Ink Ejection Performance Analysis for a Picojet Printhead

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ABSTRACT

A transient three-dimensional conservation equations of mass and momentum was developed to simulate the droplet ejection behavior for a commercially available Picojet printhead. The interfacial flow characteristics including the ink infusion, ejection, and droplet formation are discussed in detail. In the analysis, the VOF method in conjunction with the PLIC Calculation procedure is adopted to determine the evolution of the ink surface movements. To verify the present formulation, the predictions of droplet ejection development are found to be in good agreement with micrographs. In addition, the influence of internal flow field on the droplet formation and the ink ejection performance can be explored through the simulated results. Keywords: Picojet Inkjet Printhead, ejection-process, inner fluid field, numerical simulations

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