

Electronic Supplementary Information

Novel PDMS cylindrical channels that generate coaxial flow, and application to fabrication of microfibers and particles

S1. Generating alginate fiber in general rectangular channel

In rectangular channel, the fibrous structure can be fabricated but the cylindrical fiber generation was very difficult, and this method was unstable. Figure S1 shows the stream of alginate solution in rectangular channel as same dimension of cylindrical microfluidic channels, and alginate fibers were generated by changing flow rate. As the alginate become polymerized while moving through outlet channel, the friction between polymerizing alginate stream and channel wall become increase. The stream line was diverging, and when the stream line touches the side wall, the clogging is generated. The coaxial shape channel enhances situation greatly.

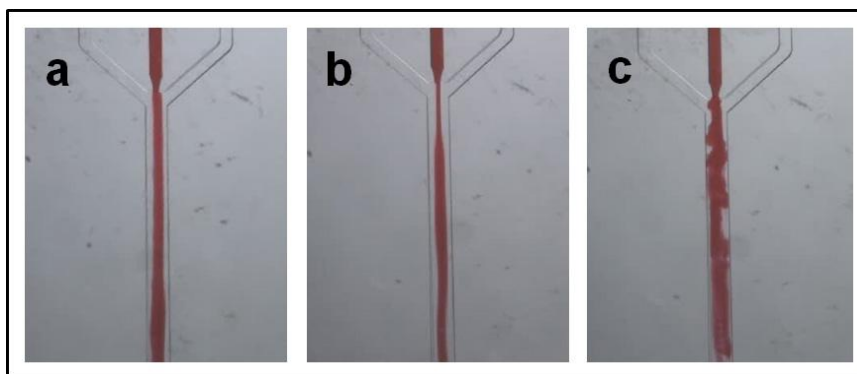


Figure S1. (a) Generation of fiber using CaCl_2 solution with flow rate of 20ml/h, (b) Generation of fiber using CaCl_2 solution with flow rate of 40ml/h, (c) Clogging the channel with flow rate of 40ml/h

M1. The production of alginate particles

M2. The production of alginate fiber

M3. The production of different FITC-BSA concentration fibers