Numerical modeling of flow induced crystallization

NUMERICAL MODELING OF FLOW INDUCED CRYSTALLIZATION.

.

Barry G. Koreman, Gerrit W.M. Peters,
Han E.H Meijer.

Eindhoven University of Technology, Materials Technology, Department of mechanical Engineering,
Dutch polymer Institute, P.O. Box 513, 5600MB Eindhoven, The Netherlands

ABSTRACT

The final material properties of a semi-crystalline polymer strongly depend on the molecular properties and the process conditions applied, i.e. the thermal-mechanical history. Factors influencing the crystallization, like nucleation and orientation depend on this thermal-mechanical history. A good prediction of final properties requires an experimental validated model that includes all the aspects required, i.e. the influence of the (numerous) parameters and the influence of thermal and flow conditions. A tool is needed that is flexible and makes it possible to easily test new models and evaluate the results. The second objective is to implement the crystallization models into VIp3D, a program to simulate 3D injection moulding (see Fig. 1).

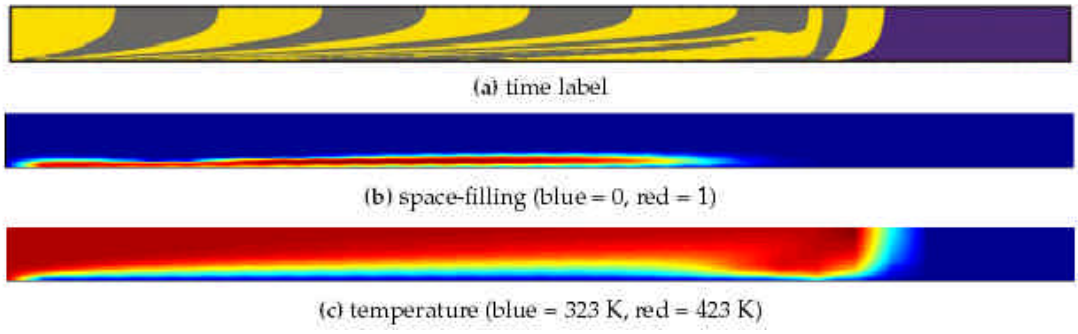

Fig 1. Predicted spatial distributions in a injection molded product.