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Producing colloids with microfluidics NICOLAS PANNACCI, HERVE WILLAIME, PATRICK TABELING, MMN, UMR 7083, ESPCI-CNRS — Submicronic emulsions are commonly used in pharmaceutical, food, cosmetic and material industries. Standard microfluidic tool is particularly convenient to produce in a very controlled way either droplets of typical diameter ranging from 10 to 300 microns with a perfect monodispersity (<3%), or double emulsions as well as double droplets (janus). We report the use of microfluidic devices to produce submicronic objects. We use a hydrodynamic flow-focusing that has the advantage to generate nanodrops in a way that is slightly dependent on the fluids used. The control on such a flow authorizes the adjustment of the diameter of the colloids formed. We will show brownian particles from 860 nm to 1.3 μm in diameter obtained in such way and their clustering into crystals thanks to their high monodispersity. These first experimental results are very promising and make evident the great potential of micro and nano-fluidics to produce nano-emulsions or colloids with very controlled size that metamaterials can require.

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