

Most of the references listed here are in the **Science & Engineering (S&E)**, the **Biomedical Library (BML)**, at **Geisel East (GE)**, or at **Scripps Institution of Oceanography (SIO)**. Those highlighted in **red boldface** are good places to start. The Library call numbers are given at the end of each reference. "TSB" signifies that Professor T. S. Baker has a copy or copies that you may borrow temporarily if you can't find a copy at UCSD or SIO.

ELECTRON MICROSCOPY AND OPTICS: GENERAL TEXTBOOKS

Electron Microscopy of Cells and Tissues. Vol. 1. Instrumentation and Techniques. F. S. Sjostrand. **1967**. Classic text on electron microscopy with emphasis on thin sectioning techniques. Is now outdated with regard to thin sectioning methods, but still provides a useful treatment of basic principles of transmission EM. (TSB)

Electron Microscopy: Principles and Techniques for Biologists. J. J. Bozzola and L. D. Russel. **1992, 1999**. Comprehensive, well-illustrated text of biological TEM and SEM and specimen preparation (mostly histological samples). (1992: SIO QH212.E4 B69 & TSB; 1999: BML QH 212.E4 B793 & TSB)

Introduction to Electron Microscopy. C. E. Hall. 1st ed. **1953**, 2nd ed. **1966, 1983**. Classic reference on electron optical theory and design. (1966: BML QH 205 H174i & TSB)

Introduction to Electron Microscopy. S. Wischnitzer. 1st ed. **1962**, 2nd ed. **1970**, 3rd ed. **1981**. Excellent survey of the principles and practice of electron microscopy. (1962: BML QH 205 W811i; 1970: BML QH 205 W811i & TSB; 1981: BML QH 212 E4 W811i & TSB)

Light and Electron Microscopy. E. M. Slayter and H. S. Slayter. **1992**. Basic text covering a wide range of topics including LM, TEM, STEM, SEM, STM, AFM, etc.. (BML QH 502.2 S631L & TSB)

Practical Electron Microscopy for Biologists. G. A. Meek. 1st ed. **1970**, 2nd ed. **1976**. Excellent general reference, more comprehensive than Wischnitzer. (1970: TSB; 1976: BML QH 212 E4 M494p & TSB)

Principles and Practice of Electron Microscope Operation. A. W. Agar, R. H. Alderson and D. Chescoe. In *Practical Methods in Electron Microscopy*, Vol. 2, **1976**, A. M. Glauert (ed.). Excellent coverage of most aspects of the operation of a TEM. (GE QH212.E4 P7 & TSB)

The Principles and Practice of Electron Microscopy. I. M. Watt. 1st ed. **1985, 1989**, 2nd ed. **1997**. Basic text covering TEM and SEM. (1985: TSB; 1997: BML QH 212 E4 W344p & TSB)

OTHER TEM BOOKS & ANNUAL REVIEWS (Alphabetical list)

Biomedical Electron Microscopy: Illustrated Methods and Interpretations. A. B. Maunsbach and B. A. Afzelius. **1999**. Academic Press, San Diego. Lots of beautiful illustrations, mostly of histological samples, and includes practical tips. (GE QH212.E4 M38 & TSB)

Electron Microscopy of Proteins. Vols. 1-4, J. R. Harris (ed.); Vols. 5-6, J. R. Harris & R. W. Horne (eds.). Academic Press, London. (BML QU 55 E387 & TSB)

Vol	Date	Contents
1	1981	Haemocyanins; Nuclear envelope and nuclear pore complex; Intermediate filaments; Protein synthesis in prokaryotes and eukaryotes; Glycoproteins; Coated vesicles; Cilia and flagella
2	1982	Multienzyme complexes; Nonenzymic proteins; Bacterial appendages; Plasma lipoproteins; Fibrous proteins of connective tissue; HREM of unstained, hydrated protein crystals; Specialized membranes
3	1982	Algal cell walls; Bacterial cell walls and membranes; Chromatin and chromosomal proteins; Extracellular haemoglobins/chlorocruorins of annelids; Amyloid; Tubulin & tubulin associated proteins
4	1983	Actin and thin filaments; Myosin molecules, thick filaments and the actin-myosin complex; Erythrocyte membrane proteins; Plasma membrane intercellular junctions
5	1986	Bacteriophage T7; Bacteriophage morphogenesis; Crystalline arrays of adenovirus and their components; Influenza virus; Filamentous plant viruses; Human hepatitis viruses; Reoviruses; Immunoelectron microscopy of extracts of virus-infected plants; Structure and assembly of herpesviruses
6	1987	Freeze fracture of integral membrane proteins; Plasma membrane and cell wall of yeast; Microvillar membrane hydrolases of small intestine; Bacterial surface layers; Photosynthetic membranes and membrane proteins; Phycobilisomes and thylakoids; Sarcoplasmic reticulum

Methods of Preparation for Electron Microscopy: An Introduction for the Biomedical Sciences. D. G. Robinson, U. Ehlers, R. Herken, B. Hermann, F. Mayer, and F.-W. Schurmann. **1987**. Chapters on: Introduction to EM; Methods for TEM; Methods for SEM; Evaluation of micrographs. Springer-Verlag, New York. (SIO QH212.E4 M49 & TSB)

Negative Staining. M. A. Hayat and S. E. Miller. **1990**. Chapters on negative staining, virological methods, specific methods, and support films. (SIO QR387.5 .H39 & TSB)

Practical Methods in Electron Microscopy. A. M. Glauert (ed.). (GE QH 212.E4 P7 has vols. 1-3, 5-7, and 11-14 & TSB has vols. 1(Pt.2), 2, 3, 4, 7, and 12)

Vol	Date	Title
1	1972	Part 1: Specimen Preparation in Materials Science Part 2: Electron and Optical Diffraction Techniques
2	1974	Principles and Practice of EM Operation
3	1974	Part 1: Fixation, Dehydration and Embedding Part 2: Ultramicrotomy
4	1975	Design of the Electron Microscope Laboratory
5	1977	Part 1: Staining Methods for Sectioned Material Part 2: X-Ray Microanalysis in the Electron Microscope
6	1977	Part 1: Autoradiography and Immunocytochemistry Part 2: Quantitative Methods in Biology
7	1978	Image Analysis, Enhancement and Interpretation
8	1980	Replica, Shadowing and Freeze-Etching Techniques
9	1981	Dynamic Experiments in the EM
10	1985	Low Temperature Methods in Biological EM
11	1985	Thin Foil Preparation
12	1987	Electron Diffraction: An Introduction for Biologists
13	1991	Sectioning and Cryosectioning for Electron Microscopy
14	1992	Cytochemical Staining Methods for Electron Microscopy
15	1994	Vacuum Methods in Electron Microscopy
16	1997	X-Ray Microanalysis for Biologists
17	1998	Biological Specimen Preparation for Transmission Electron Microscopy

IMAGE PROCESSING/RECONSTRUCTION TEXTS

Electron Crystallography of Biological Macromolecules. R. M. Glaeser, K. Downing, D. DeRosier, W. Chiu, and J. Frank. **2007**. Oxford University Press, New York, NY. (BML QD906.7 E37 E39, GE QD906.7.E37 E39 & TSB [has 2 copies])

Electron Tomography: Methods for Three-Dimensional Visualization of Structures in the Cell. J. Frank. **2006**. Springer, New York, NY. (GE QH324.9.T45 E43 & TSB)

Image Analysis, Enhancement and Interpretation. D. L. Misell. In Practical Methods in Electron Microscopy, Vol. 7, **1978**, A. M. Glauert (ed.). This was the first book to be written about the basics of image analysis discussed in this course. (GE QH 212.E4 P7 & TSB)

Three-Dimensional Electron Microscopy of Macromolecular Assemblies: Visualization of Biological Molecules in Their Native State. J. Frank. **2006**. Oxford University Press, New York, NY, 2nd ed. The most recent, comprehensive text on issues relevant to image processing of biological macromolecules. (BML QH 212 E4 F838t & TSB [has 3 copies])

PERIODICALS

Technical aspects of transmission electron microscopy are covered primarily in the following journals, many of which are available on-line to UCSD staff and students:

Journal	Call # (Library)	Vols. and Year(s)
Electron Microscopy Reviews	Electronic	v.1-5; 1988-1992
Journal of Electron Microscopy	W1 JO449 (BML) Electronic	v.1-39; 1953-1991 v.1-61; 1953-2012
Journal of Electron Microscopy Technique (Cont'd as <i>Microscopy Research & Technique</i>)	Electronic	v.1-19; 1984-1991
Journal of Microscopy	W1 JO688 (BML) Electronic	v.91-216; 1970-2004 v.181-249; 1996-2013
Journal of Structural Biology	Electronic	v.103-181; 1990-2013
Micron 1969	Electronic	v.1-14; 1969-1983
Micron and Microscopia Acta (Formerly <i>Micron 1969</i>)	Electronic	v.14-23; 1983-1992
Micron (Formerly <i>Micron and Microscopia Acta</i>)	Electronic	v.24-44; 1993-2013
Microscopy Research and Technique (Formerly <i>Journal of Electron Microscopy Technique</i>)	Electronic	v.20-76; 1992-2013
Optik	Electronic	v.112-124; 2001-2013
Ultramicroscopy	Electronic	v.1-125; 1975-2013

The following is a list of several journals that generally publish articles pertaining to results obtained by electron microscopy and image reconstruction.

Biophysical Journal	Molecular Cell
Cell	Nature
Current Opinion in Structural Biology	Nature Structural and Molecular Biology
EMBO Journal	Proceedings of the Nat'l Academy of Sciences USA
Experimental Cell Research	Protoplasma
FEBS Letters	PLOS One
Journal of Bacteriology	PLOS Biology
Journal of Cell Biology	PLOS Computational Biology
Journal of Cell Science	PLOS Pathogens
Journal of General Microbiology	Science
Journal of General Virology	Seminars in Virology
Journal of Molecular Biology	Structure
Journal of Structural Biology	Virology
Journal of Virology	

The above list is incomplete in the sense that virtually every discipline in biology has its own journal or journals that include publications with results based on transmission electron microscopy.