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Influence of Ho^{3+}-doping on ^{13}C dynamic nuclear polarization[1]
ANDHIKA KISWANDHI, PETER NIEDBALSKI, CHRISTOPHER PARISH, University of Texas at Dallas, PAVANJEET KAUR, National High Magnetic Field Laboratory, ANDRE MARTINS, University of Texas at Dallas, LEILA FIDELINO, CHALERMCHAI KHEMTONG, University of Texas Southwestern Medical Center, LIKAI SONG, National High Magnetic Field Laboratory, ALAN SHERRY, LLOYD LUMATA, University of Texas at Dallas — We report the effects of the addition of trace Ho-DOTA on the ^{13}C dynamic nuclear polarization and the relaxation time of [1-^{13}C] acetate doped with trityl OX063 free radical. Our result shows that the polarization can be improved by a factor of 2.7 fold using Ho-DOTA doping, compared to the undoped samples, similar to the effect of Gd-HP-DO3A doping. In contrast to Gd-HP-DO3A doping, the ^{13}C relaxation rate is only minimally affected by Ho-DOTA. The W-band electron spin resonance studies revealed a considerable reduction of the electron spin-lattice relaxation time T_1 of trityl OX063 at low temperatures, which corresponds to the ^{13}C polarization enhancement, in agreement with the thermodynamic picture of DNP.

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