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.

Index Terms

Computer Science Circuits and Systems

Keywords

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