EPR Spectrum Analysis of DPPH and $MnCl_2$

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Summary: Electron Paramagnetic Resonance (EPR) spectroscopy is a useful analytical technique that provides insight into the chemical nature of a variety of species: complex, inorganic, organic, lattices, free radicals etc. in different states. It is primarily used to understand the identity, oxidation and spin state of the paramagnetic ion(s) in a sample, the nature of ligands, and the interactions of the ion(s) with the lattice. Thus, the technique finds broad biological, biochemical and medical applications. EPR spectral analysis of DPPH (at room temperature) and $MnCl_2$ in aqueous solution (at low temperature) were performed at Prof. Doros Petasis' laboratory at Allegheny College. Properties such as the g-factor, hyperfine coupling constant and linewidth for the two samples have been analysed and discussed.

References:

References

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Image Sources

Figure 1: D. Petasis and M. Hendrich, *Zeeman Splitting of Degenerate Electron Spin States for an S = 1/2 System*. 2015. Accessed: Sep. 01, 2022. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S0076687915003857

Figure 2: D. Petasis, *Typical EPR Resonance Line for an S = 1/2 System*. 2015.

Figure 3: D. Petasis, *Hyperfine Splittings in a System with S = 1/2 and I = 3/2*. 2015.