Abstract

This paper presents a model of an electrokinetic platform which combines three configurations (traveling, electro-rotation, and levitation) for manipulation, characterization and separation of liver cancer cells based on dielectrophoresis phenomena. The dielectrophoresis phenomena is a motion of uncharged polarizable particles towards the location of extreme field strength in a non-uniform electric field. Recently, a dielectrophoresis (DEP) became a prominent technique for manipulation and characterization of biological particles. The traveling-wave dielectrophoresis (twDEP), Electro-rotation and levitation are electro-kinetic methods which are produced by the interaction between a non-uniform electric field and polarizable particles. In this work, a 2D model of three configurations of electro-kinetic platform based on Printed Circuit Board technology (PCB) for differentiating between liver cancer cells and normal liver cells is presented and discussed.
cells. In Electronics, Communications and Computers (JEC-ECC), 2016 Fourth International Japan-Egypt Conference on (pp. 91-94). IEEE.

**Index Terms**

Computer Science  
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**Keywords**

Dielectrophoresis, Traveling, Electro-rotation, Levitation, Liver cancer cells and COMSOL