Abstract Submitted
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^{13}C dynamic nuclear polarization using a mixture of BDPA and trityl OX063[1] CHRISTOPHER PARISH, PETER NIEDBALSKI, QING WANG, FATEMEH KASHAMI, LLOYD LUMATA, University of Texas at Dallas, LUMATA GROUP TEAM — Recently, there have been growing efforts to optimize dynamic nuclear polarization (DNP) in pursuit of achieving the highest enhancements of NMR spectroscopy and imaging (MRI) signals. A substantial portion of such optimization efforts has focused upon the role of free radicals in DNP. In this work, we have examined the effects of changing the concentration of a 1:1 mixture of two narrow line-width free radicals: trityl OX063 (trityl) and 1,3-bisdiphenylene-2-phenylallyl (BDPA). The polarization profiles, maxima, and build-up times were compared for different concentrations of trityl and BDPA under the constraint that both radicals had the same concentration. This study found that the polarization maxima displayed a sort of competition between two contributors to the intensity: the spin-lattice relaxation time and the number of polarizing centers. As expected based upon the mechanics of DNP, the extrapolated build-up times fell with increasing radical concentration. These results are discussed in the context of thermal mixing DNP mechanism.

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