



Universität Hamburg

DER FORSCHUNG | DER LEHRE | DER BILDUNG



RESEARCH ASSOCIATE FOR THE PROJECT “BIOVALCAT” § 28 SUBSECTION 3 HMBHG

Institution: Faculty of Mathematics, Informatics and Natural Sciences, Department of Chemistry, Institute of Technical and Macromolecular Chemistry

Salary level: EGR. 13 TV-L

Start date: as soon as possible, fixed until 30.04.2027 (This is a fixed-term contract in accordance with Section 2 of the academic fixed-term labor contract act [Wissenschaftszeitvertragsgesetz, WissZeitVG]).

Application deadline: 2024-06-18

Scope of work: part-time

Weekly hours: 50 % of standard work hours per week

Your responsibilities

Duties include academic services in the project named above. Research associates may also pursue independent research and further academic qualifications. They may also pursue doctoral studies outside of working duties.

The five-year project “BioValCat” (Enhanced Biomass Valorisation by Engineering of Polyoxometalate Catalysts), funded by the ERC Consolidator Grant 2022, aims to enable 100% carbon efficiency from complex biomass by developing innovative POM catalyst-solvent systems for aerobic and anaerobic applications and to develop this into an innovative and widely applicable process technology.

Polyoxometalates (POMs), as a unique class of anionic polynuclear metal-oxo clusters with high structural diversity at the atomic level, are highly promising candidates for the selective oxidation of biomass to organic acids. In the field of homogeneously catalysed, selective biomass conversion, POMs are already used intensively. One example for the potential of POMs is the already commercialised OxFA process, in which biomass is oxidatively converted to formic acid in aqueous systems.

Recent research has shown that POM catalysts can completely suppress the undesired total oxidation to CO₂ under oxidative conditions when methanol is used as a (co-)solvent. Manipulating molecular catalysts such as POMs in solution by tuning the solvent properties and gas atmospheres introduces a new paradigm in homogeneous-catalysed biomass valorisation technologies. The proposed BioValCat project aims for developing this technology towards an industrial viable biomass valorisation process by laying the foundations for a scalable, safe and economic process for the oxidation of biomass to valuable carboxylic acid esters.

A particular focus of the position advertised here will be on the synthesis and characterisation of promising POM catalyst structures. The goal is to overcome the challenges of using POMs in classical homogeneous catalysis like expensive product isolation and catalyst recycling accompanied by precipitation or undesired POM reactions with substrates or intermediates. The aim is to combine high catalytic activity and selectivity of POMs with ease of handling and facile separation. The prepared POM catalysts will be characterized in depth to understand the structure/composition of the obtained materials and to develop material optimisation concepts for enhanced catalytic performance. Appropriate analytical methods (e.g. ICP-OES, XRF, XRD, FT-IR, TGA, UV-Vis, Raman, EPR and NMR) will be used to characterise the POM catalysts and to understand the POM-solvent interactions.

Your profile

A university degree in a relevant field.

This position is preferably suitable for peoples with a university degree in inorganic chemistry with a focus on the synthesis and characterisation of organometallic and oxide compounds. Experience in working safely in chemical laboratories and previous knowledge of chemical reaction engineering and/or technical chemistry is desirable.

We offer



Reliable remuneration based on wage agreements



Continuing education opportunities



University pensions



Attractive location



Flexible working hours



Work-life balance opportunities



Health management



Educational leave



30 days of vacation per annum

Universität Hamburg—University of Excellence is one of the strongest research educational institutions in Germany. Our work in research, teaching, educational and knowledge exchange activities is fostering the next generation of responsible global citizens ready to tackle the global challenges facing us. Our guiding principle “Innovating and Cooperating for a Sustainable Future” drives collaboration with academic and nonacademic partner institutions in the Hamburg Metropolitan Region and around the world. We would like to invite you to be part of our community to work with us in creating sustainable and digital change for a dynamic and pluralist society.

The Free and Hanseatic City of Hamburg promotes equal opportunity. As women are currently underrepresented in this job category at Universität Hamburg according to the evaluation conducted under the Hamburg act on gender equality (Hamburgisches Gleichstellungsgesetz, HambGleiG), we encourage women to apply for this position. Equally qualified and suitable female applicants will receive preference.

Severely disabled and disabled applicants with the same status will receive preference over equally qualified non-disabled applicants.

Instructions for applying

Contact

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Location

Bundesstraße 45
20146 Hamburg
[Zu Google Maps](#)

Reference number

119

Application deadline

2024-06-18

Use only the online application form to submit your application with the following documents:

■ cover letter

■ CV

■ copies of degree certificate(s)

If you experience technical problems, send an email to bewerbungen@uni-hamburg.de.
More information on [data protection](#) in selection procedures.



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