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(54) **NEXT-GENERATION FLUIDICS TECHNOLOGY FOR EFFICIENT AUTONOMOUS SYNTHESIS OF COLLOIDAL NANOPARTICLES**

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(57) **ABSTRACT**

Various examples are provided related to nanoparticle synthesis. In one example, a system includes a self-driven fluidics platform including a chemical handling module and a reactor module. A mixer can form an initial mixture and deliver it through the ejector port as part of a segmented flow. The reactor module can control environmental conditions during synthesis of a nanoparticle. A flow reactor includes a channel that allows the segmented flow to move through the flow reactor via the channel and at least one observation window to enable real-time characterization of nanoparticles in individual droplets in the segmented flow through the flow reactor. In another example, a method comprises forming and flowing a segmented flow of droplets into a reactor, measuring a target property of nanoparticles in droplets in the segmented flow, and adjusting formation of droplets added to the segmented flow based upon the measured target property.