Dye Interaction with Rising Bubbles in a Crossflow
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The figure shows the interaction between rising bubbles and dye injected upstream. The bubbles are created by a reaction between the working fluid (a mixture of hexanoic acid and mineral oil) and sodium embedded in a nonreacting metal plate. The Reynolds number is 350, based on the length of the duct. Along the leading edge of the bubbles, one observes a billowing effect, due to the deformation of the boundary layer profile caused by the rising bubbles and the subsequent growth of the Kelvin–Helmholtz instability. In the closeup, the bubbles interact both in groups and individually with the dye filaments. This work was funded by a grant from the U.S. Department of Energy, Environmental Management Science Program.