



Opportunities
for Talents

TUM

Technische Universität München

The **Emmy-Noether research group on quantum sensing at the Walter Schottky Institute of TU Munich** invites applications for a

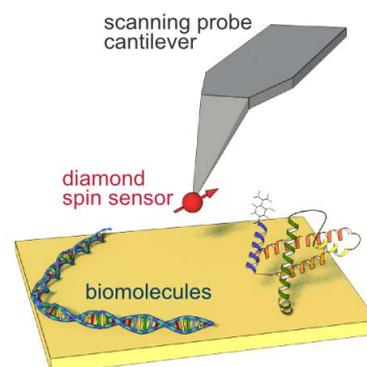
PhD position

within the EU Marie Skłodowska-Curie training network Spin-Nano.

The group

The quantum sensing group is a newly established research group at the Walter Schottky Institute of TU Munich. Its research focuses on quantum sensors and their applications, especially on applications in the life sciences.

One of its foremost goals is nuclear magnetic resonance (NMR) spectroscopy on single biomolecules, employing single nitrogen-vacancy (NV) color centers in diamond as detectors for the magnetic field of nuclear spins^{1,2}. More information can be found on our website <http://tinyurl.com/reinhardlab>.



Research goal: Using a single color center in diamond as a sensor to perform NMR spectroscopy on single biomolecules.

Your project

You will spearhead one essential step to take nanoscale magnetic resonance from a proof-of-principle experiment to serious scientific applications. Specifically, this could be work on one of the following topics

- Electric readout of NV centers by advanced electronics and laser excitation protocols.
- Microscale imaging experiments employing ensembles of NV centers for NMR microscopy or imaging of neural action potentials.
- Development of advanced quantum protocols for sensitive detection, polarization and atomic resolution imaging of electron and nuclear spins.

Technically, your work will involve the design and construction of optics and electronics, clean room fabrication and software development, as well as theory and simulation work on spin dynamics and quantum information. Experience in these areas is a benefit, but secondary to motivation and commitment.

You will join and shape a young group and an emerging field of research.

Your application

To qualify for this position you need to fulfill the EU mobility criteria. You may be of any nationality, but you must not have lived in Germany for longer than 12 months within the past three years. TUM is an equal opportunity employer and will apply affirmative action according to German law.

Applications should be sent to friedemann.reinhard@wsi.tum.de. Please include a motivation letter, your CV, a copy of your most recent thesis and a transcript of grades of your most recent diploma.

¹T. Staudacher et al., Science **339**, 561;

²H. J. Mamin et al., Science **339**, 557