

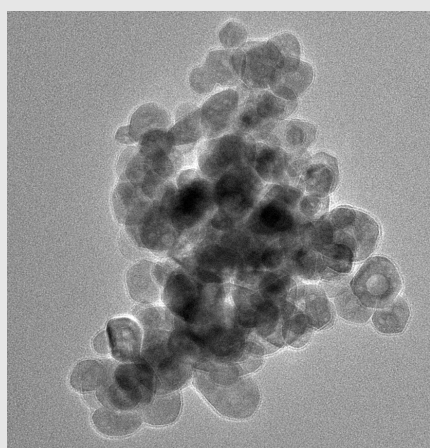
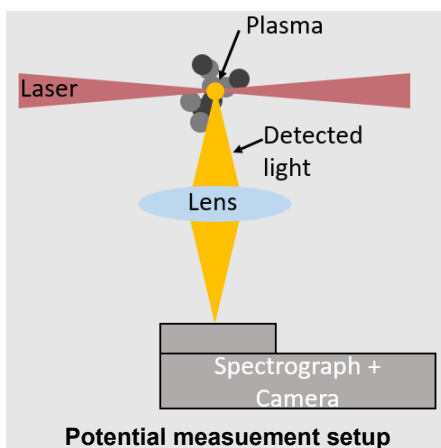
Project thesis/ Master thesis

Investigation of aerosols by spectrally and temporally resolved measurements with phase-selective laser-induced breakdown spectroscopy (PS-LIBS)

Supervisor: Peter Lang

Start: As of now

Topics: Optical metrology, laser-induced breakdown spectroscopy



TEM-image of a nanoparticle aggregate

The central topic of the working group "Particle Measurement" at the Institute of Engineering Thermodynamics (LTT) is the investigation/development of suitable methods for the characterisation of nanoparticles

Laser-induced breakdown spectroscopy (LIBS) is a laser-optical measurement technique in which nanoparticles are heated and vaporized with the aid of a laser and ionized to form a plasma. The plasma then emits light whose spectrum is characteristic of the elemental composition. By analyzing the spectrum, it is thus possible to determine the composition of the material. In phase-selective LIBS (PS-LIBS), the energy of the laser is reduced so that only the particle material is ionized, but not the gas atmosphere around the nanoparticles. This makes it easier to determine the composition of the material.

In this work, PS-LIBS is to be tested on various aerosols. A spectrograph in combination with an intensified camera will be used for this purpose.

Students should have an interest in optical measurement technology and be able to work independently. Basic knowledge of the above-mentioned subject area is advantageous, but not essential.

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