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Hydrodynamics and Heat Mass Transfer in Two-Phase Dispersed Flows in Pipes or Ducts

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Message from the Guest Editors

Two-phase gas–liquid flows are frequently encountered in energy, nuclear, chemical, geothermal, oil and gas, and refrigeration industries. Two-phase gas–liquid flows can occur in various forms, such as flows transitioning from pure liquid to vapor as a result of external heating; separated flows behind a sudden flow expansion or constriction, and dispersed two-phase flows where dispersed phase is present in the form of liquid droplets or gas bubbles in a continuous carrier fluid phase (i.e., gas or liquid). Typically, such flows are turbulent with a considerable interfacial interaction between the carrier fluid and the dispersed phases. The interfacial heat and mass transfer is very important in the modeling of such flows. The variety of flow regimes significantly complicates the theoretical prediction of hydrodynamics in the two-phase flow. Thus, the application of numerous hypotheses, assumptions, and approximations is required. […]
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Message from the Editor-in-Chief

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