

Abstract Submitted  
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**Inertial-Microfluidic Hydrodynamic Lens**<sup>1</sup> YOUNG WON KIM, JUNG YUL YOO, Seoul National University — A hydrodynamic lens is the methodology to focus nano- and micro-particles suspended in liquid medium. We designed and tested a single-stage inertial-microfluidic hydrodynamic lens embodied in a microchip for biomedical and environmental applications. We adopted cylindrical micro-orifices with diameters of 100–300  $\mu\text{m}$ , transporting micro-particles in sizes of 1–16  $\mu\text{m}$ . A numerical study is conducted to provide optimum design rules of the lens system. The lens performances are evaluated in terms of Stokes number considering the particle size, the orifice diameter, and the flow Reynolds number. Micro-particle tracking velocimetry ( $\mu$ -PTV) adopting Nd:YAG lasers, which freeze flowing particles, are applied, and compared with the numerical simulation in terms of the focused beam diameter. The particle focusing method suggested in this work is fairly simple, sheathless, and free from necessity of other external forces.

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