

Abstract Submitted  
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**Effect of added polymer in free jets of a dilute polymer solution** MARIE-CHARLOTTE RENOULT, JEAN-BAPTISTE CHARPENTIER, OLIVIER CRUMEYROLLE, INNOCENT MUTABAZI, Normandie Univ, UNIHAVRE, CNRS, LOMC 76000 Le Havre, France — The instability of a free viscoelastic jet is experimentally investigated by extruding an aqueous solution containing five parts per million of Poly(ethylene oxide) into air from a sixty micrometers orifice at relative low speeds. A method of image analysis was developed to quantify the effect of the added polymer on the morphology and the stability of the jet breakup. Three main representations were considered: the area versus perimeter relation for all liquid objects detected on the images, i.e. jets and jet fragments, the equivalent diameter distribution of jet fragments and the standard deviation curve of jets profiles. The former two provide information on the morphology of jet fragments: distinction of two classes, products and residues, and existence of coalescence. The latter gives information on the jet breakup stability: measurement of the growth rate and initial amplitude of the jet instability and detection of beads-on-a-string structures in the jet interface deformation. Experimental results will be presented and compared to theory.

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