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Size effect of properties in hybrid of gold nanoparticles and calamitic mesogen[1] CHIH-HAO YU, CHRIS WELCH, BAI J. TANG, CHRISTOPMER J. SCHUBERT, GEORG H. MEHL, Department of Chemistry, University of Hull — In this contribution we describe the synthesis and investigation of Au NPs functionalized with organic mesogenic groups which self-assemble into liquid crystalline phases. A nematic mesogenic liquid crystalline laterally reacts with functionalized gold via a siloxane group using Karstedt's catalyst. Compared to earlier work where NPs were in the size of 1.5-2.5 nm, we report here on larger than 5 nm sized particles. The synthesis of the particles is based on a new methodology using digestive ripening and synthesis functionalisation of the organic groups. This example may open up a protocol for liquid crystal molecules encapsulated in nanoparticles. Properties of the calamitic mesogen encapsulated gold nanoparticles have been investigated by HRTEM, NMR, UV/Vis, differential scanning calorimetriy (DSC), optical polarizing microscopy (OPM).

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