

Abstract Submitted
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Carbon dioxide and water multiphase flow in microchannels

RUOPENG SUN, THOMAS CUBAUD, Stony Brook University — We experimentally study the microfluidic formation and evolution of CO₂ bubbles in distilled water at room temperature. Using silicon/glass microchannels, water and carbon dioxide are mixed in a cross-shaped focusing section. The decreasing length of the produced bubbles dissolving in water is measured along a square microchannel as a function of flow rates and inlet pressures. We calculate the rate of bubble dissolution from high-speed imaging and study the flow transition from elongated to spherical bubbles. We also investigate the micro-flow behavior of carbonated water and the interrelation between bubble nucleation and frictional pressure drop.

Thomas Cubaud
Stony Brook University

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