

Abstract Submitted  
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**Enhancement of liquid-state  $^1\text{H}$  NMR signals at room temperature using a homebuilt X-band Overhauser DNP setup<sup>1</sup>** WIRYA FEIZI, CODY LARSEN, DANIEL ANABLE, LLOYD LUMATA, University of Texas at Dallas — Overhauser effect (OE) dynamic nuclear polarization (DNP) involves the transfer of the high spin alignment of the electron spins to the nuclear spin by microwave radiation at the electron paramagnetic resonance (EPR) frequency of the free electron source. Herein we report the preliminary results of an instrumental setup of an X-band Overhauser DNP polarizer in pursuit of enhancing the  $^1\text{H}$  nuclear magnetic resonance (NMR) signals of water doped with free radicals by tens if not hundreds of times relative to the thermal NMR signal of the sample. Different free radicals of varying EPR linewidths were used in this research. The NMR signal-enhancing capability of this technology has a potential practical application in improving the sensitivity of magnetic resonance imaging (MRI) signals for improved diagnostics. The preliminary  $^1\text{H}$  NMR results, EPR characterization studies, and the technical engineering challenge will be presented in this talk. This study is supported by the Welch Foundation grant AT-1877, DOD grants W81XWH-21-1-0176 and W81XWH-19-1-0741, CPRIT grant RP180716, and the UTD CoBRA and SPIRE grants.

<sup>1</sup>Enhancement of liquid-state  $^1\text{H}$  NMR signals at room temperature

Wirya Feizi  
University of Texas at Dallas

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