

Abstract Submitted  
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**Magnetic ToF GISANS on self-assembled nanoparticles**<sup>1</sup> ARTUR GLAVIC, Oak Ridge Natl Lab, Quantum Condensed Matter Div, Oak Ridge, TN 37831 USA, ELISABETH JOSTEN, OLEG PETRACIC, Juelich Centre for Neutron Science JCNS-2 and PGI-4, Juelich, Germany, VALERIA LAUTER, Oak Ridge Natl Lab, Quantum Condensed Matter Div, Oak Ridge, TN 37831 USA — Nanoparticle superlattices can be considered as novel type of materials with controllable electronic, optical and magnetic properties. Their building blocks are nanoparticles (or “nanocrystals”) from a metallic, metal-oxide, or semiconducting material or hybrid between different materials. Using self-assembling techniques it is possible to create a large amount of highly ordered 3D structures, which we have investigated for their structural and magnetic properties. The lateral ordering is quantified using electron microscopy and grazing incidence small angle X-ray scattering (GISAXS) [1,2,4]. The macroscopic magnetic behavior and correlations are investigated by superconducting quantum interference device (SQUID) magnetometry [1,3]. Utilizing the time of flight (ToF) magnetism reflectometer at SNS the magnetic correlations have been studied with polarized GISANS and PNR.

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