

# Cluster of Excellence Matters of Activity. Image Space Material: PhD Student (Biology, Material Sciences, Engineering)

Job Offer from July 25, 2019

The Max Planck Institute of Colloids and Interfaces Potsdam invites within the framework of **Cluster of Excellence Matters of Activity- Image Space Material** applications from outstanding young scientists for the position of

**Ph.D. student (m/f/d) in full time**

from 01.01.2020 limited until 31.12.2022.

The Cluster of Excellence *Matters of Activity* invites applications for a doctoral position as part of its structured doctoral program. The doctoral program promotes disciplinary doctorates in connection with joint research in an interdisciplinary working group with a program duration of 36 months.

## **Job description:**

The project »Material Form Function« seeks to fill a doctoral student position *to analyze »Tessellated Materials Systems«*. The doctoral project will focus in particular on form-function relationships in two biological systems, tessellated cartilage skeletons of sharks and rays and armadillo dermal armor. Both biological systems take advantage of architectural arrangements of soft and hard materials to mediate impressive combinations of mechanical and kinematic functions. The relationship between the tissue composition, architecture and materials properties and performance will be explored within the context of the material ecology. State-of-the-art morphological techniques (imaging-based characterization of structural and material properties) and functional approaches (e.g. simulations and physical models of the interaction and biomechanics of the tessellated systems) will be combined. The overarching goal is the identification of general principles that could further be used for biomimetic and bio-informed technical solutions, e.g., in architecture, (wearables) design and in cooperation with roboticists.

The work is carried out in close cooperation with the *comparative morphology, mechanics & biomaterials laboratory* at the Max-Planck-Institute of Colloids and Interfaces in Golm (Potsdam, near Berlin) and the *morphology and the history of forms* laboratory at the HU Berlin.

## **Requirements:**

- Higher education degree in Biology, Materials Science, or Engineering

- Experiences in imaging-based characterisation of (biological) structures, bio-material science, mechanical characterisation of biological materials, modelling and simulation of biological structures (kinematics and dynamics), bio-informed engineering
- Applicants should state further qualifications in any discipline relevant to the research project in a motivational letter
  
- strong interest in interdisciplinary research is essential and any experience in this regard is an advantage
- high proficiency in spoken and written English
- be highly motivated, able to work independently and as part of a team

The Max Planck Society seeks to employ more women in areas in which they are underrepresented. Hence, we are particularly encouraging qualified women to apply.

The Max Planck Society aims to hire more disabled people and applications of handicapped candidates are welcome.

To apply for this position, please send your application including CV, letter of motivation and certificates to Max Planck Institute of Colloids and Interfaces, Department of Biomaterials, Dr. Mason Dean and Prof. Dr. John Nyakatura, Research Campus Golm, 14424 Potsdam, Germany or preferably in electronic form (one PDF file) to: [MoA.application@hu-berlin.de](mailto:MoA.application@hu-berlin.de) with the reference number MPG/MoA/1/19.

Matters of Activity's research programme can be found at <http://www.moa.hu-berlin.de/en>