



MESTECH Research Project



Project Title: Development of novel methods for the determination of microbiological contamination of water

Project Researcher: Manika Poply

Funding Body: Beaufort Marine Awards Internship Programme

Project Summary: Microbial contamination of public water resources represents serious health risk. Monitoring of microbial water quality rely on culture growth methods and require at least 18-24 hours for analysis. This is not acceptable in cases where immediate action has to be taken. This project evaluates several strategies for utilising surrogate measurements of water quality, such as turbidity, particle size and video sensing, as early warning systems for microbiological contamination, using parallel cell-based measurements for reference purpose. The main goal of this work is to bring together the achievements of other projects of Beaufort Award Research in order to develop a microfluidic system that can provide a more specific determination of bacteriological contamination and will be capable of remote sampling and analysis over extended periods of time.

Key Outputs:

- Development and validation of appropriate analytical methods for specific targets suitable for incorporation in the analytical platform
- Development of appropriate microfluidic platform designs
- Integration of the above with required electronics, power and communications within a ruggedized housing to produce a prototype device
- Laboratory trials of the prototype device
- Field Deployment and assessment of the device

Key Impacts:

- Development of new competencies in bioanalytical measurements in microfluidic manifolds in the NCSR
- High impact papers in international journals
- Deployments in real situations with high-media potential
- Prototype system with considerable commercial potential