

We are one of the youngest universities in Germany and our thoughts are driven by possibilities and not limitations. Centered within the metropolitan area Ruhr we are developing new ideas for the future at our 11 faculties. We are strong in science and teaching, we live diversity, support potentials and support justice in education, not by name only.

The **University of Duisburg-Essen (UDE)** at the **Campus Essen** at the Faculty for Chemistry, Technical Chemistry I is searching for a

Scientific Researcher (f/m/d)
(salary group 13 TV-L, 67 %)

The Technical Chemistry I is one of the largest institutes at the Faculty for Chemistry and focuses on the synthesis of nanomaterials by laser processing in liquids and their integration into real world applications. We currently employ a young, innovative and highly motivated team of more than 20 PhD students and aspire not only to understand fundamental processes in nanoscience but also aim to develop the resulting materials into real-world applications.

Your tasks:

Have you ever worked with gold nanoparticles and wondered what will happen to their localized plasmon resonance when their size is reduced below 3 nm? To explore and understand this will be the basis of this project. Hence, you will mainly synthesize and characterize fully inorganic coinage metal and alloy particles in the underexplored transition regime (2-3 nm), where neither plasmon resonance nor photoluminescence are dominant. You will use laser fragmentation in liquids for particle synthesis in the absence of any organic ligands. Consecutively, electron donating and electron withdrawing organic and inorganic additives will be added to explore to which extent you can use them to turn on/off plasmonic or fluorescent electronic states in these particles. Characterization of the generated particles will be done using UV-Vis spectroscopy, time-resolved fluorescence spectroscopy, TEM and analytical ultracentrifugation.

Your profile:

- Master of Science degree in Chemistry with a background in Physical Chemistry and/or Nanomaterials
- Knowledge in synthesis, handling, and characterization of inorganic colloidal nanoparticles required
- Solid understanding of optical properties of metallic particles on the nanoscale particularly on the size-dependent occurrence of plasmon resonance and photoluminescence is required
- Experience in synthesis, handling and characterization of colloidal metal nanoclusters (< 2 nm) is highly desirable
- Previous experience with pulsed lasers and optical setups is desired but not required
- Familiarity with research data documentation and design of experiments as well as a thorough, independent, and structured way of working are highly beneficial
- Ability to work in an international and interdisciplinary team

We offer:

- Exciting opportunities in the emerging research field of noble metal nanoclusters
- Close collaboration within a DFG cooperative project with partners from academia
- State of the art equipment in modern chemistry, laser, and analytical laboratories
- You will be part of a young and highly motivated team which prioritizes cooperation over competition, and you will have the opportunity to participate in frequent social activities
- The opportunity for scientific qualification in conjunction with a dissertation (Dr. rer. nat.)

Anticipated start of employment: 2023-10-01
Duration of employment: 36 months
Working hours: 67% of a full time position
Application deadline: 2023-08-17

Please direct your application with all documents via E-mail (cover letter, CV and certificates) summarized as a joint PDF and reference to this application (application number 431-23 to Dr. Christoph Rehbock, Universität Duisburg-Essen, Fakultät für Chemie, 45117 Essen, Phone ++49201/183-3040, E-Mail Christoph.rehbock@uni-due.de).

Information about the faculty and the institute can be found under:

<https://www.uni-due.de/barcikowski-group/>

<https://www.youtube.com/@nanofunction>

The University of Duisburg-Essen aims to increase the diversity of its members (see <http://www.uni-due.de/diversity>). It also aims to increase the number of women among its academic staff, and therefore encourages women with pertinent qualifications to apply. Women with equal qualifications will be preferred in accordance with state equality laws. Applications of qualified disabled persons in the legal sense of § 2 para. 3 SGB IX are also welcome.

