



## Optical Insights into Structural Biology Harnessing the Power of Cd Spectroscopy

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Circular Dichroism (CD) spectroscopy is a powerful and versatile technique in structural biology, providing critical insights into the secondary and tertiary structures of proteins, nucleic acids, and other chiral biomolecules. This abstract explores the fundamental principles of CD spectroscopy, its application in determining protein secondary structures, monitoring conformational changes, and assessing the stability of biomolecular assemblies. It also highlights advancements in the methodology, including synchrotron radiation CD (SRCD) and time-resolved CD (TRCD), and their integration with other techniques such as X-ray crystallography and nuclear magnetic resonance (NMR), underscoring its pivotal role in elucidating complex structural dynamics and interactions at the molecular level. Through these optical insights, CD spectroscopy continues to advance our understanding of biomolecular structure and function, paving the way for innovations in drug design, protein engineering, and synthetic biology.

routinely used to determine the secondary structure composition of