

Cleveland State University
EngagedScholarship@CSU

Undergraduate Research Posters 2018

Undergraduate Research Posters

2018

Methodology Development for the Implementation of Microfluidic Mixers

Tahir Butt
Cleveland State University

Gautam Mahajan

Follow this and additional works at: https://engagedscholarship.csuohio.edu/u_poster_2018

How does access to this work benefit you? Let us know!

Recommended Citation

Butt, Tahir and Mahajan, Gautam, "Methodology Development for the Implementation of Microfluidic Mixers" (2018).
Undergraduate Research Posters 2018. 65.
https://engagedscholarship.csuohio.edu/u_poster_2018/65

This Book is brought to you for free and open access by the Undergraduate Research Posters at EngagedScholarship@CSU. It has been accepted for inclusion in Undergraduate Research Posters 2018 by an authorized administrator of EngagedScholarship@CSU. For more information, please contact library.es@csuohio.edu.



This digital edition was prepared by MSL Academic Endeavors, the imprint of the Michael Schwartz Library at Cleveland State University.

Methodology Development for the Implementation of Microfluidic Mixers

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.