

# ECFP Wastewater Treatment Event

Tuesday 15 November – Wednesday 16 November 2022

*The University of Edinburgh, UK*

## Overview and Purpose

Wastewater treatment (WWT) is arguably the most important biotechnological process in world. The science behind WWT is well-established and has been in use for more than 100 years, yet unexplained and costly failures happen regularly and unpredictably. With increasing public awareness, and regulatory and sustainability pressures, plus the threat of rising sea levels on coastal WWT plants, the sector is at a crossroads, requiring an injection of fundamental understanding in order drive disruptive innovation.

Current wastewater treatment research either focusses on the microscale (the microbiology of individual bacteria), or the macroscale (processing megalitres of sewage per day). Often the length scales between these two extremes are not studied, meaning that crucial mechanistic understanding linking the two are missed. Soft matter and biological physics studies the mesoscopic phenomenology bridging these micro- and macro-scales. Examples of this are clustering of individual bacteria to decrease sedimentation time, reduced packing and densification of activated sludge containing elongated bacteria, and the interactions of bacteria and substrates in the formation of biofilms.

This Edinburgh Complex Fluids Partnership (ECFP) event brings together industry practitioners, interdisciplinary academics and regulatory professionals to discuss sectoral challenges and strategic objectives towards improving efficiency, minimising environmental impacts, and enhancing public perception. The day will focus on 5 themes spanning the WWT lifecycle from ingress to discharge and will attempt to identify the key fundamental scientific challenges. We will focus on individual unit operations and the process as a whole, recognising that a holistic or systems approach is required.

## Outcomes of the event

- Increased awareness of soft matter and biological physics in WWT
- Industry/academia/regulatory joint problem identification and project ideation
- Community building around a new research group in Edinburgh
- Highlighted translational funding opportunities

## Discussion topics

1. Activated Sludge; foam formation, control, and settling – *Paul Banfield, Veolia, UK*
2. Fixed Film Technologies – *Pete Pearce, Farmiloe Fisher Environment Ltd.*
3. Thickening & Dewatering: structure, packing and interactions – *Speaker TBC*
4. Fugitive Process Emissions – *Amanda Lake, Jacobs*
5. Future technologies (e.g., cold anaerobic digestion, micropollutant removal) – *Speaker TBC*

## Programme Summary

Day 1 (Tuesday 15 November 2022)	13:00-17:00	Registration, plenary, poster session and reception.
	18:30-20:30	Speakers include Tom Curtis (Newcastle University) and Bill Sloan (University of Glasgow)  Evening meal
Day 2 (Wednesday 16 November 2022)	09:00-17:00	Industry-led keynotes and roundtable discussions

## About ECFP

Our world class, multidisciplinary team of physicists, biologists, chemists and engineers work seamlessly with industry partners to deliver rapid and meaningful results for commercial and societal benefit. Using a suite of bespoke tools, we work on the full spectrum of fundamental and applied research projects, studying products and materials that have complex flow properties, including gels, pastes, suspensions and composites. Join us at this industry event to explore how we can help you generate the understanding you need to deliver innovation in your business.

## Costs

This event is **free**; we will cover all local costs including accommodation for Tuesday 15 November.

## Contact

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