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Instability patterns in a miscible core annular flow[1] MARGUERITE D'OLCE, Universite Paris6, JEROME MARTIN, CNRS, NICOLE RAKOTOMALALA, DOMINIQUE SALIN, Universite Paris6, LAURENT TALON, CNRS — Laboratoire FAST, batiment 502, campus universitaire, 91405 Orsay Cedex (France).
Experiments are performed with two miscible fluids of equal density but different viscosities. The fluids are injected co-currently and concentrically into a cylindrical pipe. The so-obtained base state is an axisymmetric parallel flow, for which the ratio of the flow rates of the two fluids monitors the relative amount (and so the radius) of the fluids. Depending on this relative amount and on the total flow rate of the fluids, unstable axisymmetric patterns such as mushrooms and pearls are observed. We delineate the diagram of occurrence of the two patterns and characterize the instabilities.

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