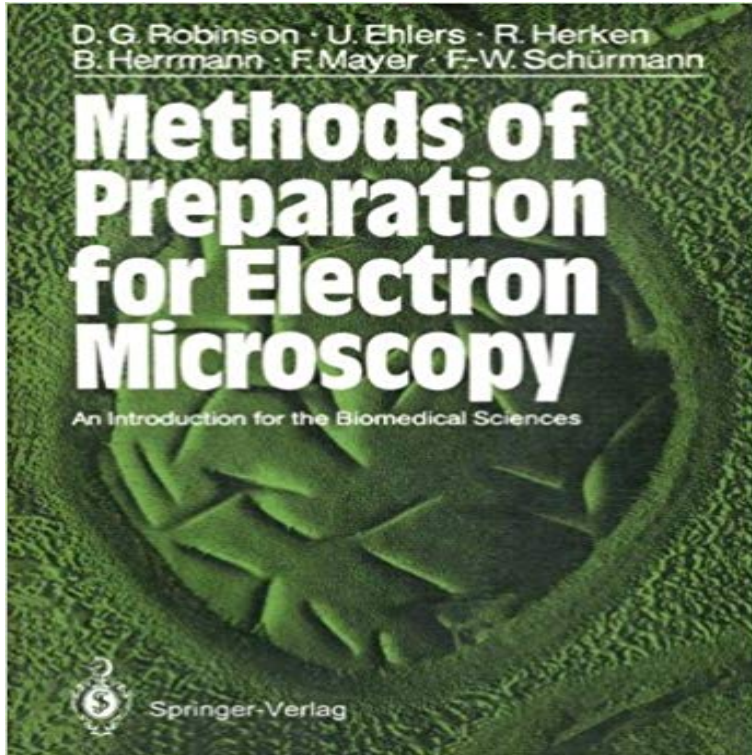


Methods of Preparation for Electron Microscopy: An Introduction for the Biomedical Sciences



In 1939, when the electron optics laboratory of Siemens & Halske Inc. began to manufacture the first electron microscopes, the biological and medical professions had an unexpected instrument at their disposal which exceeded the resolution of the light microscope by more than a hundredfold. The immediate and broad application of this new tool was complicated by the overwhelming problems inherent in specimen preparation for the investigation of cellular structures. The microtechniques applied in light microscopy were no longer applicable, since even the thinnest paraffin layers could not be penetrated by electrons. Many competent biological and medical research workers expressed their anxiety that objects in high vacuum would be modified due to complete dehydration and the absorbed electron energy would eventually cause degradation to rudimentary carbon backbones. It also seemed questionable as to whether it would be possible to prepare thin sections of approximately 0.5 μm from heterogeneous biological specimens. Thus one was suddenly in possession of a completely unique instrument which, when compared with the light microscope, allowed a 10-100-fold higher resolution, yet a suitable preparation methodology was lacking. This sceptical attitude towards the application of electron microscopy in biology and medicine was supported simultaneously by the general opinion of colloid chemists, who postulated that in the submicroscopic region of living structures no stable building blocks existed which could be revealed with this apparatus.

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Methods of Preparation for Electron Microscopy. An Introduction for Methods of Preparation for Electron Microscopy. An Introduction for the Biomedical Sciences. D. G. Robinson , U. Ehlers , R. Herken , B. Herrmann , F. Mayer

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