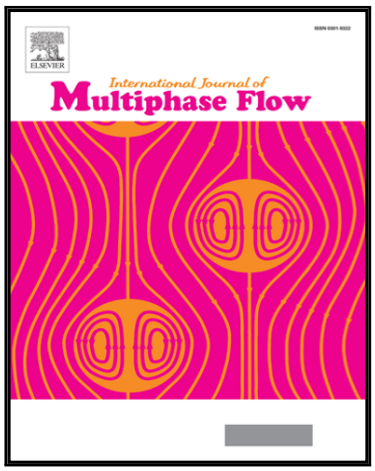

Generation of Newtonian and non-Newtonian droplets in silicone oil flow by means of a micro cross-junction

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HIGHLIGHTS

- An analysis of the characteristics of Newtonian and non-Newtonian droplets obtained with a micro cross-junction is presented.
- Before the droplet pinch-off of shear thinning dispersed phases a long thread is formed.
- With shear thinning fluids jetting is not possible at large flow rate ratio and low Capillary numbers (Ca_c<0.03)
- Mono-dispersed emulsions of Xanthan gum solutions can be obtained only in a restricted range of values of α and Ca_c with respect to water.
- An increase of the viscosity ratio is beneficial in order to obtain the transition from a droplet regime to another one for a fixed value of Ca_c and α.