



Research Fellow- Level A

Nanocellulose for food and biomedical applications

Funded, by The Australian Research Council, Monash University and Industry, we have established the BioProcessing Advanced Manufacturing Initiative. The initiative seeks to transform the Australian Bioresource processing industry by developing new products and materials.

This project involves the development of novel applications of nanocellulose and hemicellulose as food additive, coatings and biomedical diagnostics. It will involve basic functionalization of nanocellulose/ hemicellulose, engineering and characterizing the interaction of nanocellulose/hemicellulose with biomolecules such as lipids, proteins and polysaccharides, quantifying the functionality of adsorbed biomolecules (antibody, enzyme), developing complexes lipid/polysaccharides-nanocellulose and quantifying the morphology of biomolecules adsorbed on cellulose/hemicellulose interfaces. This project is part of the Bioprocessing Advanced Manufacturing Initiative (BAMI) Research Hub aiming at transforming the Forest Industry.

The candidate must hold a Ph.D. in chemical engineering, polymer or material engineering, chemistry, or a related field. The candidate must have independently been involved in polymer science and engineering, colloids and surfaces, polymer physics and biophysics. Experience with cellulose and saccharide functionalization, biomolecules at interfaces, enzymology, antigen-antibody interaction and characterization by X-ray and neutron scattering/ reflectometry and SAXS/SANS is desirable.

Research

- Conduct research under limited supervision either as a member of a team and independently. This research will involve engineering and quantifying the interactions between cellulose/hemicellulose and various biomolecules for the development of novel food additives, coatings and diagnostic devices. The functionality and morphology of biomolecules adsorbed on cellulose/hemicellulose interfaces and the complexation ability of nanocellulose with lipids and polysaccharides will need to be studied.
- Produce or contribute to publication, conference and seminar papers from the research;
- Communicate outcomes of the research with industrial partners in the form of presentations, seminars and reports.
- Be extensively involved in the active supervision of postgraduate students who are currently working on projects from the BAMI Hub.

Application closing date September 10th, 2014.

For further information or to apply, please send an email to Gil.Garnier@monash.edu

