

## PhD Studentship announcement

### Fluorometry for Rapid Eutrophication Status and Cyanobacteria Assessment (FRESCA)

**Supervision:** Stefan Simis ([stsi@pml.ac.uk](mailto:stsi@pml.ac.uk)), Kevin Oxborough ([koxborough@chelsea.co.uk](mailto:koxborough@chelsea.co.uk)), Peter Hunter ([p.d.hunter@stir.ac.uk](mailto:p.d.hunter@stir.ac.uk)), Gavin Tilstone ([ghti@pml.ac.uk](mailto:ghti@pml.ac.uk)), Andrew Tyler ([a.n.tyler@stir.ac.uk](mailto:a.n.tyler@stir.ac.uk))

**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. On-site, cost-efficient risk assessment methods to complement conventional monitoring techniques are needed.

**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 dosed light exposure for different light wavebands. 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.



Surface bloom of cyanobacteria in a lake



Cyanobacteria cultures

**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 industrial partner **Chelsea Technologies Group**. You will test these prototypes and be involved in the fine-tuning of the design. You will spend a period of three months working alongside the instrument developers and scientists of CTG.

**Requirements:** We seek an enthusiastic student capable of independent and team work, holding an MSc degree in the environmental sciences. Laboratory experience with phytoplankton cultures, optical measurements, and demonstrated numerical, computing, and scientific writing skills will be an advantage. The position is open to UK and non-UK based applicants. For more information on the project, eligibility, or working at PML please contact the lead supervisor.

The studentship must start during 2017 and is funded for four years. The closing date for applications is 28 September 2017. Visit [http://www.pml.ac.uk/Working\\_with\\_us/Studentships](http://www.pml.ac.uk/Working_with_us/Studentships) for instructions on how to apply.