Photonics Research Topics

- **Quantum Photonics :**
  - Single Photon Sources for Quantum Communication and Quantum Computing.
  - Third-order parametric down-conversion.
  - Loss-tolerant quantum imaging with twin beams.
  - Photonic crystal fibres under pressure, one, two, three photons sources for quantum optics.
  - Nanoscale integrated quantum photonics.
- **Photonic Crystal Fiber :**
  - Photonic crystal fibres under pressure, one, two, three photons sources for quantum optics Photonics production.
  - SPR Based multi analyte sensing using PCF.
- **SPR Based Biosensors :**
  - Multi analyte sensing using PCF.
  - Food quality testing.
- **Magneto Optic Data Storage :**
  - Near field optical data storage.
  - Enhanced magneto optical effects in magnetoplasmonic crystals.
  - Modeling magneto optical thin film media for optical data storage.
- **Solar Cell :**
  - Realization of graphene based quantum dot solar cell through the principle of photonics.
  - Optimization of photonics for corrugated thin film solar cells.

- **Optical Communication :**
  - Free space optical communication through atmospheric turbulence channels.
  - High bandwidth underwater optical communication.

- **Laser Driven Particle Acceleration :**
  - Ultrahigh gradient particle acceleration by intense laser driven plasma density waves.
  - Plasmonic metasurface for efficient ultrashort pulse laser driven particle acceleration.
- **Nano Photonics :**
  - Low loss , infrared and terahertz nanophotonics using surface phonon polaritons.
  - Two dimentional material nanophotonics.
- **Advanced Imaging :**
  - Looking and listening to light : the evolution of whole body photonic imaging.
  - An introduction to high speed photography and photonics.