

Abstract Submitted  
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**Thermotropic Gold Nanorod Liquid Crystal Phases<sup>1</sup>** PAUL LUCHETTE, PETER PALFFY-MUHORAY, Liquid Crystal Institute - KSU — Large scale, oriented arrays of gold nanorods (Au NR) are of interest for a variety of applications, such as negative index materials and hyperbolic dispersion lenses. We report a method for preparing lyotropic, nematic LC phases of Au NR by combining polymer coated Au NR with a low molecular weight ( $< 3200$ ) polymers solvent. The solvent system was prepared by reacting hydroxymethyl siloxane and styrene via a hydrosilylation reaction. At appropriate ratios, these mixtures exhibit liquid crystalline phase behavior. Lyotropic LC phases of Au NR were observed for Au NR with aspect ratio above 4, diameter  $\sim 15$ nm, using either linear or cyclic siloxane-styrene polymers as the solvent. Compared with other preparation methods such as lithography or evaporative deposition that produce static films, these self-assembled thermotropic LC phases of Au NR may be re-oriented in response to thermal or electric stimulus.

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