

# Spin probes for hyperpolarization and beyond

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Quantum sensing techniques using spin probes such as the nitrogen-vacancy (NV) in diamond [1] present a promising approach to performing magnetic resonance imaging and spectroscopy at the nanoscale. In this talk I will summarize some of our recent work [2-7], with focus on hyperpolarization of nuclear spins external to the diamond substrate based on controlled cross-relaxation [8], and concepts for single molecule imaging using other spin probes of interest.

## References

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- [5] D. Simpson et al, *Non-Neurotoxic Nanodiamond Probes for Intraneuronal Temperature Mapping*, ACS Nano **11** 12077 (2018)
- [6] A. Wood et al, *Quantum measurement of a rapidly rotating spin qubit in diamond*, Science Advances **4** 7691 (2018)
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