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Numerical Simulation of the Extrusion Process and Die Design for an Industrial Profile, Using the Multi-mode Pom-pom Model

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Polymer processing industry can certainly benefit of recent improvements achieved in rheological modelling, numerical solvers and computer performances. This is also true in particular for profile extrusion, where the design of die lips is an important step. In the present paper, we show 3D simulation results for the extrusion process of an industrial profile. Polymer melts are endowed with viscoelastic properties, and a multi-mode pom-pom model is used for describing the rheology of the selected melt. The calculation includes the prediction of the extrudate shape as well as that of the die lips. From the industrial point of view, this is the first scientific contribution where simulation results are presented for the 3D inverse extrusion flow of a multi-mode pom-pom model.