

We are one of the youngest universities in Germany and we think about possibilities instead of limitations. We are situated in the Ruhr metropolitan area and organized in 11 faculties where we develop ideas for the future. We are strong in research as well as teaching, encourage diversity, and we strive for real educational equality.

The **University of Duisburg-Essen** at the **Campus Essen** in the Faculty of Chemistry, chair **Technical Chemistry I** (Barcikowski group) is currently looking for a

**Scientific Co-Worker/ Chemist (at university)
(German pay grade 13 TV-L)**

Your main research topic:

Nanoparticles and nanoscale composite materials already secure the heartbeat of industry and social prosperity. The wide range of applications e.g. in semiconductor technology, medicine and catalysis and their high development rate requires a constant development of new tailor-made nanomaterials and hence, synthesis methods, which in addition to ecological standards and sustainability also have to concur with industrial flexibility and economics. The very young method of pulsed laser ablation in liquids, which emerged from these paradigms, fulfills these requirements and has been growing exponentially in terms of publication numbers for over two decades. With this project, you too can provide a substantial contribution to this growth and development.

While laser ablation of metals and oxides in water is already used in industrial research, laser ablation of metals and alloys in solvents has been largely underrepresented. Compared to water, the use of solvents allows the synthesis of even smaller nanoparticles (<3 nm) with a homogeneous element distribution (alloy) and functionality (carbon shell) but has so far only at low productivity. The aim of this project is to transfer the mechanisms already known and established from ablation in water, on to laser ablation in solvents and to understand the role of solvent molecules in the ablation process with respect to scalability. In order to gain a deeper understanding of the bottlenecks of productivity in solvents, you will perform studies including single pulse experiments with imaging shadowgraphy (established method), analysis of the gaseous and liquid decay products (GC-MS, HPLC, NMR etc.) and the nanoparticles itself to gain insight on the underlying processes for tailoring the final nano-properties.

We offer:

- the opportunity to do a doctorate in an innovative and rapidly expanding research field (<https://www.youtube.com/user/nanofunction>)
- a lived cooperation with project partners from catalyst development
- a modern equipment including new and very well-equipped chemistry-, nanoanalysis- and laser-laboratories in the Nano-Energy-Technic-Centre (NETZ; www.uni-due.de/cenide/netz)
- a young, dynamic and motivated team with joint ventures (<https://www.uni-due.de/reichenberger-group/>).

Your profile:

University degree in natural science (Diploma or master degree), ideally in chemistry with a focus on analytical chemistry or nanomaterials.

You should provide:

- sound knowledge in the field of organic chemistry and nanosciences
- experience in analysis techniques of organic chemistry (e.g. NMR, GC-MS, HPLC, IR, Raman, TOC helpful) and / or synthesis of nanoparticulate colloids and their analysis (UV-Vis, zeta potential, size analysis)
- prior knowledge in the area of schlieren and shadowgraphy techniques and handling lasers and optical structures (helpful but not a requirement)
- independent, conscientious and precise way of working
- good to very good spoken and written English skills

Starting Date: July 1st 2020

Period of contract: 36 Months

Working hours: 67% of a full time position

Application deadline: May 6th 2020

The university of Duisburg-Essen is dedicated to increase diversity upon its employees. We particularly aspire an increased portion of women as scientific co-workers and warmly encourage women with the necessary qualifications to apply for this position.

According to German gender equality law, women with equal qualification will be preferentially hired. Applications of suitable severely disabled people and equals according to § 2 Abs. 3 SGB IX are desired.

Please address your application with the usual papers (Motivation letter, CV, and all certificates) using the position ID **291-20** as one PDF-file to Dr. Sven Reichenberger, Universität Duisburg-Essen, Fakultät für Chemie, 45117 Essen, Telefon 0203/379-8116, E-Mail sven.reichenberger@uni-due.de.

Logos: Total E-Quality und Zertifikat familiengerechte Hochschule