

Abstract Submitted
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Clouds of particles in a periodic shear flow¹ BLOEN METZGER, IUSTI-CNRS, JASON E. BUTLER, University of Florida — We have investigated experimentally the time evolution of a cloud of non-Brownian particles submitted to a periodic shear flow in an otherwise pure liquid at low Reynolds number. This experiment is reminiscent to the famous Taylor experiment but applied to clouds of particles. It illustrates the irreversible nature of particulate systems submitted to a shear. Unlike Taylor’s ink-drop, clouds of particles do not reconstitute when shear is reversed. We have found that, when repeating the cycles of shear, clouds of particles progressively disperse in the flow direction until they reach the threshold critical volume fraction. For very large initial volume fractions, clouds evolve into a “galaxy-like” shape.

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