

Electro hydrodynamic Filtration: Particle Trapping in a Flowing Suspension Subject to High Gradient Electric Field

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ABSTRACT

Electric field driven phenomenon has advanced the design and fabrication of various micro devices and offers potential such as increased accuracy, portability and reduced operating cost. Dielectrophoretic force due to particle polarization by a spatially non uniform electric field is a typical field driven phenomenon which has been applied in many micro devices for the segregation of particles. The purpose of this field induced segregation is to concentrate particles in certain regions of the device and subsequently detect or recover them. In the past, this was demonstrated for a number of possibilities such as separating live and dead yeast cells, separating red and white blood cells, detection of drug resistance cancer cells and bacteria, and characterization of virus particles. This presentation will demonstrate the use of this field induced trapping phenomenon in electrohydrodynamic filtration of micronized particle in which low Reynolds number filtration and dielectrophoretic removal of particulates occurs concurrently. This method offers more advantage such as in captivity efficiency compared to other method of particulate removal.