

## **Nanoparticle Hybrid systems: interactions, local structure and mobility**

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Industrially relevant polymer-particle hybrid systems are almost never dilute. A fundamental understanding of processes in dense nanoparticle systems (~10-100 nm) requires excellence in both, characterization and modeling. My project aims at the investigation of aggregation and/or phase separation processes in concentrated nanoparticle dispersions and polymer-particle mixtures in order to rationalize the relevant design parameters responsible for long-term stability in novel nanoparticle-polymer hybrid materials. The system used is (modified) silica nanoparticles covalently bound or not with polyacrylic acid.