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Effect of viscosity on homogeneous regime stability in bubble columns

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Bubble column contactors are widely used in many technologies of chemical and food industry, biotechnology, and environmental areas. The key operational parameters depend strongly on the flow regime inside the apparatus. There are two basic flow regimes in bubble columns: homogeneous and heterogeneous. One regime can change for the other at critical parameter values. This study concerns the effect of the liquid phase viscosity on the stability of the homogeneous regime. Experiments were performed in cylindrical bubble columns and the critical values of the gas flow rate were determined. Both stabilizing and destabilizing effect of the viscosity was demonstrated.

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