

Microscopy

1. Principle of image formation in a compound microscope
2. Optical aberrations and their correction methods
3. Spatial resolution
4. Illumination and excitation methods
5. Polarization microscopy
6. Confocal and STED microscopy
7. Fluorescence and SIM microscopy
8. Fluorescence lifetime microscopy
9. Localization based super-resolution microscopy

Suggested literature:

D. Murphy, M. Davidson: Fundamentals of light microscopy and electronic imaging
J. Lakowicz: Principles of fluorescence spectroscopy
B. Valeur: Molecular fluorescence
M. Sauer: Handbook of fluorescence spectroscopy and imaging