

Abstract Submitted
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Electric-Field-Assisted Droplet Dispensing on Immiscible Fluids¹

TAEWOONG UHM, Department of Chemical Engineering, POSTECH, JIWOONG HONG, SANG JOON LEE, Department of Mechanical Engineering, POSTECH, IN SEOK KANG, Department of Chemical Engineering, POSTECH — Dispensing tiny droplets is a basic and crucial process in numerous practical applications, such as printed electronics, DNA microarray, and digital microfluidics. The precise positioning with demanded size of droplets is the main issue of dispensing tiny droplets. Furthermore, capability of dispensing charged droplets on the immiscible fluids could bring out more utilities. In this work, we demonstrate the droplet dispensing on immiscible fluids by means of electrical charge concentration (ECC). This results from the fact that the droplet is generated by electric force caused by electric induction between the surface of droplet and the immiscible fluid. The temporal evolution of the droplet-dispensing process was observed consecutively with a high-speed camera. In addition, the relationship between the size of dispensed droplet and the parameters, such as physical properties of fluids and electrical field strength, is established.

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