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Investigation of organically linked iron oxide nanoparticle supercrystals using SAXS and SANS

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The particular innovative potential of the SFB 986 is its ability to develop macroscopic materials –structured in a multi-scale way, designed "on the drawing board". Scattering techniques are a powerful tool to investigate these materials on several length scales.
Due to their different sensitivity to the included phases, SAXS (P07 at PETRA III, Hamburg) and SANS (SANS-1 at FRM II, Garching) were used to characterize the structure of organically linked iron oxide nanoparticle supercrystals. In addition, the self-assembling process of the coated nanoparticles and the materials behaviour during a heat treatment were studied *in situ*.
The results of these experiments were used to optimize the production process of the hierarchical materials system.

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