



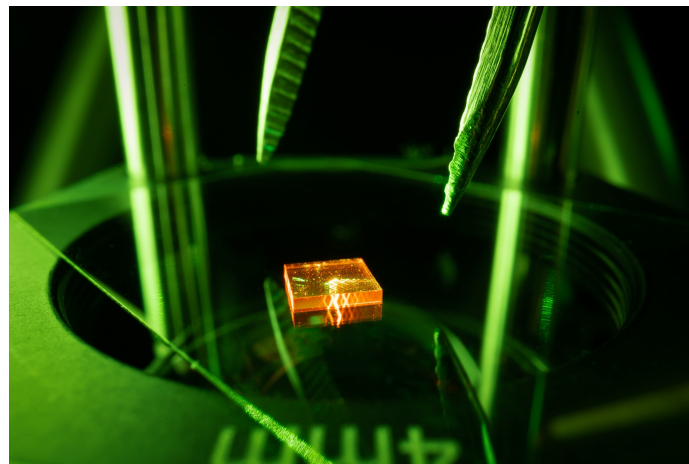
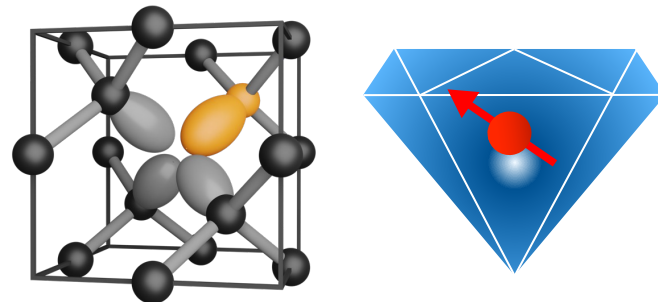
Quantum Sensing Dominik B. Bucher



Nano & Microscale NMR

Our group uses **nitrogen-vacancy (NV) centers in diamonds** as atomic-scale sensors. With these quantum sensors, nuclear magnetic resonance (NMR) signals from unprecedented lengths scale down to a few cubic nanometer sample volumes or even single molecules can be detected. We aim to establish NV-diamond NMR as a novel tool in chemistry and life sciences by an interdisciplinary approach at the interface of chemistry, physics, and biology with a focus on the following topics:

- **Surface** NV-NMR spectroscopy with applications in catalysis and material science
- NV-NMR microscopy for probing metabolism on the **single-cell** level
- NV-NMR **on-a-chip** for microscale analysis high-throughput screening
- Development of novel quantum **materials** with spin defects



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