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## Kirk H. Michaelian: Photoacoustic infrared spectroscopy

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This book is the latest volume in the continuing Chemical Analysis Series on photoacoustic (PA) and photo-thermal spectroscopy, which is dedicated to the subject of PA infrared spectroscopy. Its chapters include: evolution of PA infrared spectroscopy; experimental methods; depth profiling; numerical methods; applications of PA infrared spectroscopy; quantitative analysis; and special topics. This is an up-to-date publication that reviews the entire subject of PA infrared spectroscopy in detail. For chemists, physicists, spectroscopists and materials scientists this book is a valuable resource for characterization studies on materials.

The book adopts a historical and contemporary perspective by reviewing both early and recent literature on an array of applications of PA infrared spectroscopy. A general introduction and historical review of the developments of PA infrared spectroscopy are provided, with particular emphasis on the early work. Afterwards, the following chapter discusses a series of seven different experimental PA infrared spectroscopy methods that have been employed by researchers in the past. Chapter 4 systematically elucidates one of the most important capacities of PA infrared spectroscopy—depth profiling. In this discussion the principles that underlie several experimental techniques are described and

typical results are presented. Chapter 5 then outlines three important numerical methods pertaining to PA infrared spectroscopy.

The book concentrates on the applications of PA infrared spectroscopy to different kinds of materials; a total of 15 different applications are addressed. Each section conveys a sense of the research carried out in a specific area and guides the reader who wishes to pursue the subject in detail. The later chapters provide discussion of quantitative analysis as well as two emerging techniques: PA infrared microspectroscopy and synchrotron PA infrared spectroscopy. The discussion of these techniques demonstrates that the field of PA infrared spectroscopy continues to be energetic.

The book provides a comprehensive review of publications on PA infrared spectra, which will aid the reader who wishes to consult the original literature and gain deeper insight.

This book is rounded out with an overview of PA infrared spectroscopy consisting of its evolution and history, experimental and numerical methods, quantitative analysis and applications. This book is recommended for researchers who require an efficient and comprehensive introduction to PA infrared spectroscopy.

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