Title: **Microfluidic-based bottom-up assembly of nanocellulose fibres**

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Aligned bacterial cellulose nanofibers (BCN) have been produced, as reported in literature, in static conditions (BCN-SC) using Komagateibacter xylinus bacteria, but one of the drawbacks of this approach, is their limited length as defined by the experimental conditions used in this method. The aim of this study is to develop a method to overcome this limitation and to enable the continuous production of longer aligned BCN using a microfluidic (MF) approach, hereafter called BCN-MF fibres. To do so, a microfluidic device is designed using 3D modelling and 3D printed by Stereolithography (SLA), once cellulose-producing bacteria were incorporated inside the microfluidic device, the whole process is optimized, and production of fibres is obtained. The BCN-MF fibres were characterized by optical microscopy and scanning electron microscopy (SEM), moreover the use of polarized light microscopy showed that those fibres are aligned. To conclude, BCN-MF fibres show the same alignment as BCN-SC fibres, meaning that this new method can produce similar but longer fibres thanks to the continuous-flow approach.