



Amity Institute of Applied Sciences

DEPARTMENT OF CHEMISTRY

Research/Interest Areas

1. Polymeric and Composite Materials

- Smart / Stimulus Responsive Polymeric Hydrogels, Nanocomposites/Sensors
- Organic coatings / Paints / Functional Materials, Biobased polymers
- Water quality, Polymer Nanocomposites, Calixarene, Reactive Extrusion, Swift heavy ion induced polymer modifications
- Carbon Materials, strain sensors, EMI shielding materials
- Electrical properties of Polymers, Chemical sensors, other Sensors
- Polybenzoxazine, High-Performance Adhesives, Flame Retardant Materials, Protective coatings, Surface Functionalization, Heteroatom doped carbon frameworks

2. Nanomaterials and Nanotechnology

- Nanomaterials – CNT, Graphene, Quantum dots, Colloids, Metal Oxide Nanoparticles, Magnetic Nanoparticles etc.
- Nano-chemistry and Nanotechnology, Inorganic nanosolids, Inorganic Nanoporous/Porous Materials
- Fluorescence Dynamics, Nanomaterials, Protein–nanomaterial interactions

3. Physical, Theoretical and Computational Chemistry

- Physical Chemistry, Computational Chemistry, Reaction Kinetics
- Theoretical Chemical Physics, Attosecond Chemistry/Physics, Laser-induced Auger decay, Interatomic Coulombic decay, Photoionization, Photodissociation, Quantum Optics
- Computational statistical mechanics, Phase transition kinetics, Soft matter, MD & Monte Carlo simulations

4. Inorganic and Electrocatalytic Chemistry

- Water splitting, Superhydrophobic & Super hydrophilic surfaces
- Coordination Chemistry
- Bio-Inorganic Chemistry

5. Organic Chemistry and Natural Products

- Natural Product Chemistry, Peptidomimetics
- Supramolecular Catalysis and Organometallic Chemistry – CO₂ Reduction, Hydrogenation, Selective Functionalization of C–H, C–N, C–O Bonds
- Organic Synthesis & Catalysis, Free radicals & Antioxidants

6. Analytical Chemistry and Bioelectrochemistry

- Analytical Chemistry
- Bioelectrochemistry
- Heavy Metals Removal

7. Energy Materials & Storage

- Energy storage devices, Li/Na-ion Batteries,
- Supercapacitors
- Electrocatalysis

8. Waste Management and Resource Recovery

- Recycling of electronic wastes
- Upcycling of Polymer waste
- Battery Metal Recovery
- Waste Water Treatment
- Food Waste Management