

Greener Nanomanufacturing: Opportunities to Optimize Performance, Efficiency, and Safety in the Production of Nanoscale Materials

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Presentation

Abstract: As nanotechnology emerges from its "discovery" phase, a wide range of promising applications have been uncovered that could provide considerable benefit to society and the environment. These applications have been developed with small amounts of painstakingly prepared nanomaterials. To advance these applications, we must develop new methods of production that address the limitations of discovery scale approaches. These new methods need to scale to higher throughput, provide well-defined material in a reproducible fashion, reduce waste and enhance safety. In this presentation, I will discuss some of the challenges faced in greening the nanomanufacturing process, describe how the principles of green chemistry can guide the development of greener processes, offer examples of initial successes in greener syntheses, purification and continuous flow production and highlight some areas that provide on-going challenges.