The department “Dynamics at Surfaces” (Prof. Alec M. Wodtke) at the Max-Planck-Institute for biophysical chemistry is looking as soon as possible from June 2018 for a

**Ph.D. Student (f/m)**

or **Master Student (f/m) with intention to a Ph.D. degree**

(Code Number 12-18)

The aim of the department is to gain a detailed understanding of the fundamental physical and chemical processes occurring at surfaces and providing benchmark data for testing and validation of theoretical models. Theoretical understanding of surface chemistry will eventually become a tool to design new chemical technology including: heterogeneous (photo) catalysts, photovoltaics, fuel cells and much more. To reach this goal, we require new ideas and new theories of molecular interactions at interfaces. Applying cutting-edge laser, molecular beam, and ultrahigh vacuum technology to design well-defined experiments that can catch molecules in the act of reacting, our group strives to provide benchmark measurements which set standards for the next generation of theoretical advance. In particular, we seek to discover the "rules" that govern the conversion of energy at interfaces. Although too small to see with the naked eye and too fast to follow except with the fastest pulsed lasers, energy conversion takes place one molecule at a time and one collision at a time. By isolating these individual energy conversion events and studying them, we are building the conceptual bridge connecting our macroscopic experience of energy conversion to the molecular world.

The candidate will be involved in a recently founded highly ambitious research project aimed to investigate chemical reactions at surfaces on a picosecond time scale. The candidate will be responsible for the preparation and characterization of 2-dimensional semiconductor samples (transition metal dichalcogenides, TMDs), which exhibit unique optical and electrical properties. For example, they have a direct bandgap enabling efficient optical excitation of electron-hole pairs at the surface. The second topic will be the development of ultra-short atom pulses and the study of their interaction with the photo-excited TMDs under ultra-high vacuum conditions using short-pulse lasers. Experiences in working with high power short-pulse laser, optics, programming and vacuum technologies are advantageous.

Master students should hold a Bachelor degree in chemistry, physical chemistry, physics or a related subject. Matriculation at a German university is required. Payment will be € 11.79 per hour. For the Ph.D. student position, candidates should hold a Master’s (or equivalent) degree in chemistry, physical chemistry, physics or a related subject. The payment and benefits are based on the TVöD guidelines. Candidates with a bachelor degree will have the opportunity to receive their Master degree with the prospect to continue their research as a Ph.D. student.

The Max Planck Society is committed to increasing the number of individuals with disabilities in its workforce and therefore encourages applications from such qualified individuals.

Please send your application including a cover letter (explaining background and motivation), CV, transcript of records, contact names and addresses of two to four referees familiar with the work of the candidate preferably via e-mail as single PDF file with reference to the code number to

[aussschreibung12-18@mpibpc.mpg.de](mailto:aussschreibung12-18@mpibpc.mpg.de)

Max Planck Institute for Biophysical Chemistry
Department of Dynamics at Surfaces
Director: Prof. Dr. Alec M. Wodtke
Group Leader: Dr. Kai Golibrzuch
Am Fassberg 11, 37077 Göttingen

Web: [https://www.mpibpc.mpg.de/wodtke](https://www.mpibpc.mpg.de/wodtke)