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Sommario/riassunto

"Detection of mineral and metal distribution in any type of materials has always been a great matter of interest between the scientific communities, because, minerals plays a very vital role in all living system. Although there are several techniques by which availability of mineral or metals can be detected but these techniques need a very lengthy and systematic sample preparations and very time consuming on the contrary XRF is a very quick, authentic and required very minimal sample preparations. Application of XRF in Biological Sciences will extensively cover the broad application of XRF in biological sciences including chemical biology, clinical science and plant science, and the advances of the XRF imaging technique in these fields. Particularly, the focus will be towards the understanding and investigating the intercellular structures and metal investigation in plant cells. X-ray fluorescence spectrometry (XRF) is a powerful tool for quantitative mapping of multi element allocations in biological cells. Technological developments of simple X-ray fluorescence spectrometry has resulted in a number of micro-analytical methods, such as energy dispersive X-ray fluorescence spectrometry (EDXRF), total reflection X-ray fluorescence spectrometry (TXRF), micro-proton induced X-ray emission (micro-PIXE), electron probe X-ray microanalysis (EPXMA), synchrotron-based X-ray fluorescence microscopy (SXRF, SRIXE, or micro-XRF) and secondary ion mass spectrometry (SIMS). These techniques have biological applications for different areas of study and are useful for the imaging of elemental distribution in the biological cells or section of tissues. XRF also has the special capabilities for trace element sensitivity, combined with the ability to provide information regarding the oxidation state and coordination of metal cations, so is ideally suited to study the intracellular distribution and speciation of trace elements, toxic heavy metals, therapeutic or diagnostic metal complexes, submicron elemental imaging of bacteria and protist cells, detecting the function of transition metals in neurodegenerative disorders. Thus, this book will provide the detailed information of XRF based techniques, including the protocol and practical approaches"--