

PhD position for the topic: “Integrated diamond chip as biological sensor”

Nitrogen-vacancy (NV) center in diamond has emerged as a strong contender among new generation of quantum sensors. It has been shown that NV center is capable of measuring magnetic and electric fields, temperature, pressure, etc. Being a point defect in diamond lattice, NV center combines atomic-scale size with high sensitivity, which make it unique system for biological and medical applications.

Proposed PhD project aims at creating reliable sensor based on NV center for detection of biological species. During the project new measurement modality of the diamond sensor will be developed, which would allow going beyond pure proof of principle experiments. This approach will lead to realistic device applicable as research and diagnostic tool.

This work covers many experimental techniques such as confocal microscopy, highly sensitive photocurrent measurements, single spin magnetic resonance techniques, spin relaxometry as well as clean room methods for device fabrication such as photolithography. This work also implies collaboration with theory group at Ulm University, chemistry group at Max-Planck Institute in Mainz and material science group at Hasselt University.

The research will be carried out in the one of the world’s leading group specialized in the single defects in solids. You will enjoy a friendly atmosphere, international environment and interesting work on the cutting edge of science.

Motivated Master’s or diploma students in physics (preferably with strong background in optics, atomic or solid state physics) are encouraged to apply.

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