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P2: Implementation of groove based designs for engineering fluid flow in micromixers

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Implementation of Groove Based Designs for Engineering Fluid Flow in Micromixers

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Abstract

Mixing on microscale is important for the development of miniaturized chemical reactors that use small quantities of reactants and allow better control over the reaction conditions and products. Nevertheless, achieving rapid mixing in this type of micro-reactors is challenging due to the lack of turbulence and slow diffusion on the microscale. In this work we implement micromixers designs based on surface groove/ridge patterns targeted at inducing cross-sectional flows that both extend the interface between the different reactants, as well as induce chaotic advection. We discuss the fabrication of these structures using soft-lithography in PDMS employing a mold and their optical characterization needed in order to evaluate their mixing performance.