

# Advanced Nano-engineering Materials Laboratory

**Laboratory Coordinator: Kamal K. Kar**

**Associated Faculty Members (if any): Malay K. Das, J. Ramkumar,**

## **List of Major Equipment:**

- AFM
- SEM
- Raman
- DSC
- TGA
- DMA
- UTM
- PECVD
- Micro-injecting molding
- Thermal conductivity
- Electrical conductivity
- Hall mobility

## **Brief description of the laboratory:**

Please provide a brief description of the laboratory in about 8-10 lines, focusing on the main thrust area of the laboratory activities.

The primary research activities are to design better materials for the technologically essential areas using the fundamental principles of nanomaterials having multifunctional behaviors. Moreover, this laboratory uses the structure-properties-processing-performance concept, a building block of materials science and engineering, to improve the performance of the existing technologies and turn waste into wealth for the larger good of society. In particular, this laboratory has made several contributions through sustained effort using carbon nanotubes, graphene, porous carbon, exfoliated graphite; advanced nanostructured materials including nanopolymers; multifunctional and functionally graded composites; nanocomposites including multiscale composites, -carbon-carbon/silicon composites, etc

## **Laboratory research keywords:**

Fuel cell; Lithium battery; Thermoelectric; Water purification; Supercapacitor; High-performance structural composites; Bio-implants; -Roadwheel of Military Battle Tank Arjuna

## **Major Research and Development Contribution of the Laboratory**

This laboratory has been developing new materials for flexible supercapacitors, IMI shielding, and mechanical heart valves in the last 7 years

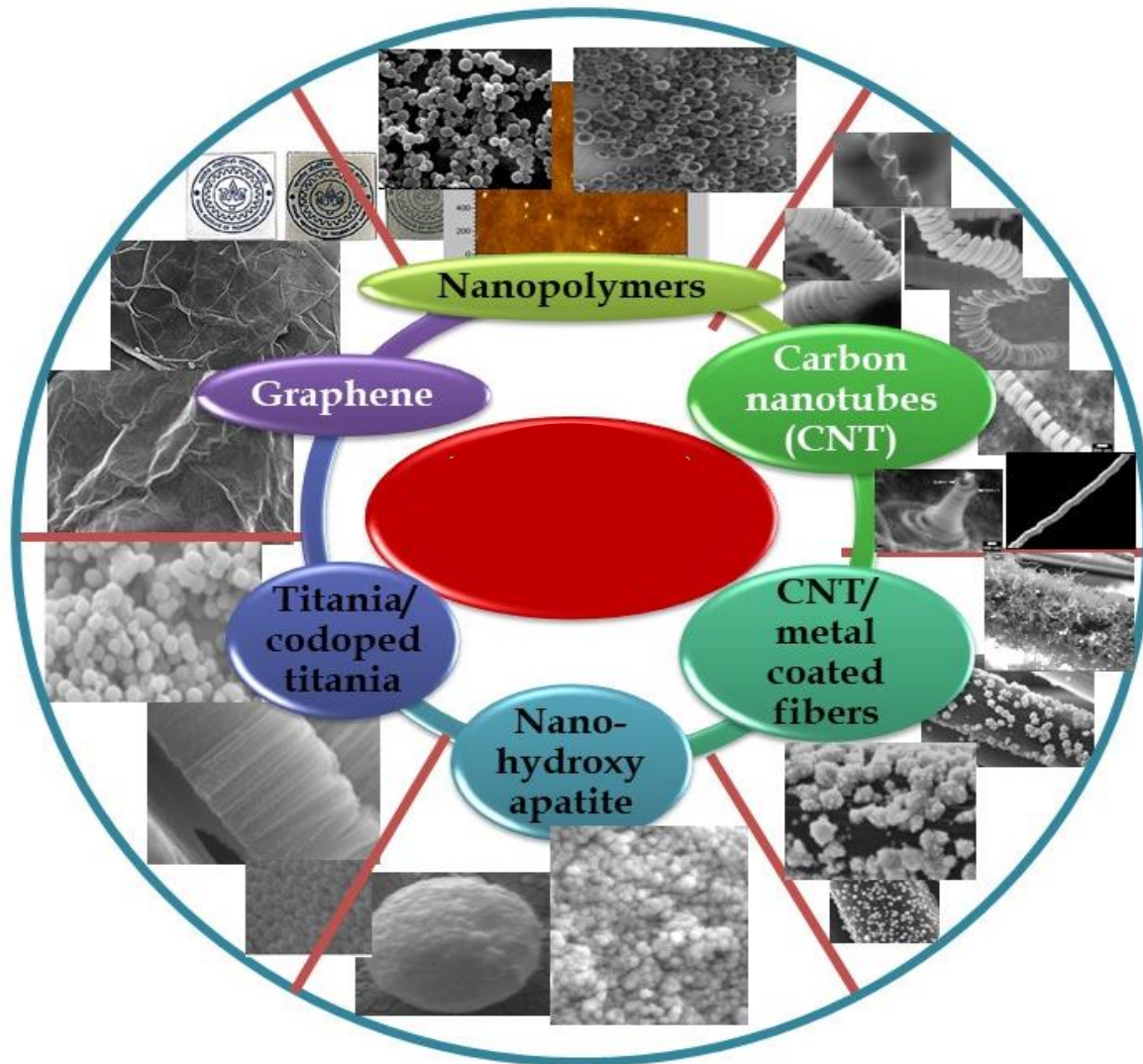


Figure #1: Portfolio of various nanostructured materials made by this laboratory

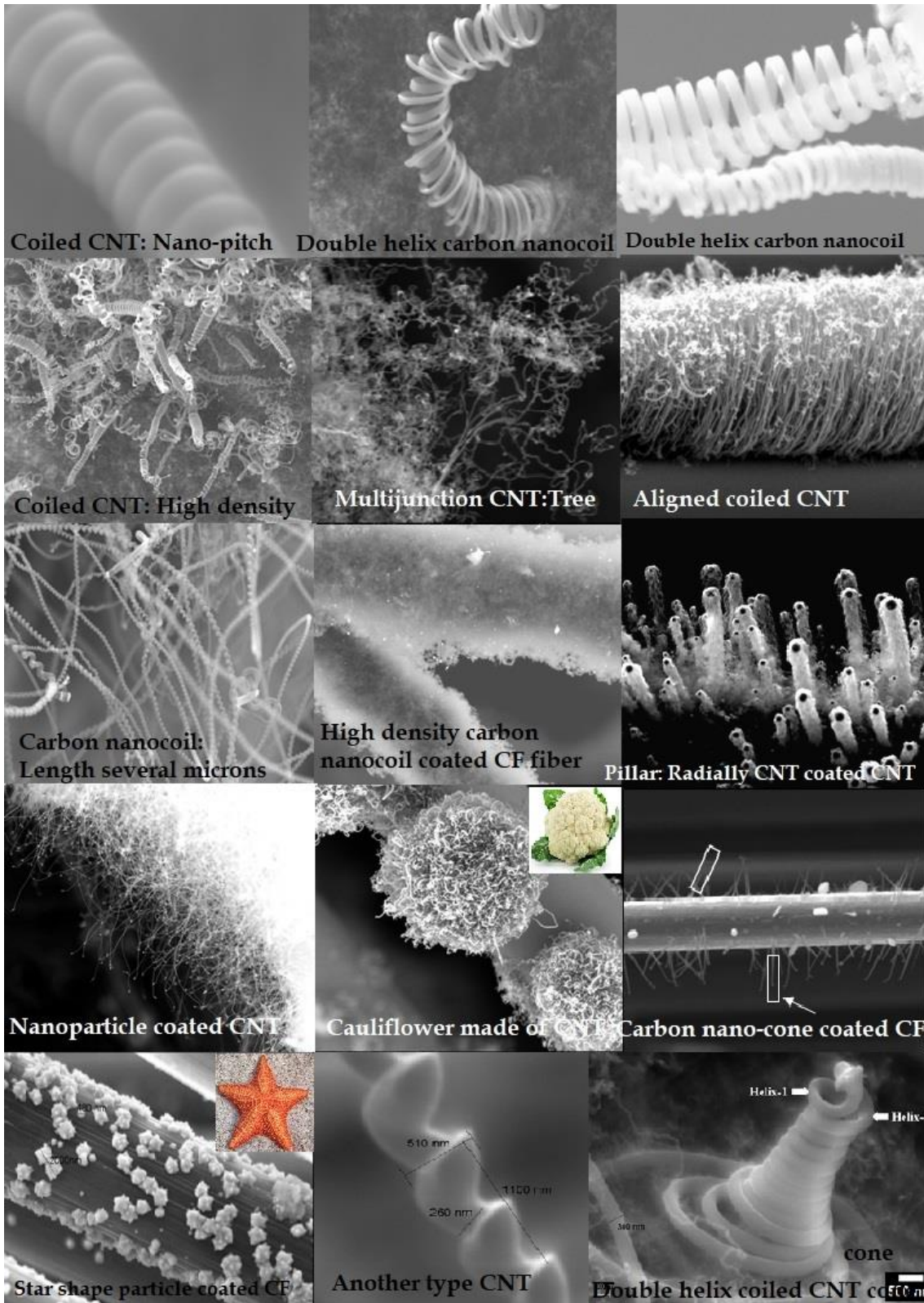


Figure #2: Portfolio of various nanostructured carbon materials made by this laboratory