

Abstract Submitted  
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**Experimental study of droplet formation of dense suspensions**

GUSTAF MARTENSSON, Chalmers U - Mycronic AB, FABIAN CARSON, Mycronic AB — As with the jet printing of dyes and other low-viscosity fluids, the jetting of dense fluid suspensions is dependent on the repeatable break-off of the fluid filament into well-formed droplets. It is well known that the break-off of dense suspensions is dependent on the volume fraction of the solid phase, particle size and morphology, fluid phase viscosity et cetera, see for example van Deen et al. (2013). The purpose of this study is to establish a deeper understanding of the formation process of droplets of dense suspensions. Previous experiments have utilised a filament break-off device (FilBO) developed in-house. These experiments utilise an ejection device based on rapid volumetric displacement of the fluid through a conical nozzle. The suspension samples consist of a resin-based flux and spherical particles with diameters of  $d_p = 5 - 25\mu\text{m}$ . A droplet of of the suspension with a volume of  $V_{\text{drop}} = 2 - 50 \text{ nl}$  is ejected from the nozzle. Correlations between droplet speed and the temporal development of the volumetric displacement will be presented. Further results relating break-off length and rate versus particle diameter, volume fraction and probe speed will be presented.

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