Foreword

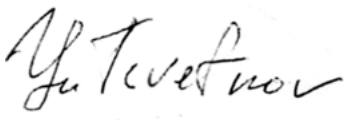
This book more specifically stresses on the aspect of foundational principle of EMR. The contents include the following: Introduction, theoretical basics, $\boldsymbol{g}$-tensor theory, isotropical hyperfine structure of spectrum, anisotropic hyperfine structure of spectrum, fine structure of spectrum, relaxation theory and lineshape, linewidths, quantitative determination, paramagnetic species in gas phase and lineshape, linewidths, quantitative determination, paramagnetic species in gas phase and inorganic radicals, spectra of transition metal ions and their complexes, and so on.

Quantitative determination of spectrum, discussed in Chapter 8, is one of the most difficult problems in EMR. Usually, the samples of EMR are in liquid or solid state. Chapter 9 discusses paramagnetic species in gas phase, and inorganic radical specially. Of the 107 elements in the periodic table, there are 57 transition metal (including rare earth) group elements, and their EMR spectra have some special characteristics. This is discussed in Chapter 10.

ENDOR, ELDOR, Pulse-EMR, and EMRI have been included in Appendix 1 for readers to refer to. Appendix 2 "Mathematic Preparation" and Appendix 3 "Angular Momentum and Stable State Perturbation Theory in Quantum Mechanics" help readers to replenish the basics of mathematics and physics.

Important aspects of modern EMR methods are considered in Appendix 1. This is pulse technique. In EMR, these methods have been developed in the last decade. It can be expected that these methods will be described in detail in the main part of the book in future, when the theory and practice of pulsed EMR will receive their completed development.

Foundational principle of EMR is the distinguishing feature of this book. It is an advanced specialzed book of science and technology. This book contains materials for further study on the basic theory of EMR for researchers and technicians who work in the field of EMR. This book will also serve as educational material for advanced study for graduate students and young teachers of related specialist fields. In all aspects, I recommend this book for study and use.



Professor of Physical Chemistry
Yu. D. Tsvetkov

https://doi.org/10.1515/9783110568578-201