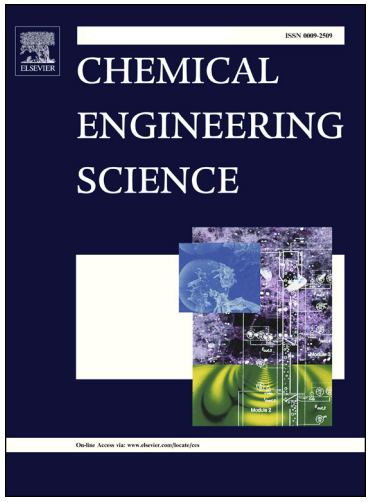

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Hydrodynamics of descending gas-liquid flows in solid foams: Liquid holdup, multiphase pressure drop and radial dispersion

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Abstract

In this contribution we report on spatially resolved analysis of multiphase hydrodynamics in solid foam packed trickle bed reactors. For investigation we used ultrafast X-ray computed tomography and fast response pressure transducers. The SiSiC foams' pore density, the liquid distribution system as well as gas and liquid flow rates were varied. The transient behavior of the liquid holdup at trickle and pulse flow as well as after drainage were examined and correlations for static and dynamic holdups were derived. The correlations are based on Eötvös, Reynolds and Galileo number, using porosity and specific area for the definition of the hydraulic diameter. The correlations are applicable to a wide range of foam morphologies, pore densities and operation conditions reported