TRA MATTER
Colloquium

Friday, 9. April 2021
Time: 3:15 p.m.

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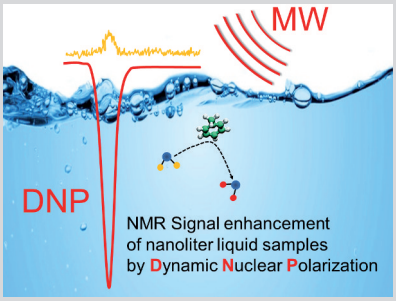
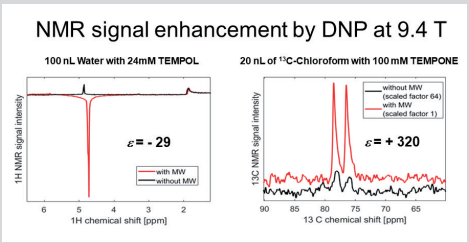
„Liquid-State Dynamic Nuclear Polarization at high magnetic fields“

Abstract: Dynamic Nuclear Polarization (DNP) transfers the much larger electron spin polarization from paramagnetic molecules to nuclear spins of diamagnetic target molecules. In the last decade it has been shown that this method allows to enhance NMR signals of solid samples at low temperatures (<100 K) many orders of magnitude, allowing detection of nuclei which were difficult to detect because of the intrinsic low sensitivity of NMR spectroscopy. Application range from surface chemistry and microfluidic chemical reactions to protein structure investigations and metabolism in humans.





Here we will present DNP experiment performed in liquid samples at room temperature at a magnetic field of 9.4 T (corresponding to a proton NMR frequency of 400 MHz and an electron spin resonance (ESR) frequency of 260 GHz). We could show that substantial DNP enhancements (> 100) can also be observed in such cases allowing to detect small sample volumes in the Nano-liter range. The technical requirements and the physical mechanism responsible for the Overhauser DNP enhancement will be discussed.

LOCATION	The presentation will be streamed via ZOOM
	Meeting ID: 913 6686 5375 Code: 213322
	https://uni-bonn.zoom.us/j/91366865375?pwd=NVQ5UW9Id2tEVnByZkcwMlFqNXlUZz09

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