

PhD STUDENTSHIP
[PhD position in discovery of layered functional materials
“beyond graphene” (BEGMAT)]

Job Ref: B-ERC1806

Employer: Humboldt-Universität zu Berlin

Location: Department of Chemistry, Brook-Taylor-Str. 2, 12489 Berlin, Germany

Salary: TV-L E13, 50%

Tenure: 36 months

Hours of work: Full-Time

Interview Date: To be confirmed

Closing Date: 30 July 2018

Informal enquiries to Dr. Michael J. Bojdys, email: michael.janus.bojdys@chemie.hu-berlin.de

Application Procedure

Applications should comprise:

* A copy of your **full curriculum vitae**

* A statement indicating the reasons for applying for this post and how your training and experience is relevant.

If you have any particular requirements should you be invited to interview, please make this clear in your application.

Submitting Applications

Applications may be submitted by e-mail to sabrina.dabrowski@chemie.hu-berlin.de or by post or in person to: Dr. Michael J. Bojdys, Functional Nanomaterials Group, Department of Chemistry, Humboldt-Universität zu Berlin, Brook-Taylor-Str. 2, 12489 Berlin, Germany.

MAIL – Please ensure that postal applications carry the correct postage according to the weight and measurement of the item.

Acknowledgement of Applications

Please note that we are unable to acknowledge postal applications. If you e-mail your application you will receive an automated acknowledgement.

Shortlisting and Interviews

Shortlisting and interview arrangements will be communicated to you within seven days after the closing date.

Outcome of Applications

Vacancies at the University often attract a large number of candidates and it is not always possible to respond individually to every application. If you have not heard from us by **mid-Aug, 2018** please take it that your application has not been successful.

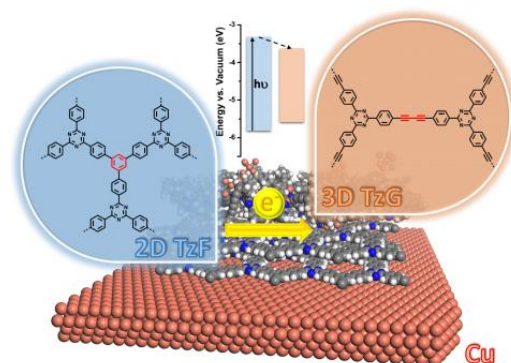
THE POST

Postgraduate research opportunities for ambitious candidates with at least an Upper Second-Class Honours degree (or equivalent) in Chemistry, Physics or Materials Science. Excellent students from a broad range of backgrounds with a strong interest in new materials are encouraged to apply. These three projects in the “Functional Nanomaterials” group involve the design and synthesis of new functional organic nanomaterials under an ERC Starting Grant (1.4 MM EUR) that combine experimental work with analytical studies and a strong collaboration with international partners. The overall aim of the project is to discover new frameworks and materials to address specific societal problems, such as clean energy and materials security.

THE PROJECT

There is a lack of metal-free 2D-materials for the construction of electronic devices. Only six materials of the “graphene family” are known to-date, one of which – developed by us – has a narrow band gap close to commercially used silicon.^{1,2} A successful candidate will conduct research into heteroatom-containing (S, N, P) ordered 2D polymers that extend this family further.³

This is an opportunity for ambitious students to work in a multi-skilled team to develop a new class of 2D “Layered functional materials “beyond graphene” (BEGMAT)” as part of a **European Research Council (ERC)** granted project.



Mixed-dimensional van der Waals heterostructures – such as 2D TzF/3D TzG – are obtained from surface-assisted reactions and feature efficient electron transfer between the two components in (photo-)catalysis.³



European Research Council
Established by the European Commission

¹ A. K. Geim et. al. *Nature* **2013**, 499, 419.

² M. J. Bojdys et al. *Angew. Chem. Int. Ed.* **2014**, 53, 7450.

³ M. J. Bojdys et al. *Adv. Mater.* **2017**, 29, 1703399.

SKILLS

The successful candidate should have, or expect to have, at least an Upper Second-Class Honours degree (or equivalent) in Chemistry – in particular a strong background and practical experience in (bio-)organic chemistry, polymer chemistry and advanced synthetic methods are required. The studentship will be remunerated according to the German federal public service scale (TV-L E13, 50%), and it includes a commitment to help with teaching-related activities in modules currently taught at the Department of Chemistry, Humboldt-Universität zu Berlin.

It is important to note that this is not an exclusive list of requirements. If you have relevant experience and a strong track-record in a related area, you are encouraged to apply and to state how you would contribute to the project. Expertise in more than one area is desirable. ***We are looking for a team of the best people who can apply their skills to the project, not to fill a restrictive skills list.***

The team skills will be focussed on the following research areas:

- Synthesis of covalent, fully-aromatic materials and fabrication of free-standing 2D layers thereof
- Development of methods for p-/n-doping of these new materials
- Structural (powder diffraction) and dynamical characterisation of the new materials and their response to chemical and electrochemical doping
- Sorption and separation by fabricated membranes from these new materials
- Catalysis using these new materials

Supervision received:

Direct supervision and reporting to the PI, Dr. Michael J. Bojdys. There are meetings about the project every week at which presentations concerning recent results and future plans are made. You will be required to make formal presentations on your work at regular project meetings. You may be required to work flexibly to make optimal use of equipment time and to attend off-site meetings and experiments involving overnight travel.

The Humboldt-Universität zu Berlin, Department of Chemistry

The project will be housed in state-of-the-art facilities within the Department of Chemistry of the Humboldt-Universität zu Berlin, offering a superb research environment (<https://www.hu-berlin.de/en/studies/counselling/course-catalogue/programme-descriptions/chemiemono>). The Humboldt-Universität zu Berlin is ranked as 62nd in the Times Higher Education World University Ranking 2018 (<https://www.timeshighereducation.com/world-university-rankings/humboldt-university-berlin>).



Living in Berlin

1) The monthly average salary in Berlin in 2015 was 2953 EUR, and an estimated single-person monthly costs are 760 EUR without rent. The following link provides information about the cost of living here: <https://www.numbeo.com/cost-of-living/in/Berlin>

2) If you end up coming to Berlin, it may also be possible to arrange a student accommodation for you. Please, consult the sites of the HU International Office for further information: <https://www.wiwi.hu-berlin.de/de/international/incomings> Single bedroom apartments start at 270 EUR per month.