

Abstract Submitted
for the DFD20 Meeting of
The American Physical Society

Active Particle Based Selective Transport and Release of Cell Organelles and Deformation of a Single Nucleus¹ YUE WU, MNFL, Mechanical Engineering department, Technion, Haifa, Israel, AFU FU, The Ruth and Bruce Rappaport Faculty of Medicine, Technion, Haifa, Israel, GILAD YOSSIFON, MNFL, Mechanical Engineering department, Technion, Haifa, Israel — Isolation of cell organelles is important as it enables their direct investigation as means for cell analysis. Current organelle separation methods include density-gradient centrifugation...(), immunoisolation and electromigration analysis. We applied a mobile floating microelectrode to trap and transport cell organelles (nucleus, mitochondria and lysosome) in a selective and releasable manner. This selectivity is driven by the different dielectrophoretic (DEP) potential wells on the JP surface that are controlled by the frequency of the electric field, along with the hydrodynamic shearing and size of the trapped organelles. Hence, the active carrier constitutes an important and novel ex vivo platform for manipulation and mechanical probing of subcellular components of potential for single cell analysis.

¹G.Y. acknowledges support from the Israel Science Foundation (ISF) (1938/16). Y.W. acknowledges support from the Technion-Guangdong project for postdoctoral fellowship. A.F. acknowledges support from the Israel Academy of Sciences and Humanities (IASH) Postdoctoral Fellowships for Foreign Researchers.

Yue Wu
MNFL, Mechanical Engineering department, Technion, Haifa, Israel

Date submitted: 03 Aug 2020

Electronic form version 1.4