
OC-30: Control of Algal Blooms using Ultrasound**Eadaoin Joyce*, Xiaoge Wu and Timothy Mason**

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Algae blooms are a global issue in a range of water bodies, which is exacerbated by human activity and excessive fertilisation of agricultural land resulting in high levels of nitrates and phosphates in water. Algal blooms result in a number of issues including (a) die out of other species such as plants, fish and microorganisms (macrophyte decline) (b) blockage of filtration systems in water treatment plants (c) increased costs for water treatment plants (additional manpower, equipment damage and higher chemical dosing) (d) associated odours/colours and human toxicity. Cyanobacterial toxins induce liver damage, neuron toxicity and tumour promotion. The application of ultrasound for the control of algae blooms (blue-green) was investigated. Sonication offers a 'green', sustainable and efficient method of controlling algae compared to traditional treatments. Ultrasound inhibits algal growth via cavitation by generating extreme conditions, resulting in a number of physical, mechanical and chemical effects. Ultrasound can also degrade algal toxins. A range of ultrasonic conditions (frequency and intensity) have been investigated, along with a number of pilot (field) studies, which highlights the potential application for ultrasonic treatment for algae removal at a large scale.

Keywords: Cyanobacteria, *Microcystis aeruginosa*, Ultrasound