

RAPID FREEZING, FREEZE FRACTURE, AND DEEP ETCHING

Edited by Nicholas J. Severs and David M. Shotton

The techniques of freeze fracture and deep etching—techniques for the examination of the ultrastructure of rapidly frozen biological specimens by transmission electron microscopy—have profoundly influenced our understanding of the functional organization of the cell. *Rapid Freezing, Freeze Fracture, and Deep Etching* guides the reader through the principles of these techniques and gives detailed examples of their application in biomedical research.

The book is organized into three sections. The first covers the fundamentals of freeze fracture and deep etching, with a discussion of basic principles for those new to the field, and an entire chapter on the equipment currently available for freeze fracture. Advanced techniques are presented next, with each chapter devoted to an in-depth treatment of a specific topic, including the advantages and limitations of each technique. The final chapters offer a series of applications selected to illustrate the wide-ranging and enduring impact of rapid freezing, freeze fracture, and deep etching on the field of biomedical research.

With over 150 illustrations and containing contributions by leading experts instrumental in the development of these techniques, *Rapid Freezing, Freeze Fracture, and Deep Etching* offers authoritative coverage of such novel topics as:

- Hyperbaric freezing
- Ultrarapid freezing techniques in the study of dynamic cellular processes
- Cytochemical methods utilizing lectins and antibodies for labeling specific cell components
- Fracturing and shadowing under ultra-low temperature and ultra-high vacuum conditions
- Freeze fracture and deep etching in neurobiology

Rapid Freezing, Freeze Fracture, and Deep Etching will appeal to both newcomers to the field and experienced researchers and will be essential reading for cell biologists and anatomists, as well as any researcher who uses electron microscopy.

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