

## Fabrication of Line Patterns with a Microfluidic Photomask

최재훈<sup>1,2</sup>, 이승곤<sup>1</sup>, 김신현<sup>1</sup>, 박성규<sup>1</sup>, 양승만<sup>1,2,\*</sup>

<sup>1</sup>한국과학기술원 광자유체집적소자연구단;

<sup>2</sup>한국과학기술원 생명화학공학과

(smyang@kaist.ac.kr\*)

One of the most important features of microfluidics is that fluids flow is laminar due to low Reynolds number. So, microfluidic photomasks using laminar flow have been recently developed for substituting conventional photomasks. Microfluidic photomask methods are attractive because the microfabricated designs can be changed with dynamic control of flows in one microfluidic chip.

In this work, a double-layer microfluidic photomask was used for generation of line patterns. For absorbing UV light, dye solution was used and its concentration was determined by Beer's law. Transparent DI water and dye solution were flown as laminar flow abreast in rectangular channel. With dynamic control of the flows, various widths of two streams could be controlled. After exposing UV light with the microfluidic photomask on substrates coated photoresist, controlled line patterns were fabricated.

In contrast to conventional photomasks, dynamic control was achieved via fluidic control of a double-layer microfluidic chip. Three-dimensional patterning with a microfluidic photomask will be able to fabricate in combination with frontal photopolymerization.