

Devices

- Chemical sensors (ppb level detection)
- Ultrasensitive photo-detectors
- Field emission and gas ionization devices (ultra-low power)
- Flexible/Foldable electronics

Composites

- Polymer, ceramic and metal-matrix nano-composites
- Enhanced mechanical, thermal and electrical properties
- Ultra-low loadings of nanofillers

Research Thrusts

Coatings

- Tailoring water/surface interactions (super-hydrophobic to super-hydrophilic wetting control)
- Passivation of surfaces (preventing corrosion, oxidation)
- Surfaces for enhanced condensation and boiling

Energy

- Next generation battery electrodes for portable electronics, automotive and grid storage applications
- Next generation flexible super-capacitor electrodes
- Perovskite solar cells
- Dye sensitized solar cells