

# Open PhD position

& Bachelor / Master Theses

UNIVERSITÄT  
DUISBURG  
ESSEN

*Open-Minded*

## Magnetism Dynamics of Interfaces and Thin Films

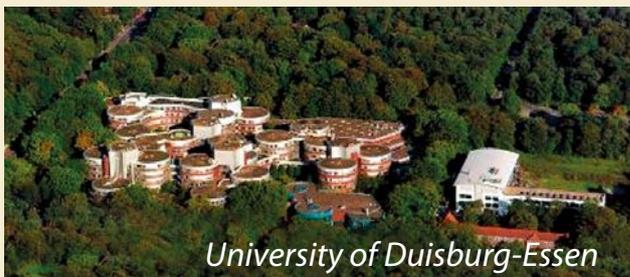
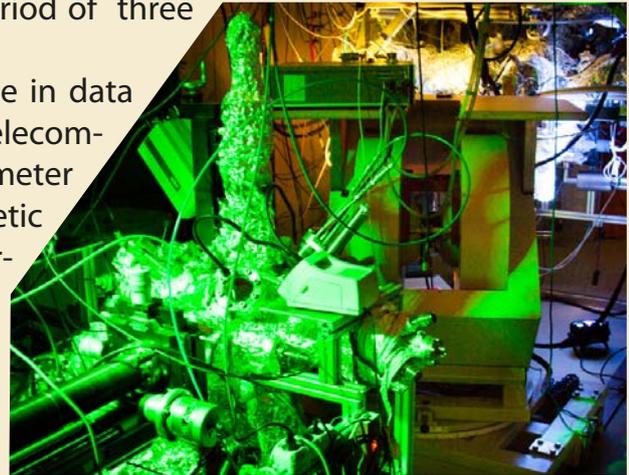
Within a DFG funded project we offer a PhD position for a period of three years in experimental fundamental physics in magnetism.

Magnetism in general has become indispensable, for example in data storage, medicine (MRT), sensors for safety and new ways of telecommunication, like the spin laser data transmission. In the nanometer scale there are still plenty of open questions, like the magnetic damping behaviour of ferromagnetic/non ferromagnetic interfaces. You will work and investigate in this scientific field.

We offer to investigate spin pumping by in situ ferromagnetic resonance at ultra high vacuum conditions on thin and ultra thin epitaxial films.

Primarily you will be making a detailed and structured analysis of the magnetic damping behaviour of interfaces of thin film, which is mainly attributed to the spin pumping effect and the changed spin orbital coupling at the interface. In the beginning your job will also include some work on an already established setup, where you will do the widening of the frequency range.

You will use the following techniques which are ideally but not necessarily well known to you: in situ multi-frequency ferromagnetic resonance (FMR), molecular beam epitaxy (MBE), auger spectroscopy (AES), low energy electron diffraction (LEED), ultra high vacuum technique (UHV) and low pressure plasma treatment. In addition superconducting interference device (SQUID), x-ray diffraction (XRD), secondary electron microscopy (SEM) and transmission electron microscopy (TEM) measurements will complement the investigation. The latter and much more is provided by the Interdisciplinary Center for Analytics on the Nanoscale ([www.uni-due.de/ICAN](http://www.uni-due.de/ICAN)). The DFG project was established by Dr. Florian M. Römer and will be embedded in the group of Prof. Dr. Michael Farle ([www.uni-due.de/agfarle](http://www.uni-due.de/agfarle)). You will work at the University of Duisburg-Essen (Duisburg, Germany), in the so called Ruhrgebiet which was formerly shaped by heavy industry and focuses on research and education nowadays.



You will be paid 75% of TVL13 position with no teaching duties.

Engagement in teaching (German! It is expected that you learn German anyway.) may raise the payment up to 100%. Applicants will have the chance to receive a doctoral grade. Please send your application in English or German language to [bewerbung.roemer@uni-due.de](mailto:bewerbung.roemer@uni-due.de) as soon as possible. You

should include a link to your master thesis (or send by email if <20MB). If it is not finished yet, a selection of an experimental part or a small report of an experimental topic of your personal work will be helpful.

**Bachelor and Master theses are also available in this scientific field, but cannot be paid.**

If you do have any questions, do not hesitate to contact Florian M. Römer (0049.203.379.4411, [bewerbung.roemer@uni-due.de](mailto:bewerbung.roemer@uni-due.de)).