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# Methodology Development for the Implementation of Microfluidic Mixers

Tahir Butt
*Cleveland State University*

Gautam Mahajan

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Washkewicz College of Engineering and College of Sciences and Health Professions

**Student Researchers:** Tahir Butt and Gautam Mahajan

**Faculty Advisors:** Chandrasekhar Kothapalli and Petru S. Fodor

## Abstract

Microfluidic platforms have been widely regarded as defining technologies for the development of chemical and biological synthesis and analysis systems, due to benefits associated with reduced reactant consumption, increases by orders of magnitude of the surface-to-volume ratios, and greatly enhanced control over reactions variables such as temperature and pressure. However, one of the bottlenecks for their wide application is the difficulty in achieving mixing, given the typical laminar flows in these systems. In this work we implement experimentally, various strategies using geometrical features to control the fluid motion and induce stirring flows. The mixers are fabricated using soft-lithography in PDMS employing replica molding. The flow structures were imaged using fluorescence confocal microscopy. In future work, the fluid flow patterns from confocal microscopy imaging, at various locations in the mixer, will be compared to theoretical predictions from computational fluid dynamics modeling.