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# Investigation of dynamics in colloidal systems by dynamic light scattering

The MID instrument at the European XFEL performs coherent X-ray scattering experiments in material science of hard and soft condensed matter. The summer student project includes the synthesis of nanoparticle suspensions, as well as their characterization using a dynamic light scattering (DLS) setup in MID's laboratory.

In the first part, standard colloidal samples of gold or silica nano-particles are investigated. The data analysis of the temporal laser light fluctuations reveals the nano-particle size, size-distribution, as well as the dependency of the dynamics on the temperature and other solution parameters. The second part focusses on the synthesis of monodisperse silica nano-particles using the Stöber synthesis. Finally, the synthesized particles will be characterized with respect to their size and size distribution and compared to the commercial standards.

#### Group

XFEL\_E1\_MID

### **Project Category**

A3. Soft-matter sciences

## **Special Qualifications**

## **DESY Site**

Hamburg

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