



Call 2017

NanoSpin

Project title

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Social Media



SUCCESS STORY (highlights)



CHALLENGE – Conventional NMR and EPR suffer from a poor sensitivity and high instrumental complexity



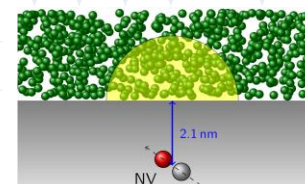
SOLUTION – Dynamic nuclear polarization (DNP) using NV centers in diamond can solve the sensitivity issue, CMOS integration can greatly reduce the instrumental complexity, moreover, nanoscale NMR provides unique opportunities for single-cell NMR



PLANNED AND SURPRISING/UNPLANNED OUTCOMES –

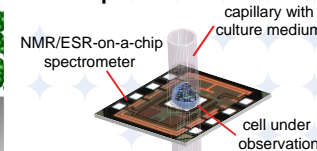
NanoSpin has contributed many theoretical (e. g. pulse sequences) and hardware (improved materials, CMOS-integrated electronics) tools for the next generation of DNP-enhanced NMR spectrometers and nanoscale NMR

Research platform for first of a kind experiments



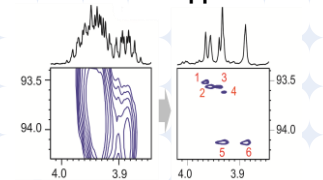
Objective 1 – Nanoscale NMR

Portable low-cost spectrometer with high-end performance



Objective 2 – Spectrometer-on-a-chip

Diamond DNP-NMR as performance booster for standard NMR applications



Objective 3 – Workhorse DNP-NMR

IMPACT (RRI aspects)



GENDER: NanoSpin measures: responsible hiring to foster gender balance in the NanoSpin research teams



OPEN SCIENCE: NanoSpin measures: open access publications, accessibility of research data, open communication



SCIENCE EDUCATION: NanoSpin measures: organization of and participation in summer and winter schools, industry workshop in Stuttgart to educate SMEs in particular



PUBLIC ENGAGEMENT: NanoSpin measures: lectures for the general public, industry workshop in Stuttgart to foster interactions between (quantum) researchers and SMEs, participation in science formats for the general public (Science Café)



ETHICS: all NanoSpin researchers apply high ethical standards in their research

IMPACT (potential users)



RELEVANT INDUSTRY BRANCHES

Providers of NMR instrumentation, Providers of MRI instrumentation, pharmaceutical companies



KEY COMMERCIALY RELEVANT APPLICATIONS

Hyperpolarized NMR, Hyperpolarized MRI, single-cell and single-molecule NMR



EXISTING/POTENTIAL END USERS

NanoSpin partner NVISION, Böhringer Ingelheim (pharmaceutical company) & Rentschler Biopharma (biopharma company) (all three are partners in German follow-up projects of NanoSpin)



QUANTERA

ERA-NET Cofund in Quantum Technologies



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