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Measuring Spin-Lattice and Spin-Spin Relaxation Times Using a Continuous Wave Electron Paramagnetic Resonance Spectrometer MICHAEL R. PAGE, M.R. HERMAN, K.C. FONG, D.V. PELEKHOV, P.C. HAMMEL, The Ohio State University — The spin-spin and spin-lattice relaxation times, known as T_2 and T_1 , respectively, provide information about the spins in a material. This information can be used as an imaging technique in Magnetic Resonance methods. T_1 and T_2 can be measured by a Continuous Wave Electron Paramagnetic Resonance Spectrometer, provided the relationship between the input power and oscillating magnetic field is known. The advantage to this is that Continuous Wave Electron Paramagnetic Resonance Spectrometers are much cheaper than Pulse Electron Paramagnetic Resonance Spectrometers. The relationship between the input power and the oscillating magnetic field is determined by using a sample with known T_1 and T_2 , measuring the absorption at different power levels, and fitting the distribution of absorptions to a curve. We show the results of this measurement with a Bruker EMX 2.7 Continuous Wave Electron Paramagnetic Resonance Spectrometer. This work was supported by The U.S. Army Research Office MURI under contract W911NF-05-1-0414 and by The U.S. Army Research Office DURIP under contract W911NF-07-1-0305.

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