

## Integrated Fabrication of Polymeric Devices for Biological Applications

Mark J. Kastantin<sup>1,2</sup>, Sheng Li<sup>1,2</sup>, Anand P. Gadre<sup>1,2</sup>, Li-Qun Wu<sup>3,4</sup>,  
William E. Bentley<sup>3,5</sup>, Gregory F. Payne<sup>3,4</sup>, Gary W. Rubloff<sup>2,6</sup>  
and Reza Ghodssi<sup>1,2\*</sup>

<sup>1</sup>Department of Electrical and Computer Engineering, University of Maryland (UMD)  
A.V. Williams Building, College Park, MD 20742, USA

<sup>2</sup>Inst. for Systems Research, UMD, A.V. Williams Building, College Park, MD 20742, USA

<sup>3</sup>Center for Biosystems Research, UMBI, College Park, MD 20742, USA

<sup>4</sup>Department of Chemical and Biochemical Engineering, UMBC, Baltimore, MD 21250, USA

<sup>5</sup>Dept. of Chemical Engineering, UMD, A.V. Williams Building, College Park, MD 20742, USA

<sup>6</sup>Dept. of Materials and Nuclear Engineering, UMD,  
A.V. Williams Building, College Park, MD 20742, USA

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A novel fabrication technique for all-polymeric, microfluidic bio-MEMS devices is presented. This device uses selective electrodeposition of a bio-polymer, chitosan, to successfully create an environment for complex biological experiments within an SU-8 microchannel. The surface energy between SU-8 and PDMS is measured to be  $0.047 \pm 0.018$  J/m<sup>2</sup>, allowing for reversible encapsulation of the microfluidic channel. The conducting material, polypyrrole, has a conductivity of  $47 \pm 5$  S/cm and is explored as a replacement for metal electrodes in future work. It is the successful integration of these four polymers, however, that enables such versatile devices to be fabricated.

\*Corresponding author, e-mail address: ghodssi@eng.umd.edu