

Abstract Submitted
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Microfluidic dissolution of CO₂ bubbles in viscous oils¹ MARTIN SAUZADE, THOMAS CUBAUD, Stony Brook University — We experimentally study the interrelation between the dissolution of carbon dioxide bubbles and microfluidic multiphase flows. Individual bubbles are generated in silicone oils at the junction of a hydrodynamic focusing section. High-speed imaging is used to track individual bubbles and monitor their shape and velocity as they experience a reduction in size due to gas diffusion. The early diffusive behavior is analyzed using computational routines developed to reconstruct the evolving 3D volume of elongated bubbles from their 2D contour. In particular, we examine the fast initial diffusive behavior, which is characterized as a function of the oil molecular weight - from low to high viscosity - gas inlet pressure, flow rates, and microgeometries.

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