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Velocimetry techniques on Newtonian droplets and jets[1] JOSE RAFAEL CASTREJON-PITA, GRAHAM D. MARTIN, IAN M. HUTCHINGS, University of Cambridge, INKJET RESEARCH CENTRE TEAM — Experiments on the dynamics of Newtonian droplets and jets are described. Laser Doppler Anemometry (LDA), Particle Image Velocimetry (PIV) and shadowgraph imaging studies were performed in experimental setups in which important parameters such as pressure and velocity can be measured, in order to generate understanding and data to validate numerical models for jet and drop behavior in ink-jet printing systems. For jets with millimeter diameter, simple setups are described to obtain velocity fields within modulated and un-modulated continuous jets by the use of LDA and PIV. A drop-on-demand system capable of generating millimeter-size droplets was used with a simple novel PIV arrangement to obtain the velocity fields within impacting and coalescing droplets. These experimental setups and their instrumentation are simple to reproduce and use conventional and commercially available techniques.

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