BIO & NANO MEDICAL DEVICES AND MATERIALS

Scope

This **concise** monograph series focuses on the implementation of various engineering principles in the conception, design, development, analysis and operation of biomedical, biotechnological and nanotechnology systems and applications. Authors are encouraged to submit their work in the following particular, but not exclusive list of topics. Contact the commissioning editor, Dr Nigel Hollingworth for further guidance and information on submitting a proposal.

BIOMEDICAL AND BIOTECHNOLOGY

- Trauma Analysis
- Vibration and Acoustics in Biomedical Applications
- Innovations in Processing, Characterization and Applications of Bioengineered Materials
- Viscoelasticity of Biological Tissues and Ultrasound Applications
- Dynamics, and Control in Biomechanical Systems
- Clinical Applications of Bioengineering
- Transport Phenomena In Biomedical Applications
- Computational Modeling and Device Design
- Safety and Risk Analysis of Biomedical Engineering
- Modeling and Processing of Bioinspired Materials and Biomaterials

NANOTECHNOLOGY

- **Bio Nano Materials**
  Topics covered: Self-assembly of bionanoparticles, Responsive bionanomaterials, Biomimetics bionanomaterials, Cellular & nanostructure material interactions, Interfaces & coatings for biotechnology applications, Cell supports & scaffolds, Nanoscale Lipid Assemblies, Modeling & simulation of bionanomaterials, Synthesis & application of novel bionanomaterials.

- **Nano Medical Sciences**
  Topics covered: Nanomedicine, Nanomedicine clinical trials, Nanotech for cellular & subcellular processes, Nanotech approaches to drug design, Modeling & simulation of biological systems, Protein-protein Interactions, Phage nanotechnology.

- **Materials for Drug & Gene Delivery**
  Biocompatible materials with nano-scale structure hold great promise as controlled release reservoirs for delivery of both small-molecule drugs and various classes of biomacromolecules, such as peptides, proteins, plasmid DNA and synthetic oligodeoxynucleotides. Topics covered: Targeting at Molecular, Cellular & Higher Levels, Novel Delivery Systems, Modes of Entry, Controlled Release Systems, Microcapsules, Liposomes, Polymer-based delivery systems, Antibody Targeting, Protein/Peptide Delivery, Pharmacodynamics, Nanomedicine clinical trials: challenges & results.

- **Nanotechnology for Central Nervous System**
  Nano-medicine - the interaction and integration of cells and tissues with engineered nanomaterials has significant potential in the diagnosis, monitoring and treatment of Central Nervous System (CNS) disorders. Topics covered: Nanomaterials for CNS regeneration, Nanoscale Visualization for CNS disorders, CNS drug delivery, Nano-neural interfaces Novel applications of nanotechnology for CNS diseases.

- **Nanomaterials & Living Systems Interactions**
  Investigating and understanding how nanomaterials interact within living systems (cells, tissues, organisms, humans) and understanding the mechanisms and spatiotemporal aspects of nanoparticle (NP) interactions with living systems. Topics covered: Mechanisms of NP uptake by cells, imaging approaches to monitor nanomaterials in cellular environments, NP-protein interactions & the development of biomolecule coronas, Mathematical modeling/simulation of NP impacts on living systems.

- **Biosensing, Diagnostics & Imaging**
  Topics covered: Nanoparticles in Imaging Technologies, Clinical/Health Applications, Defense Applications, and Environmental Applications

- **Cancer Nanotechnology**
  Topics covered: Cancer Diagnostics, Cancer Biomarkers, Cancer Immunotherapeutics, Cancer Ligands, and Drug Delivery

- **Micro & Nano Fluidics**
  Topics covered: Fluid Transport, Hydrophobic & Hydrophilic Filling & Dispensing, Flow, Dispersion & Mixing, Particle & Cell Transport, Electroosmosis /Electrophoresis, Micro Fluidic Devices, Nano Fluidic Devices, Bio Fluidic Devices; Fluidic Device Simulation

- **Environmental Health & Safety**
  Topics covered: Nanoparticle Biocompatibility & Toxicity, Neurotoxicity of Nanomaterials, Methods & Models for Nano Toxicity Screening, Nanoparticle release during the life cycle of consumer products & nanocomposites, EHS aspects of products containing Ag Nanoparticles, Societal perceptions of risk from nanotechnology, Interactions between nanomaterials & living systems

- **Soft Nanotechnology & Colloids**
  Many soft or fluid consumer products, such as foods, paint, lubricants, detergents, personal care products, and cosmetics, contain nanometer to micron scale structures. Topics covered**:** Applications of Colloidal Materials, Applications of Liquid Crystalline Materials, Microstructure design, Rheology & Nanorheology, Emulsions & Nanoemulsions, Lipid Nanocapsules & Active Delivery, Food Nanostructure, Applications Cosmetics & Personal Care, Applications in Optics & Photonics, Modeling Soft Nanostructured Materials.