

VISCOELASTIC FLOW BEHAVIOUR MODELING OF NANOIMPRINTING OF AMORPHOUS POLYMER

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To gain an understanding and to predict the filling of cylindrical nano-cavities in the nanoimprinting process, visco-elastic polymer flow, with consideration of capillary phenomena, is modeled. The axisymmetrical time-dependent squeeze flow field is studied numerically and analytically using lubrication approximation. Simulated results track the evolution of the filling of a viscoelastic polymer in a cylindrical nano-cavity as the polymer is subjected to the combined squeezing action of the die and capillary force due to surface tension effect.

Keywords: Modeling, Viscoelastic, Nanoimprinting, Surface tension, Squeeze flow