

Cleveland State University

EngagedScholarship@CSU

Undergraduate Research Posters 2017

Undergraduate Research Posters


2017

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

Tahir Butt

Cleveland State University

Follow this and additional works at: https://engagedscholarship.csuohio.edu/u_poster_2017

 Part of the [Biomedical Engineering and Bioengineering Commons](#), [Chemistry Commons](#), and the [Physics Commons](#)

[How does access to this work benefit you? Let us know!](#)

Recommended Citation

Butt, Tahir, "P2: Implementation of groove based designs for engineering fluid flow in micromixers" (2017). *Undergraduate Research Posters 2017*. 43.

https://engagedscholarship.csuohio.edu/u_poster_2017/43

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 2017 by an authorized administrator of EngagedScholarship@CSU. For more information, please contact library.es@csuohio.edu.



Implementation of Groove Based Designs for Engineering Fluid Flow in Micromixers

College of Sciences and Health Professions and
Washkewicz College of Engineering

Student Researcher: Tahir Butt

Faculty Advisors: Chandrasekhar Kothapalli and Petru S. Fodor

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.