

Abstract Submitted
for the DFD16 Meeting of
The American Physical Society

Evaluation of strategies for size based separation of polydisperse vesicle suspensions KARI J. STORSLETT, SUSAN J. MULLER, University of California, Berkeley — Microfluidic devices can be used to separate suspensions of deformable particles with different intrinsic characteristics (e.g. size) with reasonable throughputs and without external labeling. Using vesicle suspensions to test microfluidic separation schemes provides insight into cell separation. Two schemes for separating vesicle suspensions by size are discussed: filtration and inertial focusing. The filter physically prevents most large vesicles from passing through. The filtrate is collected at one outlet and the larger vesicles are collected at another. This device showed good size separation between the two collected suspensions and was able to reduce the polydispersity of the collected suspensions relative to the original suspension. The inertial separation device was based on a design studied by Di Carlo et al¹. This design was modified for our suspension and showed an ability to separate the suspension by size; however, the separated suspension's polydispersity was only slightly reduced. The advantage of the inertial separation device was its greatly increased throughput. A separation strategy may be selected based on the relative importance of high throughput vs. reduced polydispersity. (1) Di Carlo, D. et al. *Anal. Chem.* **2008**, *80*, 2204-2211.

Kari Storslett
University of California, Berkeley

Date submitted: 01 Aug 2016

Electronic form version 1.4