

# Picojet 列印頭之噴墨效能分析

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## 摘要

本文針對Picojet商用列印頭，發展三維暫態理論模型與數值方法以模擬其噴墨列印行為，並詳細討論補墨、噴出及噴墨液滴生成等過程之液氣界面運動特性與流場變化。分析中，採用流體體積法VOF(Volume of Fluid)與分段線性界面重建法PLIC(Piecewise Linear Interface Construction)以決定墨水表面時變位置。理論與實驗結果比對呈現預測之液滴生成和飛行過程與顯微觀察影像一致。此外，藉由更改微噴頭之細部幾何型購、探究不同振動膜片驅動波型(包含電子脈衝時寬/振幅)及流體物理特性等設計參數，不僅可了解噴墨時艙內流場對液滴生成影響以及墨水補充率、噴墨射出時，由入墨口及噴嘴口流出之液體配置比例，更可藉由模擬結果分析、探討Picojet列印頭之噴墨效能。關鍵字：Picojet列印頭，噴墨過程，內流場，數值模擬

關鍵詞：Picojet列印頭，噴墨過程，內流場，數值模擬；液滴生成；補充率；幾何型；關鍵字；體積法

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