

Industrial Flow Chemistry Bootcamp

09 Sep 2026 - 09 Sep 2026

CONFERENCE PROGRAMME

Wednesday, 9th September 2026

08:00	**Registration**
09:00	**Foundations of Flow Chemistry & Microreactor Technology** **Core Concepts** • Why flow chemistry matters for API and fine chemicals • Microreactor architectures and design principles • Heat & mass transfer intensification • Safety, scalability, and regulatory relevance • Catalysis in flow (homogeneous, heterogeneous, biocatalysis) • Photochemistry in flow (LED reactors, photon flux control) • Electrochemistry in flow (electrode design, ion transport) • Mechanochemistry in continuous systems (emerging field) • Gas-phase and gas–liquid reactions in microreactors
09:45	**Mixing in Microreactors: Principles, Characterisation & Measurement** **Core Concepts** • Laminar flow, diffusion-controlled mixing • Micromixing vs macromixing • Impact of mixing on selectivity, impurity formation, and yield • Using the **Fourth Bourne Reaction** as a quantitative probe • Determining micromixing time • Correlating mixing efficiency with reactor geometry and flow rate - Villermaux-Duschmann ‘iodide-iodate’ reaction • Why fast/exothermic reactions demand excellent mixing • Avoiding hotspots and runaway conditions • Inline temperature monitoring and heat removal strategies
10:45	***Tea Break***

11:00	**Residence Time, RTD & Reactor Sizing**
	
	Core Concepts
	
	• Calculating residence time
	• Plug flow vs dispersion
	• Reactor volume determination for desired throughput
	• What is **Mean Residence Time Distribution (MRTD)**
	• Why RTD matters for:
	  • impurity control
	  • scale-up
	  • telescoped reactions
	  • crystallisation and particle formation
	• Methods to measure RTD in lab reactors
	• How to translate RTD data from lab → pilot → plant scale

11:45	**Practical Operation of Microreactors** **Core Concepts** • Pump selection and flow control • Temperature and pressure management • Inline quenching, sampling, and analytics • Troubleshooting (clogging, pulsation, fouling) • Particle size distribution and settling • Slurry transport in microchannels • Avoiding clogging: velocity, channel design, ultrasound, oscillatory flow • Inline filtration and continuous solid handling • Case studies: crystallisation, heterogeneous catalysis, metal reductions
12:30	**Applications & Case Studies in Flow Synthesis** **Core Concepts** • Nitrations, oxidations, reductions • Photochemical transformations • Electrochemical oxidations/reductions • Gas–liquid reactions (carbonylations, hydrogenations) • Telescoped multi-step sequences • API intermediate examples • How flow improves safety, quality, and sustainability
13:15	**Q/A Session**
13:30	***Lunch***
14:30	**About the Equipment and Demonstration** Demonstration 1+Hands-on: Residence Time Distribution (RTD) Study on MicroFLO™ and SlurryFLO™ platforms Demonstration 2: Mixing Efficiency & Micromixing Time using MicroFLO™ microreactor Demonstration 3: Handling Slurries in Continuous Flow using SlurryFLO™ reactor Demonstration 4: CogniFLO™ Closed-Loop Auto-Optimisation
17:30	**Feedback and Certificate Presentation**