

Abstract Submitted
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Hybrid Nanomaterials: One Dimensional Nanoparticle Assemblies NIKHIL SHARMA, DARRIN POCHAN, Materials Science & Engineering, University of Delaware — One-dimensional nanoparticle assemblies have potential applications in sensing, as plasmon and energy waveguides and in the conduction of novel signals such as phonons and spin states. Herein we present two strategies for the fabrication of such assemblies. Micro and meso-scale particle assemblies have been produced via a coaxial electrospinning process that results in assemblies of particles (silica and silver) encapsulated within a polymer nanofiber (polyethylene oxide). The method has been demonstrated successfully in the creation of 1D assemblies of differently sized silica particles. The effect of change in solution concentrations and relative flow rates in internal and external channels of the coaxial electrospinning apparatus on the structure of these assemblies has been investigated. Nano-scale assemblies of gold particles have been prepared by templating gold nanoparticles on a 20 amino acid peptide that displays laminated morphology. These assemblies are formed as laterally spaced one-dimensional nanoparticle assemblies.

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