

Utilizing anisotropic multifunctional microparticles fabricated by flow lithography techniques

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Combining photolithography with microfluidic methods, flow lithography (FL) has been a powerful synthesis technique that enables the mass-production of microparticles with complex geometrical and chemical patterns. Anisotropic multifunctional microparticles fabricated by FL have been utilized in a wide range of applications from MEMs to biotechnology because the controlled shapes and chemical patterns in particles can provide unique function for each application. For example, multifunctional encoded microparticles have been designed for the rapid screening of target biomolecules in a complex biological mixture, bearing over unique codes to identify loaded probes. Another example can be pH-sensitive, multi-modulated, anisotropic microparticles for tumor-targeted drug delivery. Moreover, large-scale arrays of the anisotropic multifunctional microparticles have been used for anti-counterfeiting applications. In this presentation, we introduce how to fabricate anisotropic multifunctional microparticles by flow lithography techniques, and demonstrate how to utilize these particles for diagnostics, drug delivery, and anti-counterfeit.