

"Electron Tomography in Structural Biology"

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During the last 40 years, three-dimensional electron microscopy (3DEM) has become an important research area in structural biological. Most methods of 3DEM use a conventional transmission electron microscope (CTEM) for obtaining three-dimensional information of a specimen. One of the methods of 3DEM is electron tomography. To obtain a tomographic data set, the specimen is tilted in the microscope over a large angular range and a set of images (a tilt series) is recorded at a set of different tilt angles. The images are in fact projections along the beam direction. The set of projections is then used to calculate (reconstruct) a "three-dimensional image". The basic principles of electron tomographic data acquisition will be explained. Results of some applications of electron tomography to frozen-hydrated biological macromolecules, supramolecular assemblies, cell organelles, and whole prokaryotic cells will be shown.

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