

Abstract Submitted
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Analysis of eletrectrohydrodynamic jetting using multifunctional and three-dimensional tomography¹ HAN SEO KO, XUAN HUNG NGUYEN, SOO-HONG LEE, YOUNG HYUN KIM, Sungkyunkwan University — Three-dimensional optical tomography technique was developed to reconstruct three-dimensional flow fields using a set of two-dimensional shadowgraphic images and normal gray images. From three high speed cameras, which were positioned at an offset angle of 45° relative to one another, number, size and location of electrohydrodynamic jets with respect to the nozzle position were analyzed using shadowgraphic tomography employing a multiplicative algebraic reconstruction technique (MART). Additionally, a flow field inside cone-shaped liquid (Taylor cone) which was induced under electric field was also observed using a simultaneous multiplicative algebraic reconstruction technique (SMART) for reconstructing intensities of particle light and combining with a three-dimensional cross correlation. Various velocity fields of a circulating flow inside the cone-shaped liquid due to different physico-chemical properties of liquid and applied voltages were also investigated.

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