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Numerical Modeling of Scale up for Polyolefin Blown Film Processes

A.A. Khan and *S.N. Bhattacharya*
Rheology and Materials Processing Centre, RMIT University, Melbourne, Victoria, Australia

Non-isothermal rheological models have been used to scale up blown film processes in laboratory and industrial scales using polyolefins. Processing data from laboratory scale with suitable operating parameters such as mass flow, extruder exit die temperature and air cooling; have been incorporated in a suitable blown film model to predict bubble geometry, and temperature profiles. The rheological constitutive equation in temperature dependent power law form has been obtained from literature. It is shown that by gradually changing the scale-up parameters in step wise manner this model can be used for scale up purposes.