

Development of Imprinting and Replica Molding of Soft Mold Curved Surface

Authors : Yung-Jin Weng, Chia-Chi Chang, Chun-Yu Tsai

Abstract : This paper is focused on the research of imprinting and replica molding of quasi-grey scale soft mold curved surface microstructure mold. In this paper, a magnetic photocuring forming system is first developed and built independently, then the magnetic curved surface microstructure soft mode is created; moreover, the magnetic performance of the magnetic curved surface at different heights is tested and recorded, and through experimentation and simulation, the magnetic curved surface microstructure soft mold is used in the research of quasi-grey scale soft mold curved surface microstructure imprinting and replica molding. The experimental results show that, under different surface curvatures and voltage control conditions, different quasi-grey scale array microstructures take shape. In addition, this paper conducts research on the imprinting and replica molding of photoresist composite magnetic powder in order to discuss the forming performance of magnetic photoresist, and finally, the experimental result is compared with the simulation to obtain more accurate prediction and results. This research is predicted to provide microstructure component preparation technology with heterogeneity and controllability, and is a kind of valid shaping quasi-grey scale microstructure manufacturing technology method.

Keywords : soft mold, magnetic, microstructure, curved surface

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