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Viscoelastic effects on the jetting-dripping transition in co-flowing capillary jets JOSE M. MONTANERO, ETSI, Universidad de Sevilla, ALFONSO M. GANAN-CALVO, ESI, Universidad de Sevilla — Linear hydrodynamics stability analysis is used to determine the influence of elasticity on the jetting-dripping transition and on the temporal stability of non-axisymmetric modes in co-flowing capillary jets. The critical Weber number for which axisymmetric perturbations undergo a transition from convective to absolute instability is calculated from the spatio-temporal analysis of the dispersion relation for Oldroyd-B liquids, as a function of the density and viscosity ratios, and the Reynolds and corresponding Deborah numbers. Here we show that elasticity increases the critical Weber number for all cases analyzed and, consequently, fosters the transition from jetting to dripping. The temporal analysis of the dispersion relation for the $m = 1$ non-axisymmetric mode shows that elasticity does not affect its stability.

Alfonso M. Ganan-Calvo
ESI, Universidad de Sevilla

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