

Introduction to Bubble or Droplet Translation

In the last sections it was assumed that the particles were rigid and therefore were not deformed, fissioned or otherwise modified by the flow. However, there are many instances in which the particles that comprise the disperse phase are radically modified by the forces imposed by the continuous phase. Sometimes those modifications are radical enough to, in turn, affect the flow of the continuous phase. For example, the shear rates in the continuous phase may be sufficient to cause fission of the particles and this, in turn, may reduce the relative motion and therefore alter the global extent of phase separation in the flow.

The purpose of the following sections is to identify additional phenomena and issues that arise when the translating disperse phase consists of deformable *particles*, namely bubbles, droplets or fissionable solid grains.