

A Study of Rapid Replication of Square-Microlens Structures

Authors : Ting-Ting Wen, Jung-Ruey Tsai

Abstract : This paper reports a method for the replication of micro-scale structures. By using electromagnetic force-assisted imprinting system with magnetic soft stamp written square-microlens cavity, a photopolymer square-microlens structures can be rapidly fabricated. Under the proper processing conditions, the polymeric square-microlens structures with feature size of width 100.3um and height 15.2um across a large area can be successfully fabricated. Scanning electron microscopy (SEM) and surface profiler observations confirm that the micro-scale polymer structures are produced without defects or distortion and with good pattern fidelity over a 60x60mm² area. This technique shows great potential for the efficient replication of the micro-scale structure array at room temperature and with high productivity and low cost.

Keywords : square-microlens structures, electromagnetic force-assisted imprinting, magnetic soft stamp

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