Application Note

Cross section of Al for EBSD

related instrument Leica EM TIC020, Leica EM TIC3X

Medical Research

Industrial Manufacturing

Natural Resources
Cross section if Al for EBSD

PURPOSE
Electron backscattered diffraction (EBSD) is for example used to examine the crystallographic orientation of material. The sample preparation for such samples is sometimes very tricky as the depth of information is just few nm (~20nm or less). That means the sample surface must be flat and free of preparation artefacts. Mechanical polishing leads mostly to sample surfaces damages.

GOAL
Perfect sample surface for EBSD using the slope cutting method.

Process description (benchmark values for this particular sample):

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceleration voltage</td>
<td>7 kV</td>
</tr>
<tr>
<td>Gun current</td>
<td>2.6 mA</td>
</tr>
<tr>
<td>Milling time</td>
<td>3h</td>
</tr>
<tr>
<td>Cut depth</td>
<td>400μ</td>
</tr>
<tr>
<td>Complete process time</td>
<td>3.5h</td>
</tr>
<tr>
<td>Pre-preparation</td>
<td>EM TXP (milling to trim)</td>
</tr>
</tbody>
</table>

RESULTS
The surface quality of the Al sample is excellent
The diffraction pattern (Kikuchi-bands) proofs the preparation quality
An orientation mapping shows the orientation of the different grains of aluminium

Robert Ranner, Leica Microsystems
Rober.Ranner@leica-microsystems.com
Orientation image mapping (OIM) with the corresponding diffraction pattern (EBSD) of an aluminium sample
The statement by Ernst Leitz in 1907, “With the User, For the User,” describes the fruitful collaboration with end users and driving force of innovation at Leica Microsystems. We have developed five brand values to live up to this tradition: Pioneering, High-end Quality, Team Spirit, Dedication to Science, and Continuous Improvement. For us, living up to these values means: Living up to Life.

LIFE SCIENCE DIVISION - NANO TECHNOLOGY LNT

The Leica Microsystems Nano Technology Division’s focus is to provide the most comprehensive product portfolio for the preparation of biological, medical and industrial samples for investigation in the Electron and Light Microscope. Excellent Sample Preparation is a prerequisite for perfect microscopy. Your image starts here!