

We are one of the youngest universities in Germany and think in terms of possibilities, not limitations. In the heart of the Ruhrregion, we develop ideas of the future at our 11 faculties. We are strong in research and teaching, live diversity, support potential and are highly committed to an educational equality that has earned this name.

The **University Duisburg-Essen** offers at the **Campus Duisburg** in the Faculty of Engineering, Department of Mechanical and Process Engineering a

Research Assistant (f/m/d)

"Characterisation of soot and new energy materials along the process chain"
(Salary: TV-L 13)

Main research topics and duties:

While technical carbon black has long been traded mainly as a filler, e.g. in car tyres, and as a black pigment, conductive carbon blacks are becoming increasingly important for applications in the field of energy storage (e.g. battery) and conversion (e.g. fuel cell). Carbon blacks are mostly used in electrocatalysis as base materials or support materials for the production of nanoparticulate electrocatalysts. The aim of the project is the development, optimisation and validation of standardisable measurement methods, in particular analytical centrifugation (AZ), which enable the characterisation of technical soot with regard to particle size, morphology and surface properties along the value chain. This should make it possible for the first time to quantitatively trace process- and further processing-related variations from the "original carbon black" directly after synthesis through all subsequent steps to the electrocatalyst, i.e. the "Pt-functionalised carbon black". Ideally, this will make it possible to adapt post-processing steps to changed initial conditions at an early stage. The method to be developed is based on the investigation of powder properties via dispersion behaviour, i.e. the reaction of a powder to different probe solvents. In the next step, the knowledge gained from this will be applied to the processing of new materials in the energy sector (e.g. electrolysis).

Within the scope of the job, opportunities for further scientific qualification (PhD) will be offered.

We offer:

- Exciting development potential in the context of research on a sustainable, future-oriented technology.
- Creative interdisciplinary and international environment, with the possibility to contribute and implement own ideas
- New and very well equipped laboratories and analytical technology
- A young, open-minded and motivated team awaits you

Requirements:

- Successfully completed, relevant natural science or engineering studies
- Interest in disperse systems and nanoparticle technology
- Ability to learn quickly and to work reliably and responsibly
- Ability to work in a team
- Willingness to contribute to an interdisciplinary research project

Tasks:

- Development of standardisable methods for the characterisation of soot along the process chain
- Planning, realisation and quantitative evaluation of tests for powder dispersion and characterisation
- Transfer of the knowledge gained to other new materials in the energy sector
- Close cooperation with the project partners, especially in the field of electrochemical devices and measurement technology

Proposed starting date: 01.08.2021 or later
Duration of contract: until 31.03.2025
Working hours: 100% of a full-time position
Application deadline: 11.07.2021

The University of Duisburg- Essen pursues the goal of promoting the diversity of its members (see <http://www.uni-due.de/diversity>)

It aims to increase the proportion of women among academic staff and therefore strongly encourages relevantly qualified women to apply. In accordance with the State Equal Opportunities Act, women with equal qualifications are given preferential consideration.

Applications from suitable severely disabled persons and persons of equal status within the meaning of § 2 Para. 3 SGB IX are welcome.

Please send your application with the usual documents (curriculum vitae, list of publications if applicable, copies of certificates) as a single application to Prof. Doris Segets, University of Duisburg- Essen, Faculty of Engineering, 47057 Duisburg, telephone 0203 379 8230, e-mail: doris.segets@uni-due.de, quoting the reference number **436-21**.

For information about the faculty and the advertiser, see:

<https://www.uni-due.de/ivg/rf/index.php>
www.uni-due.de

