
# Leica EM TXP

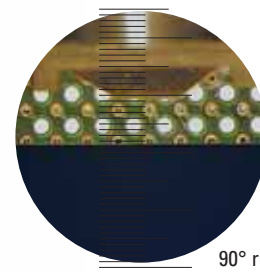
Target Surfacing System

Leica
MICROSYSTEMS

# Leica EM TXP – Target Surfacing

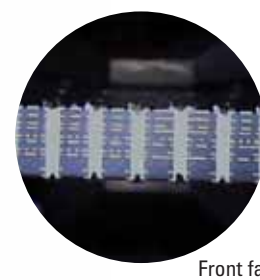
The Leica EM TXP is a unique target preparation device especially developed for cutting and polishing samples prior to examination by SEM, TEM and LM techniques. It excels with challenging specimens where pinpointing and preparing barely visible targets becomes easy. Before the Leica EM TXP, sawing, milling grinding and polishing exactly to the target was often a very time-consuming and difficult procedure as points of interest were easily missed and specimens often difficult to handle due to their small size. With the Leica EM TXP such samples can easily be prepared.


Leica Design by W. Hölbl



90° rotation view

Processing observation



Front face observation

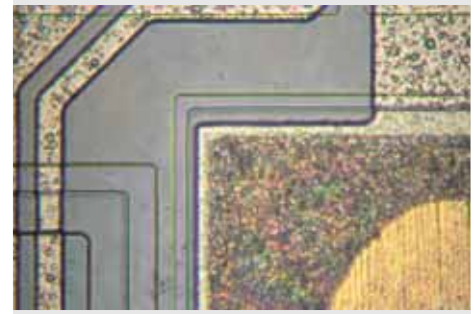
# System

## Integrated Viewing System

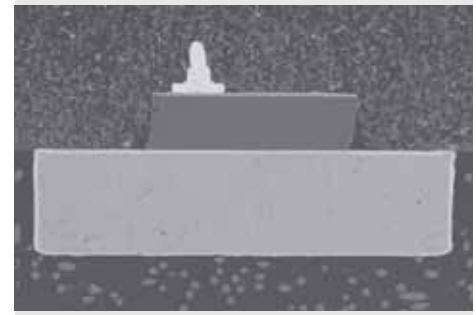
**Stereo microscopic target observation during the working process**

With the specimen pivot arm the sample can be observed during preparation at an angle between 0° and 60°, directly onto the front face, or 90° to the front face for distance determination with an eyepiece graticule. The Leica EM TXP features brilliant ring LED top light and optimized backlight illumination for excellent viewing.

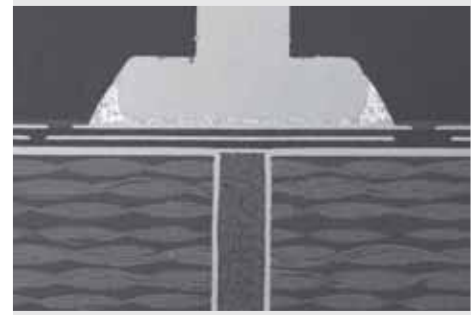
- **Accurate location and preparation of microtargets**
- **Observation with a stereo microscope**
- **Multifunctional machine processing**
- **Automatic process control to produce a mirror-like surface quality**



Front side decapsuled integrated circuit



SM LED gold wire bond



PCB cross section with soldered pin

PCB cross section

# Process Possibilities

Once the sample is clamped into the specimen holder and inserted in the pivot arm, the specimen can be:
– milled
– sawed
– ground
– and polished

without removing the sample from the Leica EM TXP and simply changing the tools while observing the process directly through the steromicroscope. The tool and sample are enclosed within a protective chamber with a transparent cover for safety. This prevents access to moving parts and avoids particulate matter escaping. During milling a low-noise extraction and filtration unit with a Hepa filter (optional) provides a safe, dust-free environment.

Diamond and tungsten carbide millers

Diamond disc cutter

Lapping inserts 15, 9, 6, 3, 1, 0.5 µm

# Integrated Automatic Process Control

**Let the Leica EM TXP do the job**

The Leica EM TXP automatic process control mechanism saves you from time-consuming routine sample preparation:

– with the automatic E-W guiding mechanism
– with the force-regulated feed control
– with the countdown function

and level sensor for the integrated lubricant cooling system


– **Pivot arm lever**
– **Hand wheel** for manual feed in steps of 0.5, 1, 10 and 100 µm
– **Control panel** for manual operation and setting of all parameters for automatic preparation

Peristaltic cooling system

Peristaltic cooling system

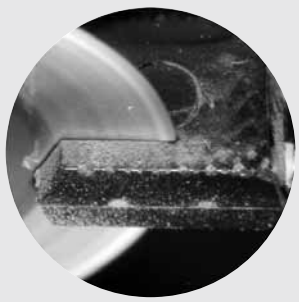
E-W guiding mechanism

# Application Examples

## Target preparation on surfaced sample for incident light LM and SEM

**All processing steps are carried out consecutively on the Leica EM TXP without removing the sample for pinpointing the area of interest via another microscope or for making any adjustments.** Preparing specimens observed during operation with the integrated stereo microscope avoids the time consuming interruption of locating the target with a stand alone microscope and then re-aligning the sample in the polishing instrument.

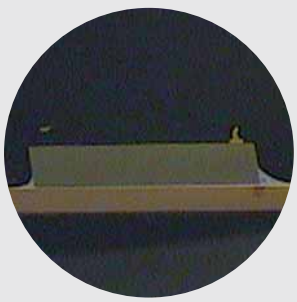
Sawing



Observation via stereo microscope of the Leica EM TXP

## Sample Thinning for transmitted light LM or prior to ion thinning for TEM

Specimen thinning with the Leica EM TXP offers the advantage of observing the complete process during treatment and distance monitoring at each process step without the need to remove the sample for checking in another instrument.



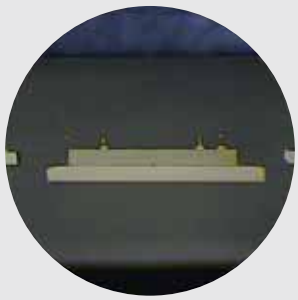
1st side preparation as described above.

Mill a supporting stub with the disc cutter so it is parallel to the prepared face in step 1. Set the advance counter to zero.

Fix the prepared 1st side with wax onto the prepared stub without removing it from the holder.

Or directly in the Leica EM TXP with glue.

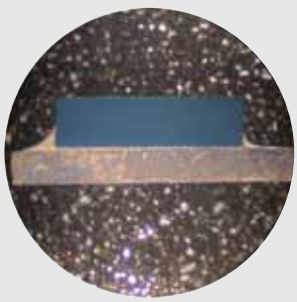
Grinding/polishing



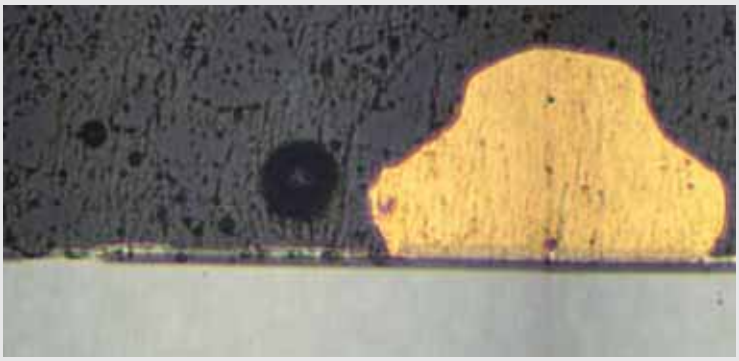
The area of interest via the stereo microscope of the Leica EM TXP

The saw is set to the desired value (e.g. 100 µm) and the second side preparation begins (here sawing).

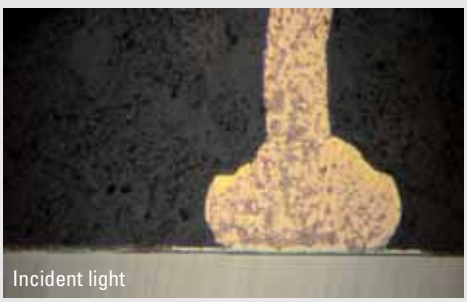
The second side is then polished. The thickness of the sample can be observed on the advance counter display.

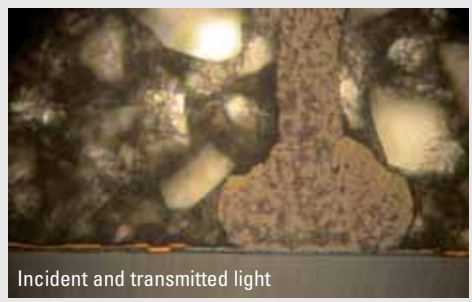


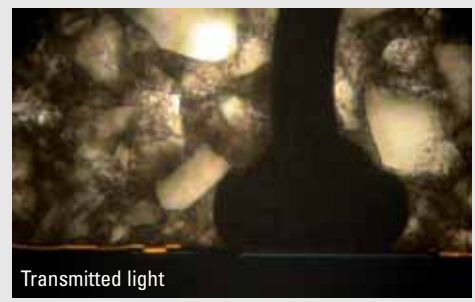
Front face observation with the Leica EM TXP. Here the sample thickness is 25 µm.




**Result**: Target-prepared integrated circuit. Gold wire bonding on Si (LM image)




**Result:** Target prepared integrated circuit. Gold wire bonding on Si .... 25 µm section (LM image)

# View the Details

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