

NERC PhD Studentship announcement

Fluorometry for Rapid Eutrophication Status and Cyanobacteria Assessment (FRESCA)

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Background: Blooms of cyanobacteria ('blue-green algae') occur with increasing frequency in freshwater bodies due to human pressures (agricultural nutrient runoff, untreated wastewater) and a changing climate. Many bloom-forming species of cyanobacteria produce toxins, which pose animal and human health risks - drinking water supplies have been known to close over trace amounts of cyanobacterial toxin. Management authorities are required to monitor the cyanobacterial status of inland waters but frequent monitoring is expensive and the required laboratory measurements, while highly accurate, do not provide immediate (on-site) risk assessment.



Surface bloom of cyanobacteria in a lake

Research and Innovation: FRESCA will provide the theoretical basis, testing, and development of a cost-efficient and mobile fluorescence sensor to diagnostically probe cyanobacteria in aquatic phytoplankton communities. Cyanobacteria have evolved distinct photosynthetic mechanisms with a characteristic fluorescence response to continued light exposure and different wavelengths (colours) of light. Some of these characteristics remain unexploited in currently available sensors. The FRESCA sensor will combine these into a design that maintains a low cost profile to suit wide deployment.

Your PhD research will include laboratory and field experiments and numerical simulations to support the interpretation of the fluorescence signals from mixed phytoplankton communities. You will work with bio-optics experts at the **Plymouth Marine laboratory**, where you will be based. You will join field campaigns in the UK and abroad with the LOCHS group of the **University of Stirling**, where you will also be registered for your PhD studies. This work will feed into the design of prototype sensors developed by **Chelsea Technologies Group** which will be available to you for testing.

Requirements and Research environment: We seek an enthusiastic student capable of independent and team work with a background in the environmental sciences. Relevant experience in the laboratory, preferably with phytoplankton cultures, and demonstrated numerical, computing, and writing skills will be considered an advantage. Candidates are encouraged to contact the lead supervisors (stsi@pml.ac.uk, p.d.hunter@stir.ac.uk) for further information on how to apply. You must be eligible for a NERC studentship to apply (consult RCUK Terms and Conditions of training grants or contact us if in doubt). The studentship must start during 2017. The closing date for applications is 31st July 2017).



Cyanobacteria cultures