

Studying Reactions on the Single-Molecule Level

QUantum Enhanced Sensing Techniques

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In recent years a new class of sensors has emerged. Popularly known as “quantum sensors”, they attempt to seriously disrupt existing metrology dogmas in all fields of science – by harnessing quantum-mechanical effects to go beyond the standards set by the classical ones.

In my newly founded group we will be focusing on one of the most well-known of the lot – the *nitrogen-vacancy center in diamond*. It offers on one hand a robust and inert device and on the other hand a record-setting magnetic field sensitivity on the atomic level.

Using this sensor, and by applying protocols pioneered by the magnetic resonance community, our long-term aim is to tackle open questions in chemical physics on the single-molecule, nanoscale limit.

In this short overview of my research, I will first introduce the sensing technique and then proceed to implications, improvements and conceived uses of it in our experiments.