

Abstract Submitted
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3D inertial migration of microspheres in a microchannel flow: transition from radial to angular focusing¹ YONG-SEOK CHOI, Biofluid and Biomimic Research Center, Department of Mechanical Engineering, POSTECH, Korea, SANG-JOON LEE, Biofluid and Biomimic Research Center, Department of Mechanical Engineering, School of Interdisciplinary Bioscience and Bioengineering, POSTECH, Korea — Particles suspended in a square channel flow tend to be focused near the centers of each channel face due to the inertial migration. We found a transition in the particle focusing mode, from radial to angular, using digital holographic microscopy technique. 3D positions of microspheres ($d=7, 15\mu\text{m}$) in a square microchannel ($H=100\mu\text{m}$) were measured at channel Reynolds number $R_C=4.7\sim 120$. With increasing R_C , the particles migrated in radial direction in advance and then started to focus angularly toward the four equilibrium positions at around $R_C > 60$. The degree of angular focusing was also found to be linearly increased as the product of shear-rate and particle diameter increases.

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