

# Fabrication Techniques of Microchannels for Different Microfluidics Application <sup>†</sup>

Svapnil Kevat <sup>1</sup>, V. N. Lad <sup>1,\*</sup>

<sup>1</sup> Department of Chemical Engineering, Sardar Vallabhbhai Patel National Institute of Technology, Surat, Gujarat-India;

\* Correspondence: [vnl@ched.svnit.ac.in](mailto:vnl@ched.svnit.ac.in) (V.N.L.);

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**Abstract:** Microfluidics is recently found in many applications, including lab-on-a-chip technology, DNA chips, microreactor, micro heat exchanger, microthermal, and micro propulsion technologies. As a result, researchers have used various fabrication techniques to achieve the necessary geometries of microfluidic devices. Comparison and description of several essential fabrication techniques used in microfluidics have been presented. Polymer laminates like laminates printing, polymer molding processes like replica molding, injection molding, Hot embossing, 3D printing methods like fused deposition modeling, stereolithography, multijet modeling, and recent advances in nanofabrication like two-photon polymerization are among these techniques. A suitable fabrication technique can significantly reduce the fabrication time and increase the performance of the microdevice. The fabrication of polymeric microfluidic devices is relatively easy, and the polymer microstructures are created without harmful etching reagents. These factors enable polymeric microfluidics devices to be easily manufactured in typical research laboratories. Various polymer microfabrication technologies have been used by various researchers using low-cost and straightforward formats. This paper includes the raw materials for microfabrication methods, facility costs, and general and state-of-the-art fabrication processes for laboratory scale and commercial processing.

**Keywords:** lab-on-a-chip; microfabrication; microfluidics; polymer.

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## Conflicts of Interest

The authors declare no conflict of interest.