FM16S_12585

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

Gravity Waves in Fluidized Suspension

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A suspension of solid particles fluidized in a liquid is classically described as an effective fluid. With this description, a solid liquid fluidized bed consist of a light fluid over a denser and more viscous one. In the case of two real fluids, the waves generated at their interface are damped. We generate such waves in a Hele-shaw cell, and study the attenuation rate and the phase velocity of the waves as functions of concentration of solid phase of the suspension, and for different viscosities of fluid phase. The results are compared to theoretical predictions obtained with the use of the Navier–Stokes–Darcy equation. In particular, an estimation of the effective viscosity is obtained from the attenuation rate measurements.

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