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Sommario/riassunto

Distance measurements in biological systems by EPR The foundation for understanding function and dynamics of biological systems is knowledge of their structure. Many experimental methodologies are used for determination of structure, each with special utility. Volumes in this series on Biological Magnetic Resonance emphasize the methods that involve magnetic resonance. This volume seeks to provide a critical evaluation of EPR methods for determining the distances between two unpaired electrons. The editors invited the authors to make this a very practical book, with specific numerical examples of how experimental data is worked up to produce a distance estimate, and realistic assessments of uncertainties and of the range of applicability, along with examples of the power of the technique to answer biological problems. The first chapter is an overview, by two of the editors, of EPR methods to determine distances, with a focus on the range of applicability. The next chapter, also by the Editors, reviews what is known about electron spin relaxation times that are needed in estimating distances between spins or in selecting appropriate temperatures for particular experiments. Albert Beth and Eric Hustedt describe the information about spin-spin interaction that one can obtain by simulating CW EPR line shapes of nitroxyl radicals. The information in fluid solution CW EPR spectra of dual-spin labeled proteins is illustrated by Hassane Mchaourab and Eduardo Perozo.

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