

An Indian-Australian research partnership

Project title: Nanofilters for Water Treatment

Project number: IMURA0115

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Research Academy theme/s

List only the research academy theme/s that is relevant to the project

Nanotechnology
Water

The research problem

The development of energy-efficient water treatment technology has become an important area of research as it offers a solution to the increasingly limited water supplies available to the world's growing population and industry. Functional nanofilters will be developed for removal of target pollutants from water to achieve water treatment. Nanofilters would be designed primarily for removal of heavy metal pollutants and hydrophobic organic compounds (HOCs). Options for incorporating antimicrobial activity in the nanofilters would also be explored to facilitate destruction of pathogenic microorganisms.

Project aims

This project aims to develop functional nanofilters for water treatment.

Expected outcomes

Design and development of nanofilters with ability to remove target pollutants, i.e., heavy metals and HOCs and such filters possessing antimicrobial property; A good understanding of the impact of background water quality on removal of target pollutants using the nanofilters; A good understanding of transport and reaction mechanisms that affect water treatment using the nanofilters

Which of the above Themes does this project address?

Nanotechnology
Water

How will the project address the Goals of the above Themes?

- (1) Nano meshes using carbon nanomaterials will be deposited on porous ceramic substrates, ensuring high flux, high selectivity, and good capacity for removal of target pollutants
- (2) Antimicrobial agents will be attached to the nano meshes to achieve antimicrobial property.