Electronic Circular Dichroism Spectroscopy

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1 INTRODUCTION

1.1 Definitions and Abbreviations Used in the Chapter

1.1.1 Definitions *Anisotropy factor (termed also as Kuhn's dissymmetry ratio or g factor)*: It is a dimensionless parameter expressing a ratio of the strength of CD to strength of light absorption of the chiral sample at specific wavelengths. $g = \Delta A/A = \Delta\varepsilon/\varepsilon$, where ΔA is the difference of the absorption of the sample against left- and right-circularly polarized light beams ($A_L - A_R$). It is a useful parameter of how difficult it is to measure the CD in the region of a given absorption band, because $\Delta A/A$ is proportional to the signal/noise ratio where ΔA determines the signal and A determines the noise. The anisotropy factor is rarely larger than 10^{-2} and more commonly is around 10^{-4}. g factor can be used as analytical tool to characterize the diastereomeric and enantiomeric purities of optically active materials.

Chiral exciton coupling: It is based on the through space exciton interaction between two or more chirally oriented chromophores which are not conjugated to each other and show strong ($\varepsilon \geq 10^4$) $\pi \rightarrow \pi^*$ type absorption. Coupling of the $\pi \rightarrow \pi^*$ transition moments in a symmetric and anti-symmetric fashion gives rise to a

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