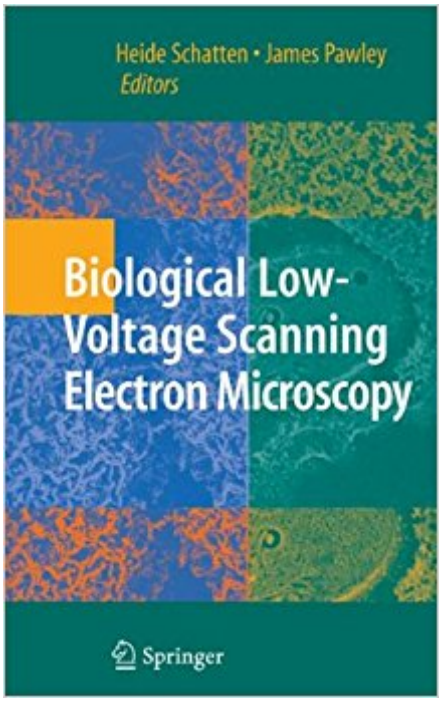
Biological Low-Voltage Scanning Electron Microscopy



Synopsis

Major improvements in instrumentation and specimen preparation have brought SEM to the fore as a biological imaging technique. Although this imaging technique has undergone tremendous developments, it is still poorly represented in the literature, limited to journal articles and chapters in books. This comprehensive volume is dedicated to the theory and practical applications of FESEM in biological samples. It provides a comprehensive explanation of instrumentation, applications, and protocols, and is intended to teach the reader how to operate such microscopes to obtain the best quality images.

Book Information

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Customer Reviews

From the reviews: "Topics ranging from the early development of the scanning electron microscope (SEM) to some of the latest low-voltage and cryo techniques are reviewed in detail. Ã¢â ¬Â¦ this is a very useful volume for those wishing to learn, or refresh their memory, in the context of getting the best out of an SEM, and in particular the field emission SEM (FESEM)." (Iolo Ap Gwynn, infocus Magazine, Issue 12, December, 2008) Ã¢â ¬Å“Biological Low-voltage Scanning Electron Microscopy is an excellent and timely collection, written by many of the recognized experts in the subject Ã¢â ¬Â¦. Strongly recommended.Ã¢â ¬Â• (Ultramicroscopy, Vol. 109, June, 2009)

Field-emission, low-voltage scanning electron microscopy (LVSEM) is a field that has grown tremendously in recent years because is offers the optimal method for viewing complex surfaces at

high resolution and in three dimensions. However, even though the instrumentation required to get good results at low beam voltage has become increasingly available, there has been a lag in its application to biological specimens. What seemed to be missing was volume that combined both the theory and practice of using this equipment in an optimal manner with a thorough treatment of biological specimen preparation. Biological Low-Voltage Scanning Electron Microscopy is the first book to address both of these aspects of biological LVSEM. After providing a thorough description of the unique advantages and the operating constraints related to operating a scanning electron microscope at low beam voltage, the remainder of book focuses on the the best way to image all types of plant and animal cells and covers specimens that range from macromolecules to the surfaces revealed by de-embedding resin-embedded samples. Advanced specimen preparation techniques such as cryo-LVSEM, and immuno-gold-LVSEM are fully covered, as is x-ray microanalysis at low beam voltage and live-time stereo imaging. The preparative protocols provided represent the distilled essence of the experience of a group of world-renowned authors who have, for many decades, been instrumental in developing and applying new approaches to LVSEM to support their own biological research.

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