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Numerical Simulation on the Liquid Bridge Formation by the Applied Electric Pulse[1] JIN SEOK HONG, IN SEOK KANG, POSTECH — In this work, liquid bridge (LB) formation by the applied electric field is analyzed numerically. Numerical simulation captures the temporal behavior of liquid surface during the LB formation between a top plate and a bottom nozzle. Numerical results show the three stages of LB formation; interface elevation, impact/fast spreading and slow spreading/stabilization. The effect of the applied voltage pulse is also studied in terms of minimal electrical energy for LB formation. Non-linear behavior such as bubble trapping at the impact of liquid to plate is also captured and explained qualitatively. Grounded and floating plate is considered. The wetting criterion for LB formation is suggested and explained in terms of capillary pressure. The linear decrease of the final contact radius with the top plate contact angle is shown from the numerical results. In addition, the effects of the liquid properties on the dynamics are briefly discussed.

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