

Microfluidic synthesis of oil -drop templated cellulose microstructures

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Cellulose as the most abundant natural polymer is renewable, biodegradable, biocompatible and is important in the manufacture of numerous products such as paper, textiles and pharmaceuticals. However cellulose is difficult to process in solution, because of its intra - and intermolecular hydrogen bonds. Here, we report a single step approach for fabricating mineral oil-drop templated cellulose microstructures (microfiber, microtube, microcapsules) using a microfluidic system. The production of the various cellulose microstructures are based on the regeneration of cellulose from ionic liquid (IL) by simply contacting with water in a microchannel. Both of size and morphology of the cellulose microstructures were simply controlled by the flow rates of the oil phase, cellulose solution with IL, and aqueous phase.