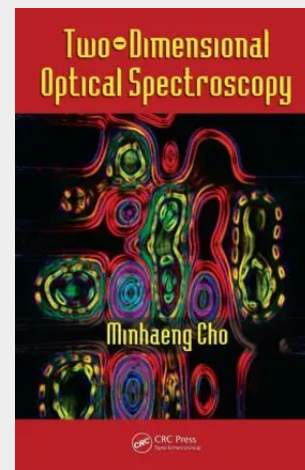


Two-Dimensional Optical Spectroscopy

Two-Dimensional Optical Spectroscopy discusses the principles and applications of newly emerging two-dimensional vibrational and optical spectroscopy techniques. It provides a detailed account of basic theory required for an understanding of two-dimensional vibrational and electronic spectroscopy. It also bridges the gap between the formal development of nonlinear optical spectroscopy and the application of the theory to explain experimental results. Focusing on time-domain spectroscopy, the book presents detailed discussions on the underlying physics and interpretation methods of a variety of two-dimensional optical spectroscopic methods. It illustrates how novel diagrammatic techniques are useful in graphically describing the associated nonlinear optical transition pathways and involved population or coherence evolutions. The author also explains the basics of quantum dynamics and time-dependent perturbation theories that are required in describing nonlinear optical processes. From the development of the theory to novel applications, this book covers a gamut of topics in this field, including perturbation theory, coherent Raman scattering, pump-probe spectroscopy, photon echo spectroscopy, IR-visible four-wave mixing, and linear and nonlinear optical activity spectroscopy. It shows how to apply the recently developed tools of vibrational and electronic spectroscopy in two dimensions.

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