

Toward Flow-Assisted Synthesis of Functional Nanomaterials as Carriers for Drug Delivery Applications

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The mesoporous silica nanoparticles (MSNPs) have been recently attracted with increasing attention as carriers in biomedicine. The porous structure, morphology, size, and surface properties of nanomaterials have been found to be facily tunable for the purposes of drug loading, controlled drug release and delivery, and multi-functionalization. Herein, we introduce continuous synthesis of functional nanomaterials in microfluidic devices. The MSNPs spheres with monodispersed size were successfully synthesized a continuous-flow droplet microfluidic system in a single step and one-flow strategy. Further, we propose with preliminary results on the synthesis of magnetic mesoporous silica nanoparticle (M-MSNPs) based micro-robot by the multi-step wise microfluidic approach.