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Spin Resonance Spectroscopy: Principles and applications

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Advances in Electron Paramagnetic Resonance (Book Chapter)

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Abstract

This chapter deals with the recent advances in electron paramagnetic resonance (EPR) methods especially using multifrequency including low- and high-field EPR on Zero-Field Splitting, g-anisotropy, and role in invivo EPR spectroscopy. It also includes advances in pulsed-EPR using electron spin echo, field-swept, echo-detected, saturation recovery EPR for measurement of electron spin-relaxation times. Time-resolved and rapid-scan EPRs are discussed to study the unstable free radicals intermediates. The theory and application of multipulse EPR, viz., electron spin echo envelope modulation (ESEEM) including two-pulse ESEEM, three-pulse ESEEM, and two-dimensional hyperfine sublevel correlation (HYSCORE) are discussed. Furthermore, multiresonance EPR techniques viz., electron-nuclear double resonance (ENDOR), continuous wave (CW) ENDOR, Pulsed ENDOR and its types, Davies ENDOR, and Mims ENDOR are described. In addition, electron-electron double resonance (ELDOR) CW and pulsed ELDOR or double electron-electron resonance for distance measurements are presented.

Author keywords

DEER ELDOR ENDOR ESEEM HYSCORE Multifrequency EPR Time resolved TRIPLE

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