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Breakup of micro liquid jets in crossflow JAIHO LEE, KHALED SALLAM, Oklahoma State University — An experimental research for the breakup of micro liquid jets in crossflow was performed by digital inline holographic microscopy (DIHM) using a commercial CCD sensor (Nikon D-70). DIHM is similar in setup to standard in-line digital holography except no lens is used to collimate the object beam. This eliminates two lenses from the typical optical path used for in-line holography, which results in a much cleaner hologram recording and reconstruction. In the present experimental setup, two Nd:YAG lasers were used to generate two independent laser pulses. The laser intensity was controlled by two 1/2 wave plates and a polarized beam splitter cube. The laser beams were expanded with an objective lens (M 5x) and a 15 μ m pinhole. Double pulsed holograms were recorded on the same camera frame. Velocities of micro liquid jets have been determined by the time interval between two pulses and the distance between double pulsed images on a camera frame. The velocity results had good agreement with theoretical results. Moreover, various Reynolds numbers ($\text{Re} = 1754 \sim 5282$) were used for breakup regime transitions of micro liquid jets.

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