

## Elongational viscosity effects in spraying processes

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Elongational viscosity plays a major role in the formation of drift-prone aerosols in spray painting, cutting fluids for machining metals, and agricultural spraying applications. We will present data on the role of elasticity on the breakup of drops. Measurements on model "Boger Fluids", i.e. fluids with constant viscosities but substantial elasticity, show that the effect of elasticity is not merely due to the higher elongational viscosity at high rates, but is associated with the magnitude of the elasticity. Instruments for measuring the elongational viscosity of dilute solutions have problems either imposing known kinematics or imposing steady (in a Lagrangian sense) deformations on the polymers. We will present data and discuss elongational viscosity measurements on an opposing jet viscometer (Rheometric RFX) and on a screen viscometer. The simplicity of the screen viscometer makes it an attractive instrument for measuring elongational properties of dilute polymer solutions. Measurements of drop breakup for polymer solutions, associating polymer solutions, emulsions, and micellar solutions will be presented.