

### Deposition pattern of colloidal particles in electrohydrodynamic (EHD) jet printing

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(ahnnet@snu.ac.kr\*)

Electrohydrodynamic (EHD) jet printing is a method to eject ink by applying the electric potential similar to ink-jet printing that applies pressure to generate droplets. In EHD process, applying the electric potential between the nozzle and the counter electrode deforms the drop which is hanging on the tip of the nozzle and changes into a cone-jet (Taylor cone) shape. By obtaining a cone-jet shape, we can deposit and pattern materials as required. Therefore, it is important to make a stable cone-jet, which depends on the operating conditions (applied electric potential, flow rate, and working distance) and the properties of ink (viscosity, surface tension, dielectric constant, conductivity, and so on). These factors are known to have an effect on the surface profile of the deposit patterns. In this study, we have investigated the effect of ink composition on the formation of cone-jet and the conditions to control the uniformity of the deposit patterns.