

Single-particle Diffraction

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X-ray crystallography is approaching the time when it will be able to image single small objects without the need to aggregate multiple copies into a crystal. The emerging technique is quite close to that of x-ray crystallography, but replaces the crystal's large amplification of the diffracted signal by the use of high-intensity x-ray sources and techniques for minimizing the effects of radiation damage. The subject will be illustrated by describing progress in our project aiming at 3D 10nm-resolution imaging of a single quick-frozen yeast cell.

The talk will serve as an introduction to Microsymposium MS22, which will describe additional ongoing work, including projects aimed at atomic-resolution imaging of single macromolecules and macromolecular assemblies by the use of femtosecond-length pulsed x-ray sources.

Keywords: crystallography without crystals, x-ray diffraction microscopy, yeast cell