

Oxford Instruments

NanoAnalysis

TKD Sample Holder 51-1720-133

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This is an instruction sheet covering the Oxford Instruments dedicated TKD (t-ebbsd) sample holder. This holder is specifically designed for holding thin film samples while acquiring EBSD data in 'transmission' mode.

Introduction

TKD uses conventional EBSD hardware and software, but the samples are thin, electron transparent samples. The diffraction signal is obtained from a few to tens of nms of the bottom sample surface, so sample preparation is important.

The main difference between EBSD and t-EBSD is how the sample is positioned in the SEM chamber. A typical representation of the configuration required, is shown in figure 1 on page 2. In this representation the sample is positioned at an angle (20 degrees) to the electron beam, however, other studies orientate the sample horizontally. The optimum angle to use depends on the position of the EBSD detector and the working distance.

TKD data can be collected and presented in the same way as conventional EBSD data.

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Figure 1



How to use the TKD Sample Holder:

- The thin sample is positioned and held between two plates
- There is a recessed section in the lower plate so that the sample can be easily positioned
- When the sample is located the top plate is replaced and the screws tightened
- However the fixing screws do not need to be removed when changing or loading samples.
- The screws are loosened and the top plate which holds the sample in position can then be lifted and slid back out of the way.
- The sandwich which holds the sample can be inverted, should the sample be mounted upside down
- In addition, it can be mounted for conventional EBSD
- The brass post has alignment flats to ensure that the alignment of the holder can be controlled
- The sample holder includes a beam stop to prevent the beam which passes through the thin sample from being reflected back up onto the EBSD screen, and thereby interfere with the EBSP
- To fit the post to the stage use the 51-H5-550 pre-tilted sample holder.

TKD Sample Holder

A new Transmission Kikuchi Diffraction sample holder is available from Oxford Instruments. It is designed to hold thin (TEM) samples at a geometry so transmitted kikuchi patterns can be collected on the screen of the EBSD detector.

- Can be used on a range of SEM types
- Easy to use, and eases the locating and holding of delicate thin samples:
 - The fixing screws do not need to be removed when changing or loading samples
 - The screws are loosened and the top plate (which holds the sample in position) can be lifted and slid back out of the way
 - When the sample is located the top plate is replaced and the screws tightened
 - There is a recessed section in the lower plate so that the sample can be easily positioned
- The entire top plate can be inverted, should the sample be mounted upside down
- In addition, the plate can be mounted for conventional EBSD
- The sample holder includes a beam stop to prevent the beam which passes through the thin sample being reflected back up onto the EBSD screen, and therefore interfering with the EBSP

