POST DOCTORAL FELLOWS

Dr. Mohan Turup

Project Title: Polymer Nanocomposites for Aerospace, Automotive and Other Engineering Applications

- Development of nanoclay based Polymer (thermoset, thermoplastics and rubbers) Composites.
- Carbon Nanotubes (CNT) based Polymer Composites
- Glass fibre and natural fibre reinforced polymer composites
- Analysis of Composite and Nanocomposite structures (Micromechanical and Computational methods)
- Industrial activities: Demonstrating and collaborative work on nanotechnology and composites research with local industries in and around Durban. Industries focused on were automotive, packaging, medical and paint
- Project proposals, funding applications
- Co-supervising Prof. Kanny's D. Tech, M. Tech, B. Tech and N. Diploma students projects

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Dr. Mithil Kumar

Project Title: Synthesis and Characterization of Biodegradable Green Polymers for Water Treatment and Anti-Bacterial Applications

Research areas

- Water Soluble Polymers
- Green Polymer systems
- Biodegradable Polymers Synthesis, Characterization and application of polymers
- Waste Water Treatment Applications, scale inhibitor, corrosion and microbiological growth inhibition

The research work is on synthesis, characterization and application of biodegradable green polymers. These polymers are prepared by direct bulk melt condensation process above 150°C. These developed polymers deal the minimization of calcium carbonate scale formation, corrosion and microbiological growth waste water. The final polymer is characterised the help of infrared absorption spectra (FTIR), Differential Scanning Calorimeter (DSC) and Thermo Gravimetric Analysis (TGA) equipment and Gel Phase Chromatography (GPC).

Dr. Vimala Reddy

Project Title: Fabrication of Silver Nanocomposite Films using Natural Polymers and Modified Natural Polymers for Biomedical and Packaging Applications

In recent years, the study and preparation of inorganic crystalline particles on the nanometre scale has attracted considerable attention. Silver is an important commercially available metal and the antimicrobial activity of silver is much higher than other metals, such as mercury, copper, lead, chromium and tin . Recently silver nanoparticles, which have high specific surface area, surface active multi centres and high surface reactivity, have been studied extensively due to their key importance in the antimicrobial activity, wound dressing, food processing and packaging, water purification and other applications related to disinfection. The main advantage of silver nanoparticles is that even nanomolar concentrations are effective. In addition silver based nanoparticles have proven environmentally nontoxic to human cells. Due to several advantages of silver nanoparticles, the present work involves the development of nanoparticles and nanostructures grown in polymer networks. These networks are constructed with different environment friendly polymers like Gum Acaia, Carboxymethylcellulose (CMC), Sodium Carboxymethylcellulose, Sodium Alginate, Starch (SR), Chitosan (CS), etc.