Lattice Boltzmann Method를 이용한 마이크로 채널 내 Droplet 형성에 대한 수치적 모사

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Numerical Simulation of Droplet formation in a Microchannel using the Lattice Boltzmann Method

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Key Words: Lattice Boltzmann Method(격자볼츠만법), Two-phase Flow (이상유동), Droplet Formation(droplet 형성)

Abstract : In this paper, the lattice Boltzmann method is discussed for simulating droplet formation in a microchannel. Droplets are formed by the hydrodynamic instability on the interface between two immiscible fluids when two immiscible fluids are imported simultaneously in a microchannel. Shan & Chen model (1993), which is a lattice-Boltzmann model of two-phase flows, is used to treat the interaction between immiscible fluids.

두 개의 입구들을 가진 충돌제트의 유동장 해석

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Simulation of Fluid Flow on the Impinging Jet Flow with two inlets

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Key Words: Impinging Jet(충돌제트), Fluid Flow(유체 유동), Stagnation point(정체점)

Abstract : The present study numerically investigates two-dimensional fluid flow in the confined jet flow with two inlets. Numerical simulations to calculate the fluid flow in the confined jet are performed for different number of inlets and Reynolds. The numerical results fo the case of impinging jet for the range of $Re \leq 250$ are steady. Up to $Re = 250$, impinging jet flow remains steady. Time-averaged wall friction and pressure coefficients along the lower wall for various Re are presented for comparative study. The present study reports the detailed information for jet flows , spanwise vorticity is apparent in the structure of the wall jet that forms as the flow develops near and along the impingement surface.