# The Study of Injection Molding with Micro-features


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**ABSTRACT**

Injection molding can be applied to produce plastic parts with micro-features or micro-channels. Plastic parts with three different structures were selected to study the filling pattern of the polymer melt and replicating capacity of micro-structures. This research investigates the effects of three process parameters, including the mold temperature, packing pressure, injection speed, on the quality of the micro-structures with different aspect ratio. Simulation with C-Mold software and injection molding experiments were carried out in this study. Experimental results show that the mold temperature and the injection speed strongly affect the flow behavior. The replicating capacity of micro-structures is affected by the packing pressure. It was found that there is an obvious difference between the numerical and experimental results. Therefore, more efforts should be made to simulate the injection molding process with micro-channels



Keywords : injection molding ; micro-features ; micro-channels


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**REFERENCES**


H. Eberle,“ Micro-Injection Moulding — Mould Technology, ” Kunststoff Platic Europe, P.1344-1346, Sep. 1998. 張金錄，”高深寬比射出成形之技術研究”，雲林科技大學機械系碩士論文，1999年。 Liyong Yu, Chee Guan Koh, Kurt Koelling, L. James Lee and Marc J. Madou,“ Experimental Numerical Analysis of Thin—wall Injection Molding with Micro-Features ”, ANTEC 2001. Donggang Yao and Byung Kim,“ Simulation of the filling process in micro-channels for polymeric materials, ” Journal of Micromechanics and Microengineering, 12 (2002), P.604-610. Despa M. S., Kelly K. W. and Collier J. R.,“ Injection molding using high aspect ratio microstructures mold inserts produced by LIGA techniques ”, Proc. SPIE 3512, pp. 286-94(1998).