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The effects of confinement and inertia on the production of droplets[1] YURIKO RENARDY, Dept of Mathematics, Virginia Tech — Recent experiments of Sibillo et al (2005 Society of Rheology Meeting) investigate the effect of walls on flow-induced drop deformation for Stokes flow. The drop and the fluid in which it is suspended have the same viscosities. The capillary numbers vary from 0.4 to 0.46. They find that complex start-up transients are observed with overshoots and undershoots in drop deformation. Drop breakup is inhibited by lowering the gap. The ratio of drop radius to wall separation is 0.34. We show that inertia can enhance elongation to break the drop by examining Reynolds numbers in the range 1 to 10. The volumes of the daughter drops can be larger than in the unbounded case, and even result in the production of monodisperse droplets.

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