



Project Proposal for Ph.D.

Project Details	
Project Title	Development of Advanced Quantum Dot-based Single-Photon Sources for Quantum Technologies
Project Summary (Minimum 500 and maximum 2000 characters)	In the realm of quantum technologies, harnessing non-classical light states is pivotal for quantum communication, metrology, and information processing. This project aims to revolutionize quantum photonics by developing highly efficient quantum dot-based single-photon sources (QD-SPS). These sources have the potential to outperform existing methods, addressing challenges like brightness and on-demand operation. By leveraging the unique properties of GaAs quantum dots, the project seeks to achieve near-unity single-photon purity and indistinguishability. The endeavor aligns with India's vision of indigenously advancing quantum technologies. The outcome could reshape the quantum landscape and pave the way for innovative applications in secure communication and quantum networks.

Ph.D. Supervisors			
Role	Name of Faculty	Academic Unit in IITD/Institute/University	Email ID (Official)
Supervisor 1	Santanu Manna	Electrical Engineering	mannasan@ee.iitd.ac.in
Supervisor 2	Samaresh Das	CARE	samareshdas@care.iitd.ac.in

Project requirements (Student qualifications, experience required, etc) *The candidate will be shortlisted based on common shortlisting criteria decided by ScRC (SIRe)
- MSc/MTech/MS in Physics/Electronics/Optics and photonics/Materials science - Background in quantum mechanics, solid-state physics, optics

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

Role of Faculty Members involved:	
Supervisor-1	Mentoring device design and characterization
Supervisor-2	Mentoring device fabrication