# Process Simulation of Hot Embossing on Polymeric Microstructure


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**ABSTRACT**

This thesis discuss the simulation and process results difference. Make use of the Pro-E and ANSYS-APDL( ANSYS Parametric Design Language) parametric design as the Pre-Processor and the convergence of the element number analysis. At the same time, take the Finite element model describing by ASCII word file to edit the DEFORM executive Keyfile to carry out the simulation. The simulation of the phenomenon is the micro-structure forming by the hot-embossing. By the way that is a multi-body contact problem, stress-stain and heat transfer effect is dynamic change with the time and the process conditions. Besides, PMMA belongs to the polymer the forming viscosity change with the process temperature and shear force. In the thesis we will take the consideration of the heat transfer or not in 3-D model to discuss and compare the forming difference in the micro-structure number further in simplified the model as the 2-D cross section . The process make use of the Lab development in design and assembly hot-embossing machine including the structure and the Man Machine Interface to undergo the controlling and data derived as the hard and soft device. The material PMMA is directly purchased and the mold insert is produced by the semi-conductor process in the etching and electroplating reaching the micro scale .



Keywords : hot embossing simulation, DEFORM, LVDT


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