

# Photo-Patternable and Adhesive Polymer for Wafer-Scale Microfluidic Device Fabrication

## ウェーハスケール・マイクロ流路デバイス製作のための感光性接着剤

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### Abstract

A novel photo-patternable and adhesive material for wafer-scale microfluidic devices by simple process steps using photolithographic technique and thermal bonding has been developed. We here report feasibility of such wafer-scale process for bio-MEMS lab-on-chip application.

### Wafer-Scale microfluidic fabrication

Our fabrication process is described in Fig.1. Photolithographic process takes place by spin-coating, exposure, and development (2.38wt% TMAH) to realize desired microfluidic structures. SEM image shows smooth and clean polymer surface in Fig. 2. Finally, microfluidic structure was successfully fabricated on 8-inch wafer to demonstrate feasibility of production.

### Summary

We have introduced a photo-patternable & adhesive polymer and demonstrated fabrication of microfluidic structure and attachment of glass cover in simple lithography and thermal bonding process. The method is applicable to wafer-scale process and suitable for wafer-level production. We believe the material is a promising solution to polymer microfluidics in bio-MEMS lab-on-chip technology.

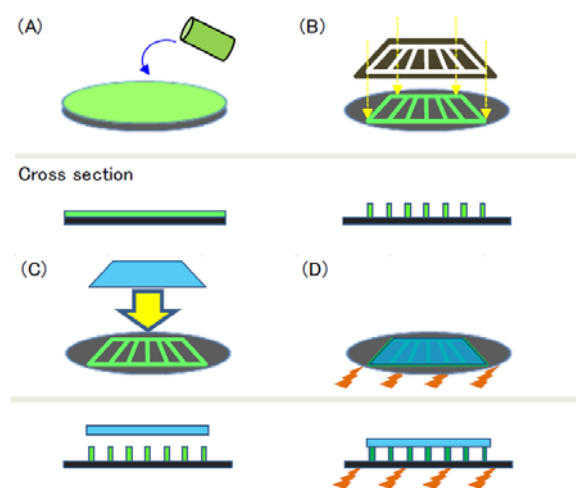


Fig.1 wafer-scale fabrication steps.

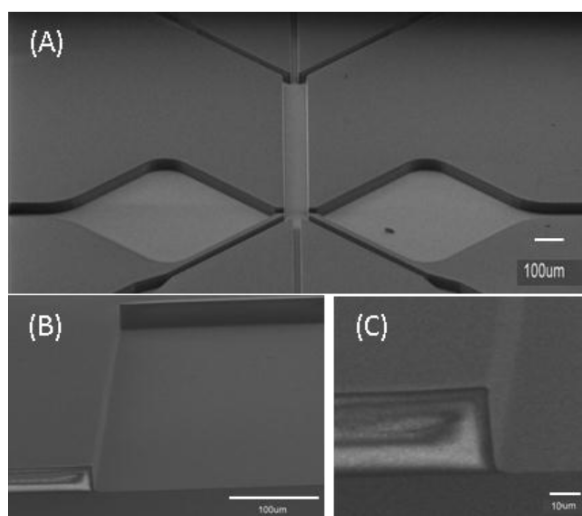


Fig.2 Microfluidic structure using photolithography.