

Abstract Submitted
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Towards Nuclear Polarization of Nanodiamond¹ EWA REJ, DAVID WADDINGTON, TORSTEN GAEBEL, DAVID REILLY, ARC Centre of Excellence for Engineered Quantum Systems, School of Physics, The University of Sydney, Sydney, NSW 2006, Australia — Nanoparticles with long nuclear spin relaxation times [1] are candidates for use in targeted therapeutic delivery [2] and magnetic resonance imaging [3]. We report progress towards the development of contrast agents based on ¹³C in nanodiamond. Nuclear relaxation and electron spin resonance data is presented. We describe the development of a DNP setup at X band frequencies based on an ENDOR cavity, together with a novel brute force setup that combines milli-Kelvin temperatures of a dilution refrigerator, high magnetic fields and fast sample exchange. [1] J. Aptekar, *et al.*, ACS Nano, 3, 4003-4008 (2009). [2] H. Huang, E. Pierstorff, E. Osawa, and D. Ho, Nano Lett, 7, 3305-3314 (2007). [3] L Manus T. J. Meade, Nano Lett, 10, 484-489 (2010).

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