MESTECH Research Project

Project Title: Investigation of microbial growth on surfaces: combating bio-fouling of sensors and environmental platforms

Project Researcher: Tim Sullivan

Funding Body: Beaufort Marine Research Awards

Project Summary: Underwater instrumentation suffers biofouling and loss of performance when immersed in the sea for extended periods. This phenomenon results in poor data quality or a need for frequent maintenance. Biofouling is defined as the undesirable accumulation of micro-organisms, plants and animals on a surface. In this project we propose the study, development and characterisation of novel materials for prevention of fouling. We investigate materials because mechanical methods are not ideal for application in sensing where power use will be a limiting factor in deployment of devices for extended periods of time. Initial studies have illustrated that certain material components show inhibition of bacterial growth completely and others show a reduction in the growth of gram positive or gram negative bacteria.

Key Outputs:

- Investigation of fouling in the aquatic environment
- Definition of mechanisms in marine and riverine environments – temporal & spatial variability in fouling events
- Assessment of current methods, limitations and benefits
- PhD student training in environmental monitoring
- Publications and contribution to knowledge in the area of anti-fouling strategies

Key Impacts:

- Knowledge in the area is minimal and thus it is an important research effort.
- Improved sensor performance will result if fouling can be reduced.
- Has impacts in the aquatic environment as a whole, but marine environment would benefit from application to small platforms or large vessels.