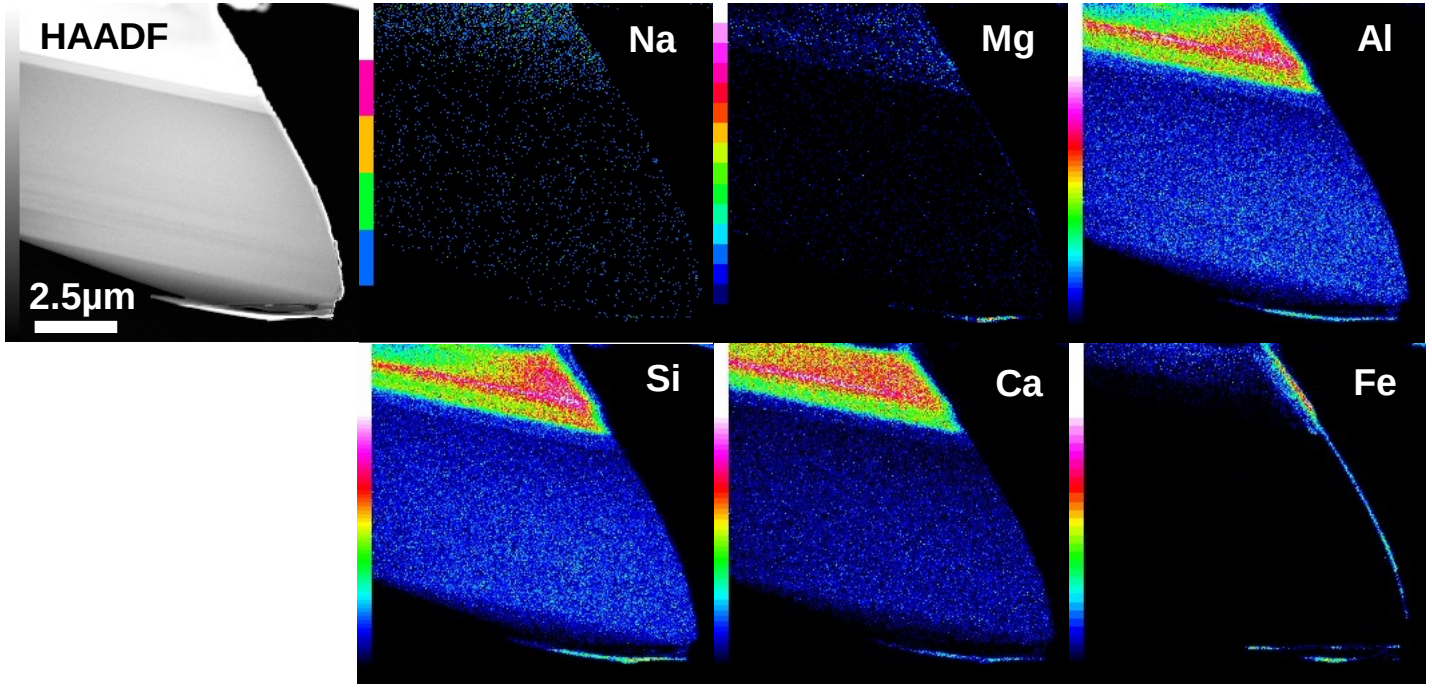
MET00426 chondrule M6 (resolvable excess ^{26}Mg)

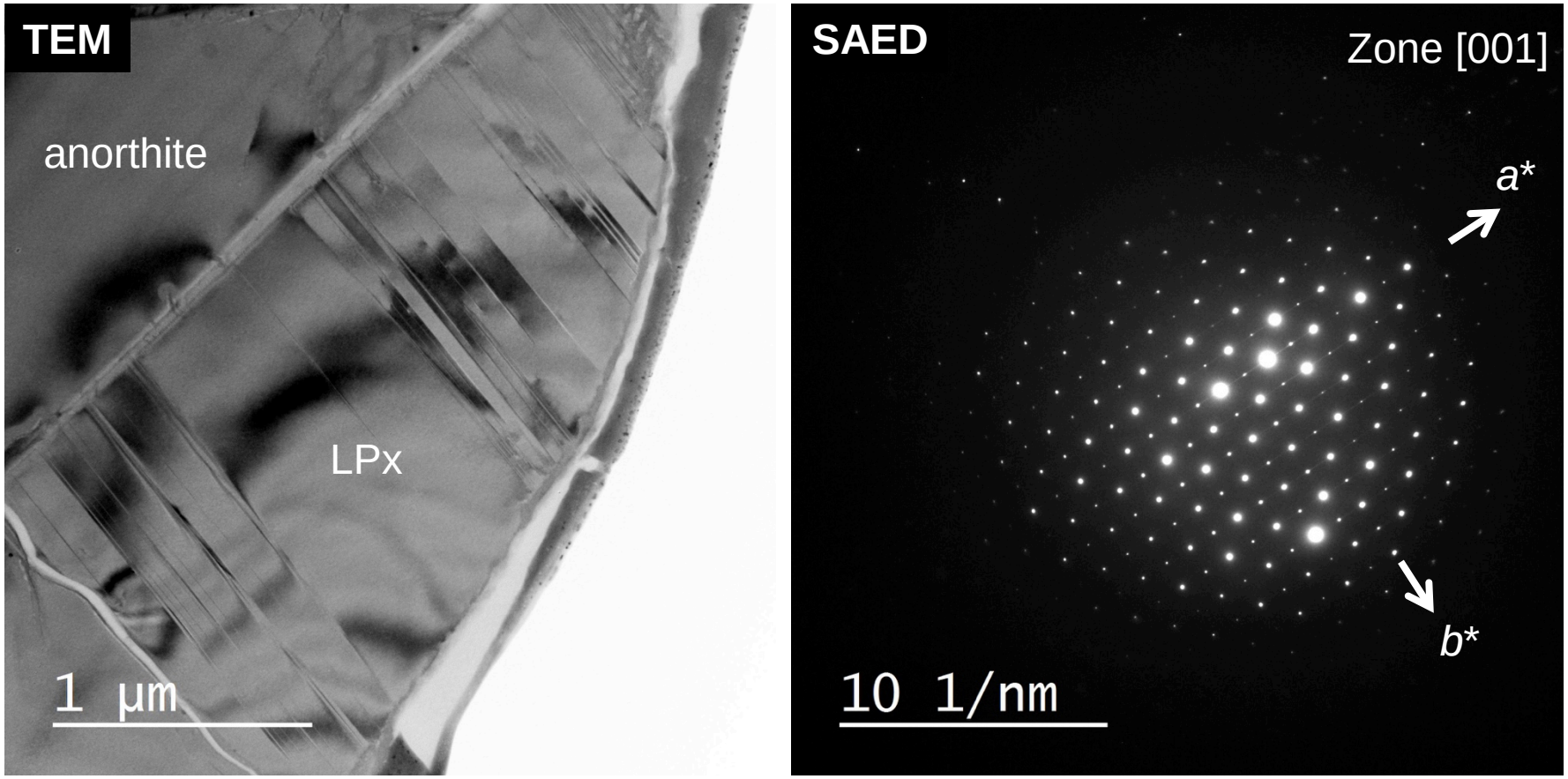
Chondrule M6 FIB section STEM-EDS mapping



- The sample is chemically homogeneous. Striped color gradation is caused by different sample thickness.

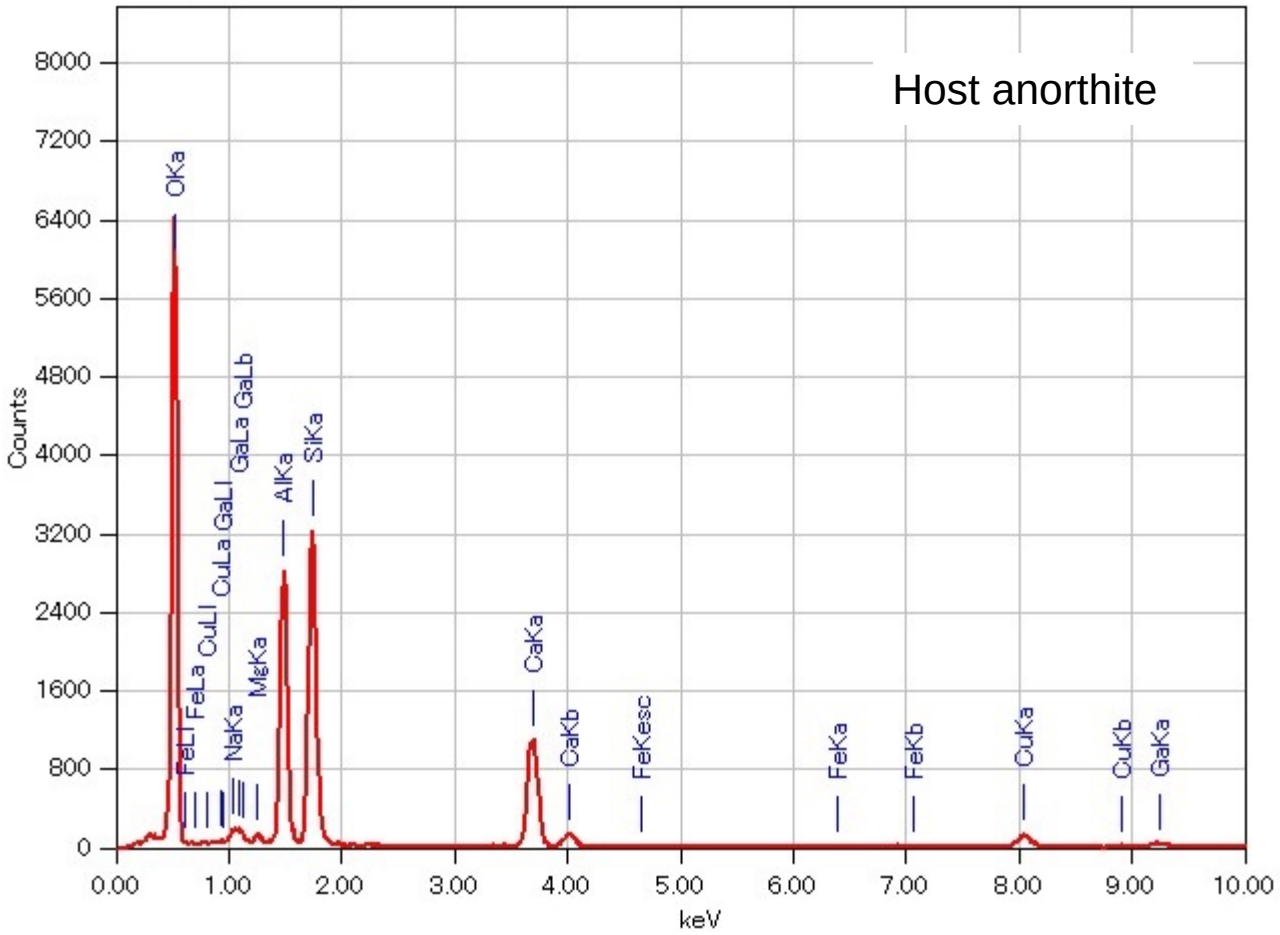
QUE99177 chondrule Q44 (no resolvable excess ^{26}Mg)

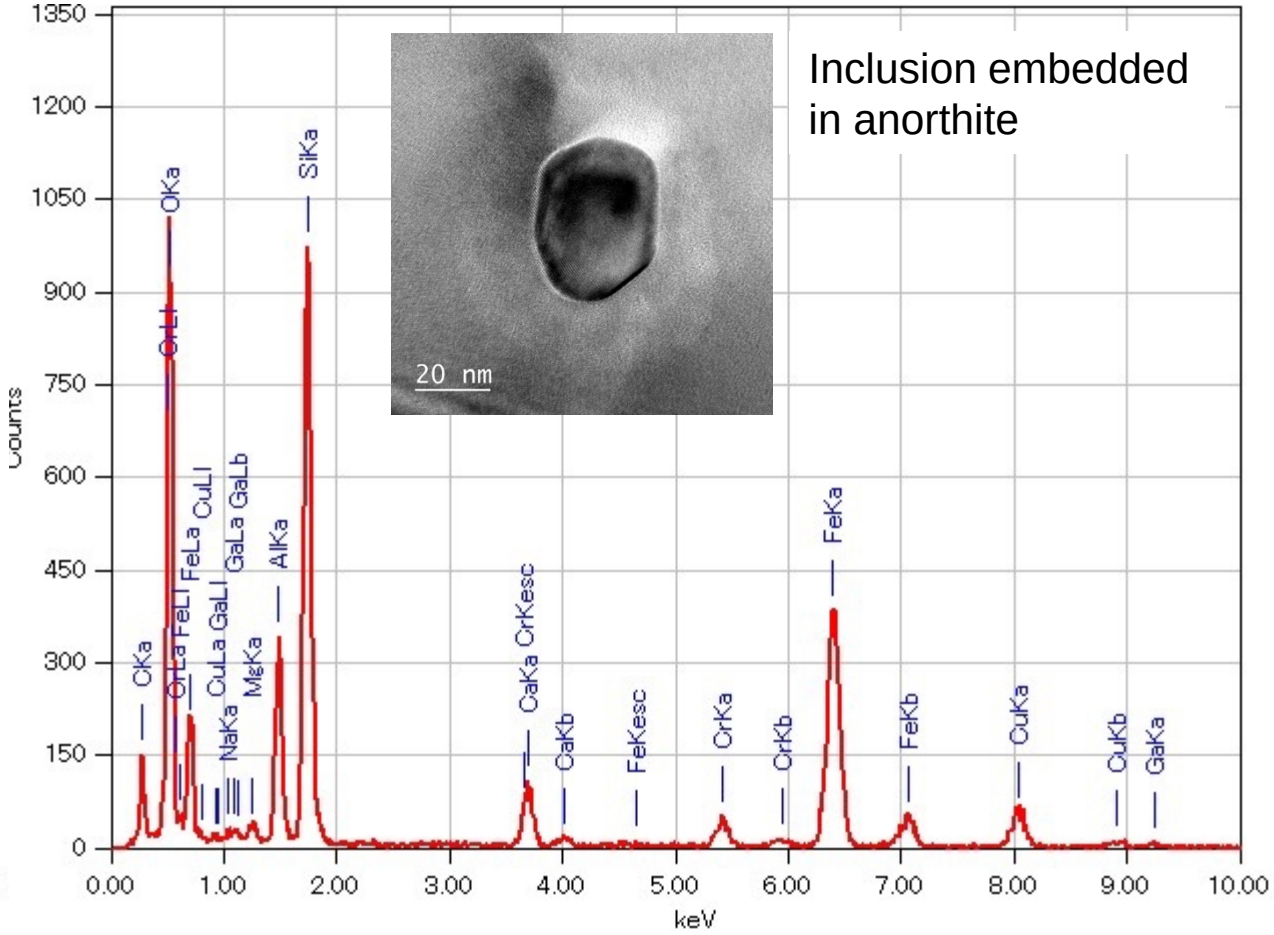
TEM image and selected area electron diffraction (SAED) pattern of low-Ca pyroxene (clinoenstatite) in the Q44 FIB section



- Low-Ca pyroxene (LPx) has stacking disorder on the (100) plane.

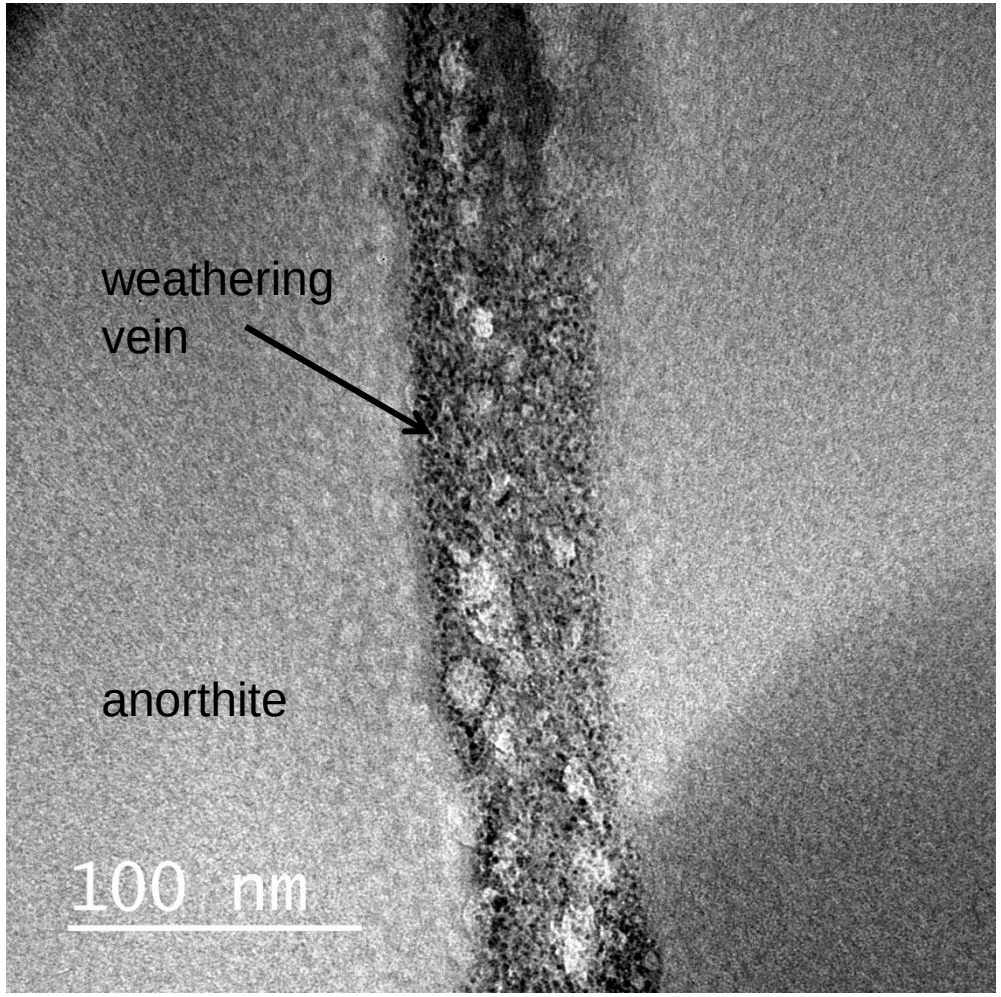
EDS spectra of an anorthite grain with inclusions in Q44 FIB section domain 1



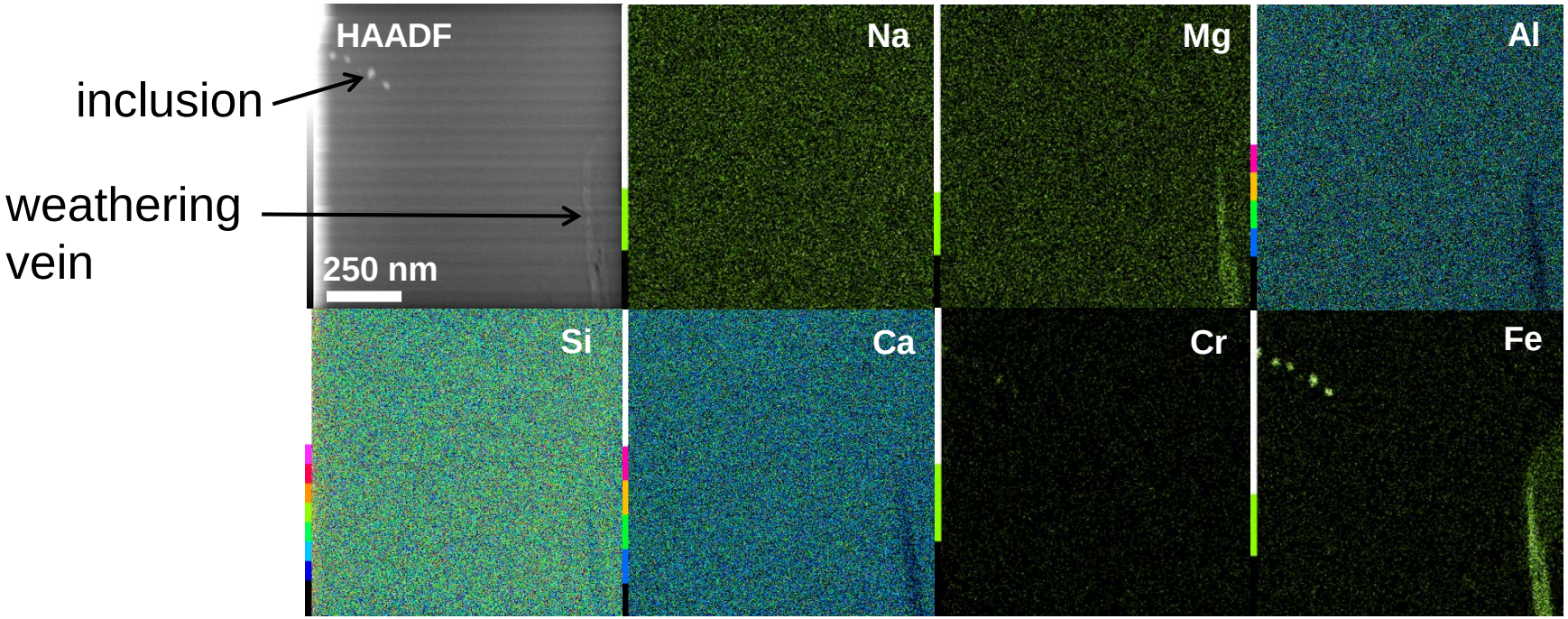


- Inclusions contain a large amount of Fe and Si, and a lesser amount of Cr. As the inclusions are so small, the EDS spectra are a mixture of peaks from the inclusions and the host anorthite. Ga peaks are from implanted Ga during FIB sectioning and Cu peaks are coming from the TEM grid.

TEM image of a weathering vein in Q44 plagioclase domain 1

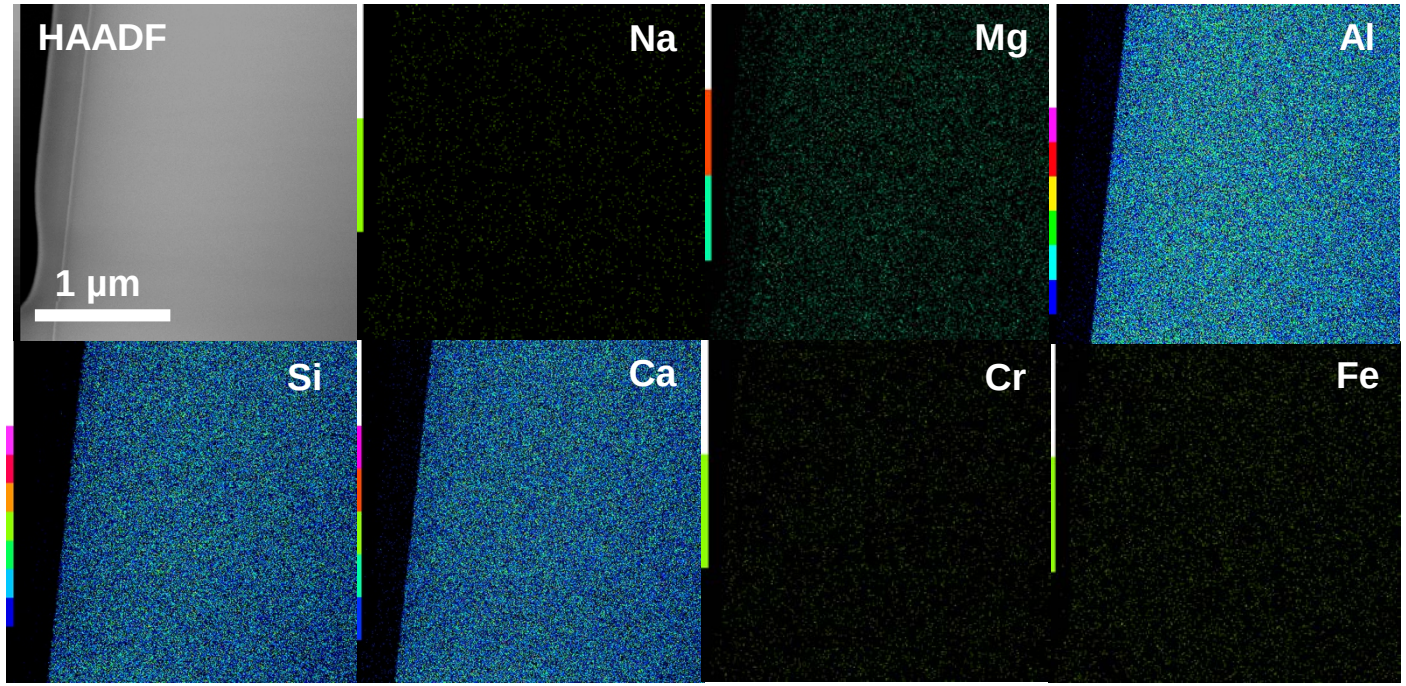


STEM-EDS mapping: Q44 plagioclase domain 1



- Weathering veins are rich in Fe and Mg. The Fe-rich inclusions are not lying on the weathering veins.

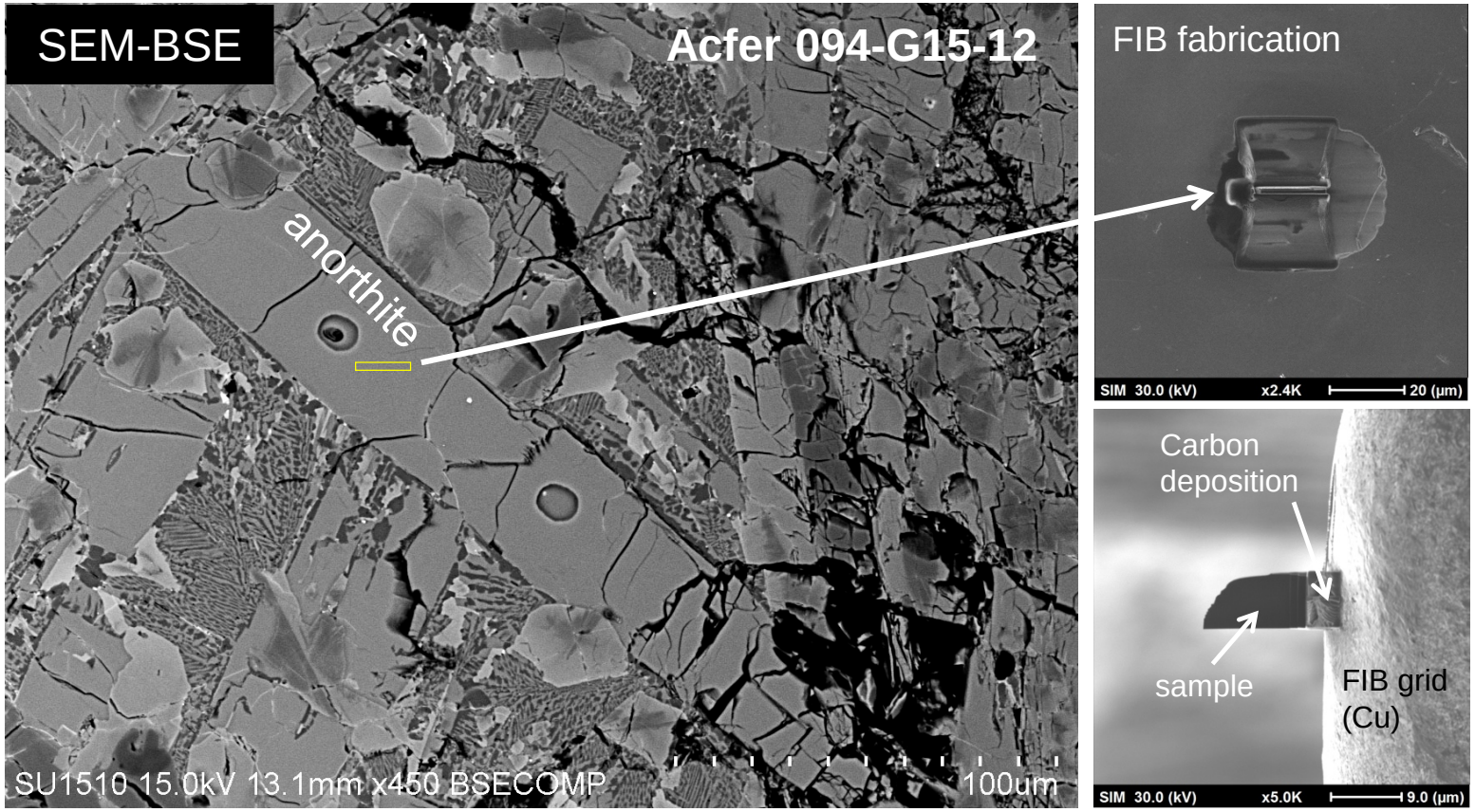
STEM-EDS mapping: Q44 plagioclase domain 2



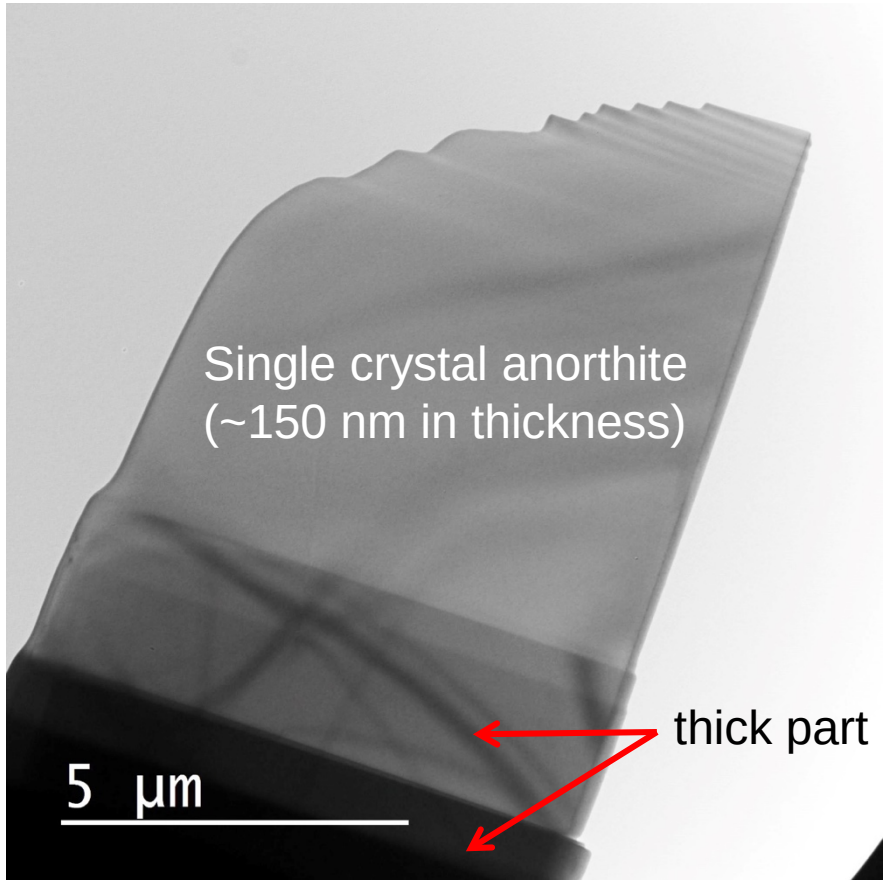
- The domain is chemically homogeneous.

Acfer 094 chondrule G15 (resolvable excess ^{26}Mg)

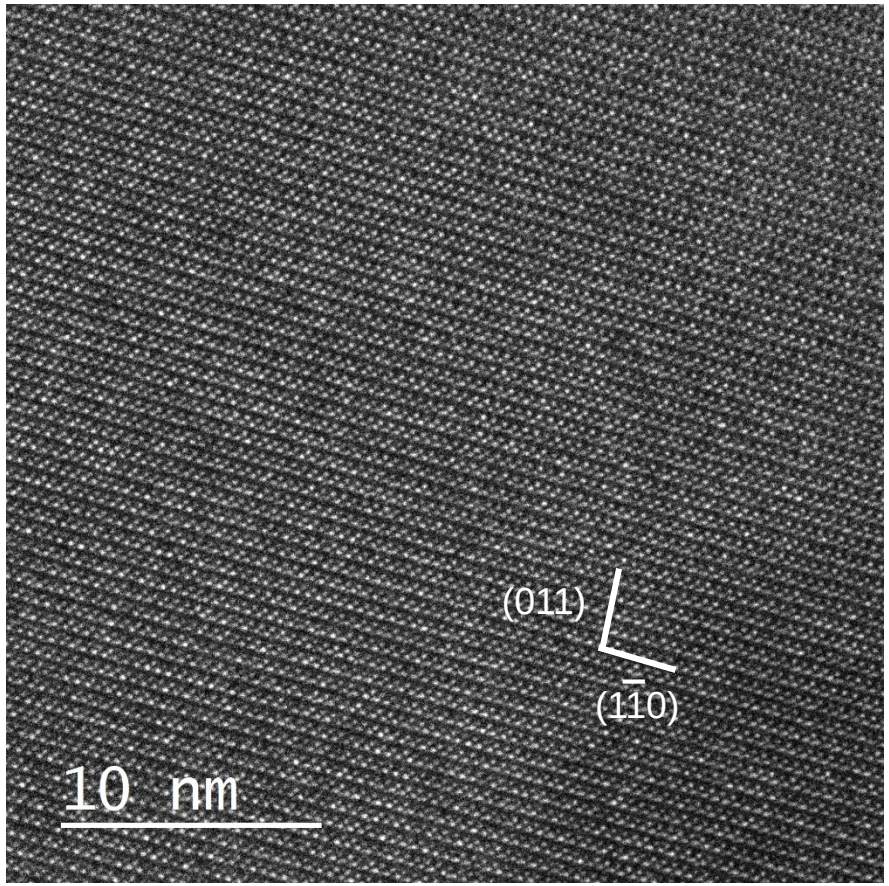
FIB-fabricated anorthite grain



Low magnification TEM image

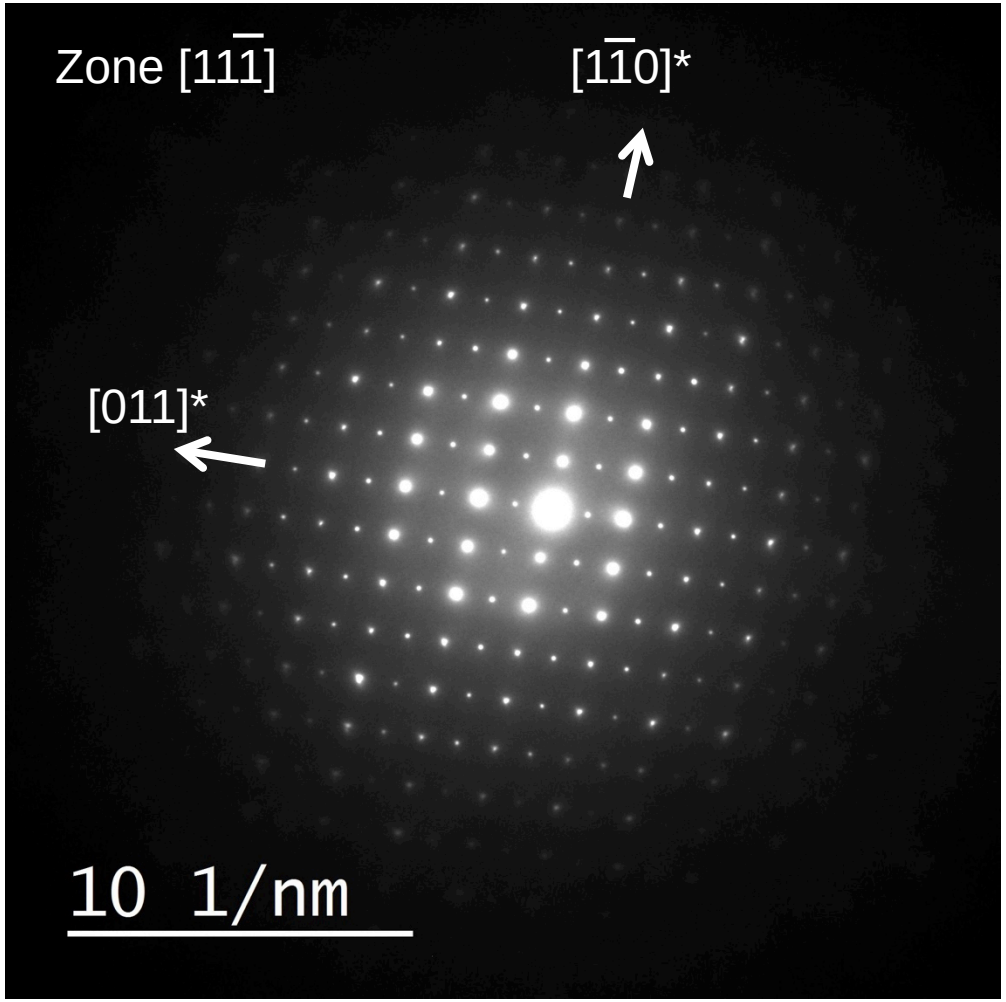


High-resolution TEM image



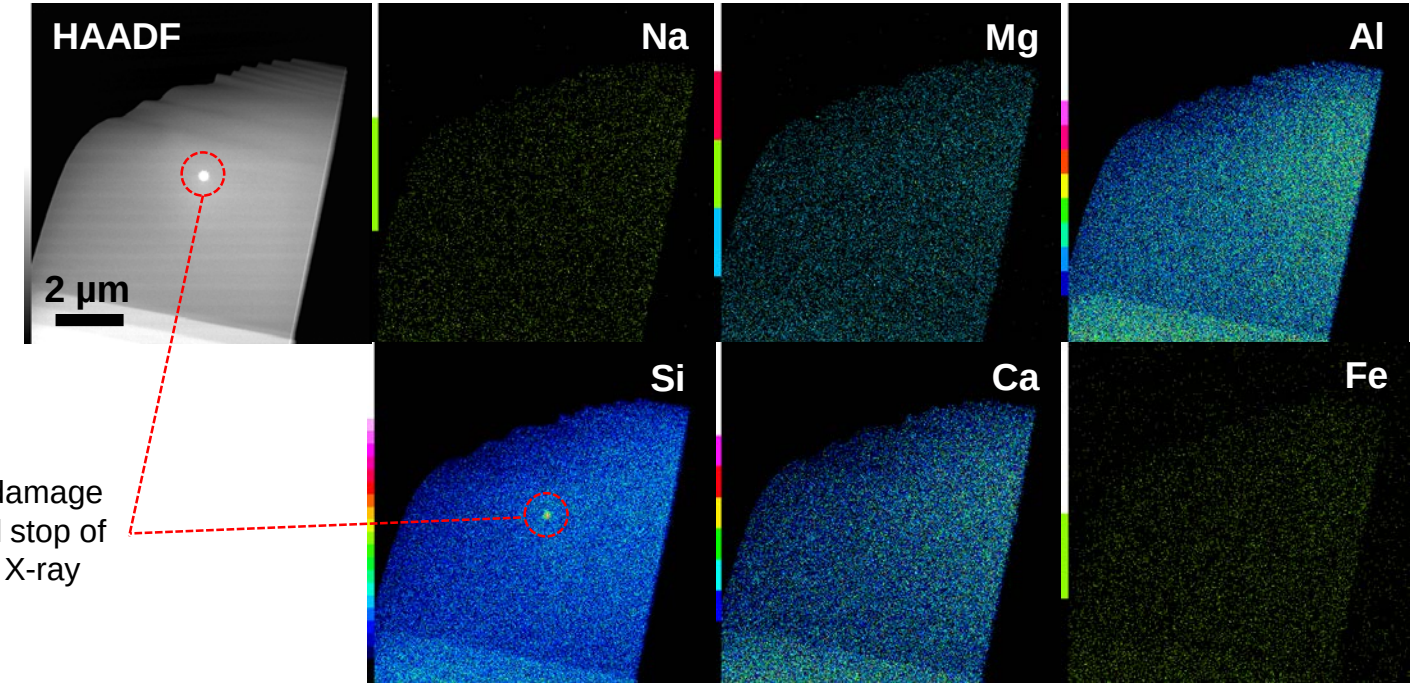
- No inclusions and defect structures are present, even at the nanometer-scale.

Selected area electron diffraction of anorthite grain



- The diffraction pattern only shows diffraction spots of anorthite. No superlattice reflections.

STEM-EDS X-ray mapping



Electron-beam damage by an accidental stop of scanning during X-ray mapping.

- The sample is chemically homogeneous. Small gradation is caused by different sample thickness.