



Vibrational Spectroscopy for Medical Diagnosis

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DESCRIPTION

Cancer is the second largest cause of death (after heart disease) in North America and Europe. Statistics from many countries serve constantly to inform us of how prevalent cancer is worldwide, even though one particular variation may be more predominant in one geographical region than another. The traumatic cost in human lives, the dramatic cost of treatment and the need for rapidly advancing diagnoses and improving diagnostic methods for cancer, are clear for all to see. Current histopathological techniques for the detection and classification of cancer often lead to ambiguous diagnoses. Infrared and Raman spectroscopy have the potential to provide fast, accurate complementary techniques for the detection of many different forms of cancer. This book contains ten state-of-the-art chapters on the application of these techniques to the detection and classification of prostate, lymphatic, cervical, head and neck, and esophageal cancers, as well as reports on the application of vibrational spectroscopy to the study of individual human cells, and the identification of micro-organisms and erythrocytes, which should be of importance to spectroscopists and medical professionals alike.

This book provides an up-to-date account of the practical means, applications and potential of mid-infrared and Raman spectroscopy for the medical diagnosis of diseased tissue and cells. It will be of significant interest both to vibrational spectroscopists involved in developing techniques for medical diagnosis, and to clinicians, histopathologists, medical practitioners and students working in the field, with whom the spectroscopists must work closely in multi-disciplinary teams.

ABOUT THE AUTHOR

Professor Max Diem is based in the Department of Physical and Biophysical Chemistry at Northeastern University. He did his first degree at the University of Karlsruhe and then his PhD at the University of Toledo in OH. Until 2005 he was at the Central University of New York before moving to Northeastern University. His research interests are centered on the development of physical / optical methods for medical diagnosis in tissue diagnostics. He was appointed as a National Tour Speaker in 2006 for the Society for Applied Spectroscopy, having received the Lester W. Strock Award for outstanding work in vibrational spectroscopy in 2000.

John Chalmers is an independent consultant in the field of vibrational spectroscopy, as well as a Reader at the University of Nottingham. John left ICI in 1997 after 22 years, serving as a Business Research Associate in the Science Support Group of ICI Technology. He is chairman of the UK Infrared and Raman Discussion Group (IRDG) and current chairman of the RSC (Royal Society of Chemistry) Molecular Spectroscopy Subject Group. He is a member of the Association of British Spectroscopists (ABS) Trust. He is a Fellow of the Royal Society of Chemistry. In 1994, he received the Williams-Wright Award from the Coblentz Society.

Peter Griffiths is a Professor of Chemistry at the University of Idaho in Moscow, Idaho. In 1972, he joined the faculty of Ohio University, becoming Distinguished Professor less than 10 years later. After spending 7 years on the faculty of the University of California, Riverside, he was appointed chair of the Department of Chemistry at the University of Idaho, a post he held for 8 years. Professor Griffiths has published 3 books, 25 book chapters and over 200 papers in the area of vibrational spectroscopy. He has received various awards, including the Spectroscopy Society of Pittsburgh Award and the Fritz Pregl Medal of the Austrian Society of Analytical Chemistry.

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