PhD Position (m/f/d, TV-L E 12 position, max. 75%, for three years) **in "Surface Chemical Physics and Molecular Nanoscience" at Technical University Munich in the Department of Physics.** The position is part of the Focus Group *Molecular and Interfacial Engineering of Organic Nanosystems* at the Institute for Advanced Study (IAS) headed by Prof. Mathias O. Senge (Hans Fischer Senior Fellow, TUM and Chair of Organic Chemistry, School of Chemistry, Trinity College Dublin), Prof. Johannes Barth (Molecular Nanoscience and Chemical Physics of Interfaces, TUM) and Prof. Willi Auwärter (Molecular Engineering at Functional Interfaces, TUM).

Project: We aim to use the unique optical, photophysical, electrochemical, and structural properties of porphyrins in conjunction with novel linker structures to affect a transformational advance in the molecular design and control of interfacial nanoconstructs with tunable electronic, photonic, biomedical, and chemical functionalities. The prospects of porphyrin-based 1D, 2D, and 3D materials for device development will be assessed in collaboration with research partners from industry and academia. A key concept is to combine tetrapyrroles as 'functional' platforms with rigid hydrocarbon linkers (such as cubanes and bicyclo(1.1.1)pentane) as building blocks of choice for the on-surface synthesis of atomically precise nanostructures and networks. These systems will have tunable chemical and photophysical properties for the translational development of platform technologies in the advanced materials sciences.

This is a highly interdisciplinary project which brings together researchers from synthetic organic chemistry, nanoscale science, and interface physics and requires a strong interest in these areas. While primarily located at TU Munich, the researcher will simultaneously be embedded in the Senge Group at Trinity College Dublin, Ireland. Participation in STEM outreach and collaborative research projects and grant initiatives is expected.

Background Information: Nat. Chem. ***2015****, 7,* 105; *Chem. Eur. J.* **2019**, *25*, 4590; *Angew. Chem. Int. Ed.* **2019**, *58*, 418; *Coord. Chem. Rev.* **2021**, *431*, 213760; *Eur. J. Org. Chem.* **2021**, in press, https://doi.org/10.1002/ejoc.202001564.

.

http://sengegroup.eu
https://www.ias.tum.de/research-areas/fundamental-natural-and-life-sciences/molecular-and-interfacial-engineering-of-organic-nanosystems/
https://www.ias.tum.de/active-fellows/senge-mathias/
https://www.groups.ph.tum.de/e20/startseite/
https://www.groups.ph.tum.de/nanosurfs/home/

Requirements: Recent M.Sci. (2019-2021) in chemistry or physics with experience in nanoscale science, a solid background in surface science, practical experience in scanning probe microscopy or UHV-based techniques, fluent English, proof of scientific publishing, legal ability to travel within the EU (EU, EAA, CH), and commitment to work in highly diverse and multicultural research groups. Applications from underrepresented groups and women are strongly encouraged.

Applications (full CV, motivation letter, 2 reference letters, diversity statement, transcripts; if available, M.Sci. thesis) to Mathias Senge (mathias.senge@tum.de), deadline 19/02/2021. Start date: March/April 2021.

Senge Group

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Technische Universität München