

Numerical modeling of flow induced crystallization

Citation for published version (APA):

Koreman, B. G., Peters, G. W. M., & Meijer, H. E. H. (2003). Numerical modeling of flow induced crystallization. In *PC2003 : Polymer Crystallization and Structure Formation in Processing, 20 years of fundamental and applied research in Linz, an international mini-conference, September 19-20, 2003, Linz, Austria.- 2003*

Document status and date:

Published: 01/01/2003

Document Version:

Publisher's PDF, also known as Version of Record (includes final page, issue and volume numbers)

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

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NUMERICAL MODELING OF FLOW INDUCED CRYSTALLIZATION.

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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).

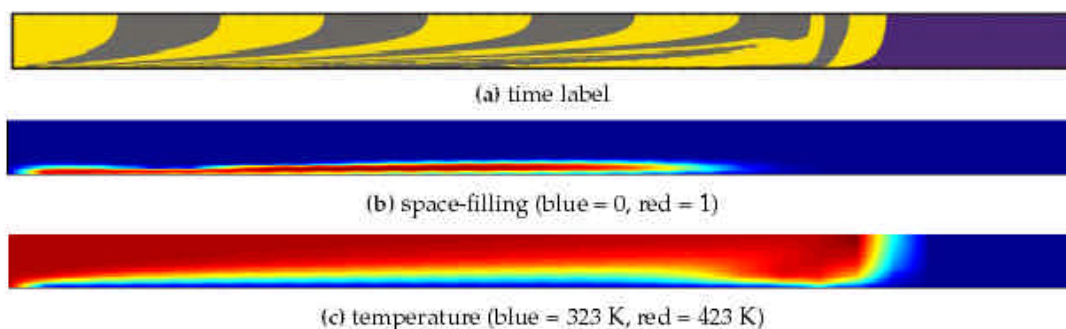


Fig 1. Predicted spatial distributions in a injection molded product.