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New Possibilities in X-ray Microanalysis with an Electron Beam

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The introduction of silicon drift detectors (SDD) made new applications in electron microscopy possible. Larger detector areas lead to higher collection angles and thus to a higher detection efficiency. Faster electronics improved the overall detection rate. Count rates of 100'000 cts/sec and more have become possible. Improved low energy sensitivity and the increased number of counts (for a given time) allow a better light element and trace element analysis. Dramatically reduced acquisition times for elemental mapping (minutes instead of hours) have made it possible to perform 3D elemental analysis in FIB/SEM tomography.

In some transmission electron microscopes detector elements are integrated into the pole piece and allow high speed and artefact free analysis of even single atom columns. Tilt-series tomography based on X-ray intensity maps allow the reconstruction of complex chemical microstructures in 3D.

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Advancing quantitative chemical imaging

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Talk

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