



VISUALIZATION OF REACTIVE BUOYANCY-DRIVEN INSTABILITIES

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KEYWORDS:

Main subjects: Experimental and computational fluid mechanics, reactive flows

Fluid: acid-base reactive flows

Visualization method(s): Schlieren, interferometry, particle image velocimetry

Other keywords: image processing, color indicator

ABSTRACT: The study of buoyancy instabilities induced by chemical reactions has gained renewed interest because of their implications in CO₂ sequestration techniques. The theoretical models describing the evolution of the unstable interface between two miscible solutions, each containing a reactant, have to be compared to laboratory-scale experiments. We expose the diverse visualization methods we used to experimentally study the related buoyancy-driven instabilities of chemical fronts and their possible influence on the dynamics. This way, quantitative comparison with numerical simulations give good agreements.

References

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