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Applications of microfluidic chips in functional polymers

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Microfluidics is a multidisciplinary science integrating engineering, physics, chemistry, and biotechnology. The application of droplet-based microfluidic technology in polymer science is an emerging research field. We summarize currently developed droplet-based microfluidic technologies of our lab for functional polymers. For example, synthesis of core-shell structure microcapsules with dual pH-responsive drug release function; microfluidic assisted synthesis of silver nanoparticle–chitosan composite microparticles for antibacterial applications; synthesis of uniform core–shell gelatin–alginate microparticles as intestine-released oral delivery drug carrier; synthesis of uniform poly (d, l-lactide) and poly (d, l-lactide-co-glycolide) microspheres using a microfluidic chip for comparison; and microfluidic one-step synthesis of Fe_3O_4-chitosan composite particles and their applications, and the others.

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