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**High sensitivity electron spin magnetic resonance force microscopy for labeled biological samples** ERIC W. MOORE, SANGGAP LEE, STEVEN A. HICKMAN, Department of Chemistry and Chemical Biology, Cornell University, SARAH J. WRIGHT, wrightsarahjane@gmail.com, LEE E. HARRELL, Department of Physics, U.S. Military Academy, JONILYN G. LONGENECKER, PETER P. BORBAT, JACK H. FREED, JOHN A. MAROHN, Department of Chemistry and Chemical Biology, Cornell University — Magnetic resonance force microscopy is a promising route to 3-dimensional nanoscale imaging of organic materials due to its high sensitivity and isotopic specificity. Labeling of proteins, DNA and biomolecular assemblies with free radical labels for inductive detection are well established techniques, although many of these radical's relaxation times are too short to support previously demonstrated techniques for single electron detection by magnetic resonance force microscopy. We report on our efforts toward sub-single electron sensitivity on organic radicals using batch fabricated 100 nm nickel nanorod tipped ultrasensitive cantilevers.

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