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# GAS –LIQUID TWO PHASE FLOW IN ANNULI

**Abstract**

Heat/mass transfer on the moving gas-liquid interface is an important subject directly related to many industrial applications from crystal growth to cooling of electronic devices. In the case of non-uniform temperature in liquid the overall scenario depends on thermo- capillary convection in liquid which is affected by moving gas along the interface. Space experiment JEREMI (Japanese European Research Experiment on Marangoni Instabilities) is devoted to the study of the threshold of hydrothermal instabilities in two-phase systems. The present study is one of the first steps on the way of the experiment preparation. We report the results of numerical and experimental study of two-phase flows in annulus. The internal column consists of solid supports at the bottom and top, while the central part is a liquid zone filled with viscous liquid and kept in its position by surface tension. Gas enters into the annular duct and entrains initially quiescent liquid. The flow field in liquid is investigated for increasing gas velocity from zero up to 2m/s (correspondingly, Reynolds number in gas varies as 0¡Re¡600). The flow field is analyzed for the different viscosity ratios between liquid and gas. An excellent agreement between computed results and experimental data demonstrates that the developed experimental technique and numerical code are capable to capture the main characteristics of the phenomenon studied.