Effect of interelectrode gap to the manipulations of peprints using AC Electroosmosis

ABSTRACT

AC Electroosmosis (ACEO) is a phenomenon where AC signal is used to induce fluid flows and manipulates particle in a suspension medium. ACEO is a type of AC Electrokinetic (ACEK) and it has been utilized in many lab on a chip (LOC) applications featuring microfluidics technology. The effect of ACEO is electric field dependent. The generation of electric field relies on the signal supplies and electrodes geometry. Zipper electrodes is a type of electrodes that exhibit ACEO. It consist of electrodes pad and interelectrode gap fabricated on Indium Tin Oxide (ITO) coated glass. In this work, Zipper electrodes were fabricated using laser technology by RapidX250-L machine. Zipper electrodes with ACEO will manipulate suspension medium and trap particles to the center of electrode pad. Manipulation of particles is dependent on many parameters such as properties of electrode geometry (size and gap), properties of medium (conductivity, permitivity, temperature and viscosity), properties of signal (voltage and frequency) and many more. This work exhibits multiple zipper electrodes with variation of interelectrode gaps tostudy the effect of interelectrode gaps to the manipulations of particle when influence by ACEO.

Keyword: Interelectrode gap; Zipper electrodes; AC Electroosmosis, Lab on a chip