

Planar Micro-electrodes versus Cone Plate for Biological Cell Trapping and Characterization

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Abstract

The trapping and the levitation of micro scale particles has been of interest to many scientists for many years. Therefore, more than one design based on Dielectrophoresis (DEP) phenomena has been extracted for this function. The most important of these designs are as follows: the cone plate design, the concentric rings planar design, and the quadrupole planar design. In this study, a comparison between the three designs are presented using the Finite element method (FEM) in order to achieve an efficient technique for cell's trapping and levitation. This comparison based on studying the direction, distribution, the density, and the strength of the electric field, in addition to the generated DEP force on particles. COMSOL MULTIPHYSICS is proposed for introducing the simulation for the three proposed designs.

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