

Abstract Submitted  
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**Dielectrophoretic Tweezers and Micropost Arrays for Cell and Particle Manipulation** TOM HUNT, Harvard Physics, HAKHO LEE, Harvard Physics, ROBERT WESTERVELT, Harvard Division of Engineering and Applied Science — We describe a micromanipulator system that uses dielectrophoresis to capture and release cells or particles. Dielectrophoretic tweezers are capable of applying hundreds of piconewtons of force to micron scale objects suspended in liquid and precisely positioning objects in three dimensions. Metal electrodes on either side of a sharp pipette tip provide the electric field gradient necessary. This manipulation technique compliments our micropost array (1) for the manipulation of particles in a microfluidic system. We will discuss applications of dielectrophoresis using hybrid integrated circuit/microfluidic devices (2) with applications that include cell sorting and tissue assembly. This work made possible by a gift from Phillip Morris and the NSEC NSF grant PHY-0117795. 1. T. P. Hunt H. Lee and R. M. Westervelt, “Addressable micropost array for the dielectrophoretic manipulation of particles in fluid,” Appl. Phys. Lett. In Press. 2. H. Lee, et Al. “An IC/ microfluidic hybrid microsystem for 2D magnetic manipulation of individual biological cells,” To appear in IEEE ISSCC, Feb. 2005.

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