science aspects