

Abstract Submitted
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The safety of a cell in a droplet under high electric field¹ JIHOON NOH, DO JIN IM, IN SEOK KANG, POSTECH — Electrically charged aqueous droplet can be transported by electrical field in a dielectric fluid without the flow of medium (Jung et al. *J. Colloid Interface Sci.* 2008). This phenomenon can be used to transport a single nanoliter droplet in a micro channel, which can serve as biochemical micro-reactor. Because an aqueous droplet is much conductive than the dielectric fluid, there is effectively no electric field inside the droplet suspended in dielectric fluid. Therefore bio-materials are protected from electricity even under high electric field. However, when the droplet is charged near an electrode by direct contact to the electrode, there is possibility that electric field can hurt bio-materials like DNA molecules, microorganisms, cells, protein in droplet. Because of this concern, we should confirm that bio-materials in droplet moving by direct charging are safe under strong external electric field especially to organism cells. Therefore we examine the effect of electric field on the cells such as yeast, *E.coli.*, and sperm in droplet experimentally.

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