
MM 1: Invited Talk (Hauptvortrag): Dunin-Borkowski

Time: Monday 9:30–10:00

Location: H24

Invited Talk

MM 1.1 Mon 9:30 H24

New opportunities and challenges in chromatic aberration corrected and in situ transmission electron microscopy —•RAFAL E. DUNIN-BORKOWSKI¹, LOTHAR HOUBEN¹, JURI BARTHEL¹, ANDREAS THUST¹, CHRIS BOOTHROYD¹, MARTINA LUYSBERG¹, ANDRAS KOVACS¹, MARTIAL DUCHAMP¹, and JOACHIM MAYER² —¹Forshungszentrum Jülich, Jülich, Germany — ²RWTH Aachen University, Aachen, Germany

In the most recent generation of transmission electron microscopes, chromatic aberration correction promises to provide improved spatial resolution and interpretability when compared with the use of spherical aberration correction alone, especially at lower accelerating voltages.

The reduced dependence of image resolution on energy spread offers benefits for conventional bright-field and dark-field imaging, less re-focusing is necessary between regions of different specimen thickness, large energy windows and large objective aperture sizes can be used in energy-filtered transmission electron microscopy, and a spatial resolution of better than 0.5 nm can be achieved with the conventional microscope objective lens switched off. In this talk I will present a selection of initial calibrations and test results obtained in both high-resolution and Lorentz modes from a recently installed transmission electron microscope equipped with a combined spherical and chromatic aberration corrector on the objective lens. These developments and results will be discussed in the context of in situ experiments, including the use of microscopes that are equipped with larger pole-piece gaps.