

High throughput synthesis of silver nanoparticles in a microchannel reactor

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We have investigated a novel continuous synthesis system of nanoparticles using a microchannel reactor. Compared to conventional batch reactor systems that have limitations in scaling up nanoparticle fabrication, the continuous flow synthesis developed in the work could offer a simple but powerful route for large scale production of diverse nanoparticles with desired functionalities. Here, we fabricated Ag nanoparticles in microscale channels of microflow control system (MFCS) under precisely controlled reaction conditions. We demonstrated that the morphological properties of the nanoparticles synthesized via the MFCS depend strongly on flow rates, temperatures, mean residence time, and flow types (i.e., laminar flows and pulsed flows).