Particle engineering applications of crossflow emulsification and micromixing

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Membrane Emulsification has been used to create low dispersity emulsions for decades, however issues with scalability and reproducibility have prevented industrially relevant uptake of the technology. Using precision engineering methods, Micropore has developed continuous crossflow systems for the development and GMP production of emulsions and suspensions in fully scalable manner, giving microfluidic precision at true manufacturing volumes.

This talk will touch on the principals of emulsification using crossflow systems and how to increase system control by adjusting the formulation and look at several application areas the equipment has been applied to, including polymer microspheres, interfacial polymerization and use cases in nanomedicine production, including LNPs for mRNA delivery. The integration of the equipment into larger production processes and PAT systems for smarter production will also briefly be discussed.

This talk should be of interest for anyone interested in emulsions, microencapsulation, or nanoparticles research or manufacture, primarily in the pharmaceutical industry but also across industries including food and agrochemicals.