

TEM foil preparation technique by FIB system

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Recently, Focused Ion Beam (FIB) system is introducing rapidly to the earth science for the preparation of TEM foil. FIB system is novel technique because we can prepare TEM foil of a micrometer-order specific portion. However TEM foil preparation technique by FIB system is still developing. And FIB system has several disadvantages; 1) TEM foil prepared by FIB system is thick (120-130 nm); 2) Gallium contamination; 3) amorphous or damage layer. These points should be dissolved to apply FIB system extensively. FIB system a JEOL JEM-9320FIB was installed at graduate school of science, Tohoku University in 2005. A dedicated optical microscope with a manipulator for a lift out method was also introduced. Firstly, we will talk about the outline of a JEOL JEM-9320FIB. Secondary, we will show TEM foil preparation technique by a JEOL JEM-9320FIB, a dedicated optical microscope with a manipulator, dedicated Mo grid, argon ion milling method, and gentle milling system. Finally, we will also show several BF-TEM and ADF/BF-STEM images of TEM foils prepared by our technique.