

# Master Student Molecular Sensing in Blood Hemostasis at the Nanoscale

**Institute of Biophysics, Johannes Kepler University (JKU) Linz, Molecular Biosensing Group**

We are looking for a master student to join our Molecular Biosensing Group, performing topographical and functional investigation in blood clot formation. Blood coagulation and clot formation is a highly dynamic process playing a pivotal in major diseases like myocardial infarction or stroke. Fibrin, a blood protein, plays a crucial role in the complex haemostatic process. We attempt to gain in depth understanding of fibrin and its role in the haemostatic clot formation at the molecular scale. For this, we use the atomic force microscopy (AFM) allowing gaining insights into the structure-function-relationship with nanometre resolution and piconewton accuracy. Clot formation under real physiological conditions requires measurements in blood, which is a turbid liquid and thus, making conventional biological AFM measurements impossible. Recently we were able to overcome this limitation by a technical breakthrough, the substitution of the optical laser based readout by an electrical system – the All Electric AFM. Within this master thesis, you will perform pioneering work on this new all electric AFM. Blood clot formation, especially fibrinolysis aspects, will be the physiological focus. In addition, you will perform innovative molecular bio sensing techniques like AFM based Topography and Recognition Imaging or Single Molecule Force Spectroscopy. You will be part of a young, motivated, and kind research team including scientist with background ranging from medical science over nanotechnology and biophysics, to molecular biology.

## Duties:

- Blood sample preparation and sensor bio-functionalization for
- Topographical imaging and molecular sensing of clot compartments.
- Investigation with complementary techniques (SPR, EM)

## Your Qualifications:

- You have a background in either molecular biology, scanning probe microscopy, nanotechnology, physics; interests in one of the other fields and/or in (nano)medicine are a plus.
- You are curious to solve new problems, have an attitude to solve problems self-driven and independently with the support of our team.
- As good team player, you like working in teams in an international environment where a good communication internally and externally is crucial.
- Besides good subject knowledge, emphasis will be on creative thinking, motivation, ability to cooperate, initiative to work independently and personal suitability for scientific thinking.
- Clear communication skills to engage with key partners of the project.

If you are interested, please contact

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The Johannes Kepler University wishes to increase the proportion of academic female faculty and, for this reason, especially welcomes applications by qualified women. If applicants are equally qualified, a woman will be given preference for this position. The university welcomes applications from qualified applicants with physical disabilities. These applications will be given special consideration.

