

عنوان مقاله:

Droplet Actuation by Electrowetting within a microchannel

محل انتشار:

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خلاصه مقاله:

The present study investigates the movement of water drop within a microchannel under electrowetting phenomenon. Electrowetting, by applying boundary (line) stress and the macroscopic variation in the contact angle of the surface, operates according to an electric field in order to manipulate small volumes of liquids. Applied electrostatic field makes the conducting drop to move in the direction of the field. Electrowetting phenomenon simulation has been done by application of OpenFoam software in Linux operating system and interFoam solver, by using the method of the volume of fluid (VOF). Numerical modeling has been compared with experimental results has been confirmed, and then has been investigated through three dimensional modeling of the movement of fluid drop in microchannels under electrowetting phenomenon with channel's different heights effect of temperature variation. An increase in microchannel height at fixed volume of water drop causes the velocity of drop to increase. An increase in the water temperature and in parallel with that reduction in viscosity and surface tension, the velocity of water drop increases as well.

کلمات کلیدی:

Electrowetting, OpenFoam, Microchannel height, Temperature

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