

Abstract Submitted  
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**A novel method for the fabrication of microfluidic devices by photopolymerization of polymethylmethacrylate** JACOB FORSTATER, BRIAN AUGUSTINE, CHRIS HUGHES, James Madison University — We have developed a new technique for the rapid fabrication of structures useful for microfluidic devices called micromolding by photopolymerization in capillaries ( $\mu$ -PIC). The technique involves the replication of features from a silicon master in which features on the order of tens to hundreds of microns have been formed by crystallographic etching. The negative of the features is then transferred to a sheet of polymethylmethacrylate (PMMA) by placing the PMMA sheet over the silicon master and injecting a solution of methylmethacrylate monomer with a benzoin methyl ether photoinitiator. This solution is drawn between the PMMA and the silicon by capillary action forming a liquid layer that is no more than a few hundred microns thick. This liquid is then polymerized by exposure to ultraviolet light for less than a half hour. The features transferred in this manner have nearly identical surface structure and roughness. Analysis of these surfaces and structures by atomic force microscopy and scanning electron microscopy will be presented.

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