Abstract Submitted
for the DFD11 Meeting of
The American Physical Society

Interactive tuning of flow geometry for size-sensitive sorting of microparticles SASCHA HILGENFELDT, CHENG WANG, SHREYAS JALIKOP, University of Illinois at Urbana-Champaign — We show that sensitive selection, focusing, and sorting of microparticles by size is possible in microfluidic setups without the need for moving boundaries or external forces on the particles. The flow domain is flexibly and interactively shaped by the superposition of a transport flow and a microbubble-induced streaming flow. This method separates particles for which both the absolute size and the size differential are only a few micrometers, in a setup whose smallest geometric scale is about 100 microns. Size-dependent trapping, release, and focusing can be effected and used for switching and sorting [1]. Devices based on this novel concept are easy to fabricate and can be directly tailored to a variety of transported objects, including cells and vesicles.

[1] C. Wang, S. V. Jalikop and S. Hilgenfeldt, Applied Physics Letters **99**, 034101 (2011).

Sascha Hilgenfeldt
University of Illinois at Urbana-Champaign

Date submitted: 04 Aug 2011 Electronic form version 1.4