FM8S_12311

XXI International Congress of Theoretical and Applied Mechanics
Warsaw, Poland, August 15–21, 2004

Hydrodynamics of Gas Bubbling through Organic Liquids

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The bubble diameter values were calculated from theoretical model. The model has been based on the original approach by Prince and Blanch. It assumes an equilibrium between the coalescence and redispersion processes, and uses a simplified method of solution of the population balance equations. The experiments were carried out with different organic liquids in two bubble columns: – a glass laboratory column 9 cm diameter and 200 cm high with different gas distributors (porous gas distributor and spargers with holes) operated at atmospheric pressure and low temperature, with seven liquids: acetaldehyde, acetone, cyclohexane, isopropanol, methanol, n-heptane and toluene. – a stainless steel pilot plant column 30.4 cm diameter and 400 cm high (gas distributor – spargers with holes) operated at elevated pressure (up to 1.1 MPa) and temperature (up to 160oC), with cyclohexane as a liquid. Good agreement was found between calculated and experimental values.

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