

Microflow-based biocatalytic process development

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Industrial exploitation of biocatalysis can strongly benefit from integration with innovative technologies such as flow and micro-scale processing. Microflow-based droplets facilitate ultrahigh-throughput biocatalyst screening and engineering, optimization of process parameters, and very fast collection of data on reaction kinetics using small amounts of time and reagents. Harnessing the benefits of microflow devices results in faster and cheaper selection of substrate(s) and media, and development of suitable immobilization methods for continuous biocatalyst use. Furthermore, the use of highly efficient reactor designs integrated with downstream processing enabling also faster and more reliable scale-up can bridge the gap between the academic research and industrial use of biocatalysts [1]. This will be illustrated by various biotransformations with dissolved and immobilized biocatalysts, namely lipases [2,3] and amine transferases [4,5], recently studied within the Microprocess Engineering Research Laboratory from the University of Ljubljana.

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