

Holographic Fabrication of 3D Structured Microparticles Using Micro Prism Array

박효성, 이승곤, 양승만*
한국과학기술원
(smyang@kaist.ac.kr*)

Structured particles are widely used in biological and chemical applications. Although various approaches have been proposed, it is still challenge to fabricate such multi-dimensional structured particles with simple and facile way. Moreover, mass production of such particles becomes important matter. For satisfying these requirements, we suggest the combination of simple and high throughput microfluidic system and holographic lithography with micro prism array.

A flowing stream of oligomer in microfluidic channel is stopped and then polymerized by holographic lithography with micro prism array. The generated particles are then flushed out before next polymerization is repeated. In holographic process, single laser beam split into multi-beams and merge together by micro prism array to generate structured particles in micro fluidic channel.

For fabricate the micro prism array, three steps are carried out, photolithography, reactive ion etching and KOH wet etching. Using carved silicon substrate as casting molds, micro prism array made of transparent polydimethylsiloxane is fabricated onto the microscope coverglass, soft-lithographically.