

Flow chemistry to control the synthesis of nano and microparticles for biomedical applications

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In this article we review the flow chemistry methodologies for the controlled synthesis of different kind of nano and microparticles for biomedical applications. Injection mechanism has emerged as new alternative for the synthesis of nanoparticles due to this strategy allows achieving superior levels of control of self-assemblies, leading to higher-ordered structures and rapid chemical reactions. Self-assembly events are strongly dependent on factors such as the local concentration of reagents, the mixing rates, and the shear forces, which can be finely tuned, as an example, in a microfluidic device. Injection methods have also proved to be optimal to elaborate microsystems comprising polymer solutions. Concretely, extrusion based methods can provide controlled fluid transport, rapid chemical reactions, and cost-saving advantages over conventional reactors. We provide an update of synthesis of nano and microparticles such as core/shell, Janus, nanocrystals, liposomes, and biopolymeric