

Publication

3D Electron Diffraction: The Nanocrystallography Revolution

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Crystallography of nanocrystalline materials has witnessed a true revolution in the past 10 years, thanks to the introduction of protocols for 3D acquisition and analysis of electron diffraction data. This method provides single-crystal data of structure solution and refinement quality, allowing the atomic structure determination of those materials that remained hitherto unknown because of their limited crystallinity. Several experimental protocols exist, which share the common idea of sampling a sequence of diffraction patterns while the crystal is tilted around a noncrystallographic axis, namely, the goniometer axis of the transmission electron microscope sample stage. This Outlook reviews most important 3D electron diffraction applications for different kinds of samples and problematics, related with both materials and life sciences. Structure refinement including dynamical scattering is also briefly discussed.

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