

Master's Thesis:

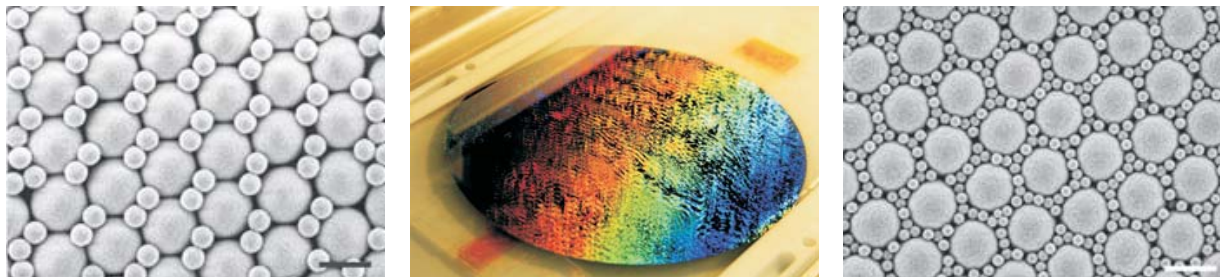
Synthesis of Stable Colloidal Crystals via Co-Self-Assembly

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Colloidal crystals with highly ordered 2D or 3D structures have received a great deal of attention in recent years because of their applications in the fields of photonics, catalysis, lithography and sensors, as well as fundamental research into crystal formation.



The goal of the project is to synthesize a stable, reproducible, functional material with a well defined complex architecture consisting of crosslinked Nano- and Microparticles. Your work will combine well established methods for the synthesis of Nano- and Microparticles with the surface modification of these particles to produce a range of reactive groups (UV-activated binding sites, catalytic crosslinkers, hydrogen-bonding systems,...). You will analyze the materials with state of the art high-resolution microscopy methods (transmission electron microscopy (TEM), scanning electron microscopy (SEM), and optical microscopy).

Learning outcome

The project includes a wide range of very different scientific disciplines. The chemical synthesis of small, functional molecules (classical synthetic chemistry), the synthesis of Nano- and Microparticles using different protocols, the production of highly ordered crystals via different methods and setups and finally the microscopy (TEM, SEM, optical) of the obtained materials will give you a broad knowledge of up to date Nanotechnology.