

Metal centres in EPR SpectroscopyK. Keller¹, G. Jeschke¹, M. Yulikov¹¹Physical Chemistry, ETH Zurich

Unpaired electrons are the basis of Electron Paramagnetic Resonance (EPR) spectroscopy.

Electron pairing is usually energetically favorable and thus only a small fraction of systems contain native paramagnetic centres or can be put into paramagnetic states to exhibit an intrinsic EPR signal. On the other hand, it allows to use EPR spectroscopy in combination with so called site-directed spin labeling (SDSL) under a wide range of conditions.¹

In this contribution we want to give a brief overview of the use of metal ions in EPR spectroscopy in biological systems and then focus on two examples using Mn²⁺ or Gd³⁺ as spin probes. In the first case we demonstrate, what insights can be obtained from EPR by the substitution of diamagnetic Mg²⁺ to paramagnetic Mn²⁺ in a DnaB helicase.² In the second example we want to demonstrate advantages and disadvantages of using high spin Gd³⁺ ions for distance measurements.^{3,4}

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