

Incorporation of slip in numerical simulation of extrusion flow of SBR compounds

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During the extrusion process of rubbers and plastics at high shear rates, slippage mechanisms at the interface between processed material and processing equipment play an important role. For accurate computational simulations of the manufacturing process, the slip needs to be taken into account. In this project, capillary and parallel-plate rheometers (Fig. 1) are used to investigate the flow behaviour of styrene-butadiene rubbers (SBR) with different silica contents at different, but fixed, temperatures. The main objective is to identify the most suitable constitutive model and the slip boundary condition, applicable to industrial extrusion processes of SBR compounds.

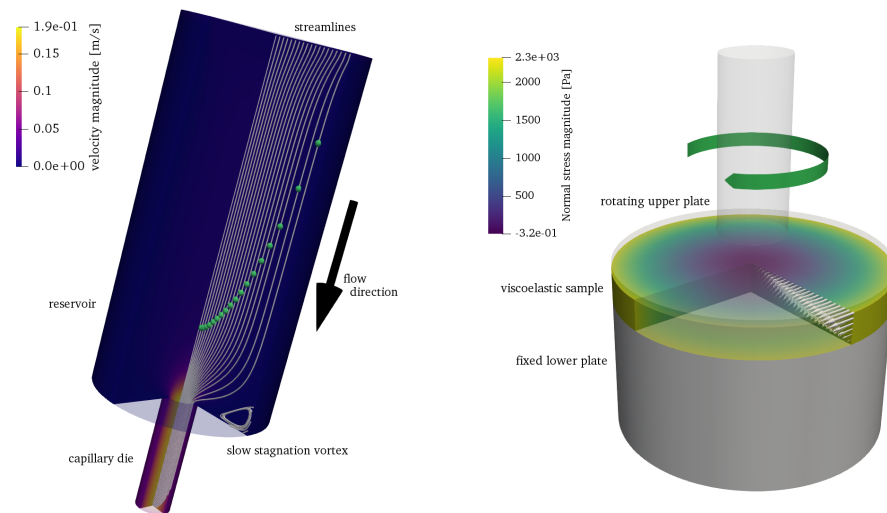


Fig. 1: Digital replicas of capillary (left) and parallel-plate (right) rheometers.