

Abstract Submitted
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Tunable Nanoparticle Arrays by Immobilizing Nanoparticles on Polymer Single Crystal Surface¹ BING LI, CHRISTOPHER LI, The Department of Materials Science and Engineering, Drexel University — 2-Dimensional nanoparticle (NP) array has been extensively investigated and a number of techniques are available for fabricating this unique structure. One remaining technical challenge is controlling the inter-particle spacing, which could directly leads to numerous applications. We herein report a novel means to achieve tunable NP arrays by immobilizing AuNPs on polymer single crystal surface. The single crystals of thiol-terminated polyethylene oxide (PEO) were incubated in a monodisperse gold sol. Strong Au-S chemical bonds were formed between the AuNPs and the PEO single crystal surfaces. The inter-particle spacing was controlled by the crystallization temperatures, thus the thickness of the PEO single crystals, the incubation time, and the annealing temperatures after incubation. This research might lead to a novel method to fabricate NP arrays with controlled inter-particle distance from a few nanometers to ~ 100 nm distances.

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