

Abstract Submitted
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Is there an elongational Flow State in Circular Couette Flow?

ANDREAS ZELL, CHRISTIAN WAGNER, Universität des Saarlandes — We investigate the behavior of dilute polymer solutions in a Taylor-Couette cell with independently rotatable cylinders. The focus of our interest concentrates on the examination of the elongation of the solved polymers and their response on the imposed flow. The elongation is imposed to the fluid by a special ratio of the cylinder rotation rates which create a non rotational circular Couette flow. This special flow state is numerically investigated concerning its effectiveness deforming dispersed material in the fluid. Experimental results show, that the flow state holds for Newtonian fluids but that it is changed for polymer solutions due to their power law shear thinning behaviour. In addition to the investigated polymer solutions including different types of polymers, concentrations and solvent viscosities an industrial manufactured emulsion has been tested.

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