'SYNTHESIS AND CHARACTERIZATION OF INNOVATIVE CELLULOSICS'

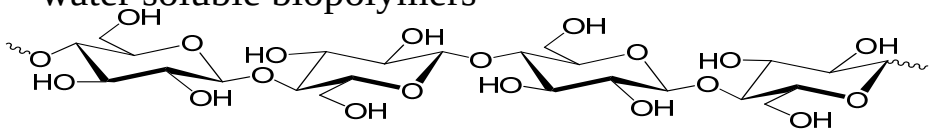
Rajalaxmi Dash

PROGRAM DESCRIPTION

Synthesis and characterization of renewable bio-based materials from natural polymers

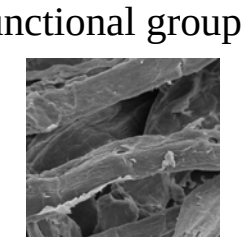
- with controlled functionalization
- well defined nano-scale architectures

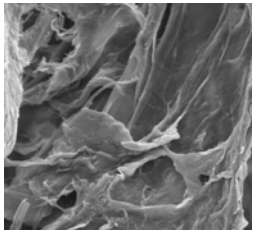
Utilization of functional cellulosic fibers and whiskers for novel hydrogels, superabsorbents and water soluble biopolymers



TECHNICAL DETAILS

- Oxidative functionalization of cellulose
- Sulfonation and amination of oxidized cellulose
- Application of FT-IR spectroscopy to study the change in functional group





- Use of NMR spectroscopy for structural characterization
- Use of SEM and TEM to study the surface morphology
- Utilization of GPC for molecular weight distribution

PAYOFF

- Chemical modification of cellulose microfibers and cellulose nanofibers
- Optimization of the derivatization process
- Detailed characterization and property study of the cellulose based derivatives
- Novel water soluble form of cellulose for green biopolymer able to modify viscosity of water
- Green superabsorbents and smart hydrogels

KEY ACCOMPLISHMENTS

- Synthesized and characterized novel water soluble sulfonated cellulose
- Studied the rheological properties of the sulfonated cellulose
- Prepared sulfonated derivative of cellulose microspheres

Professor AJ Ragauskas, Supervisor