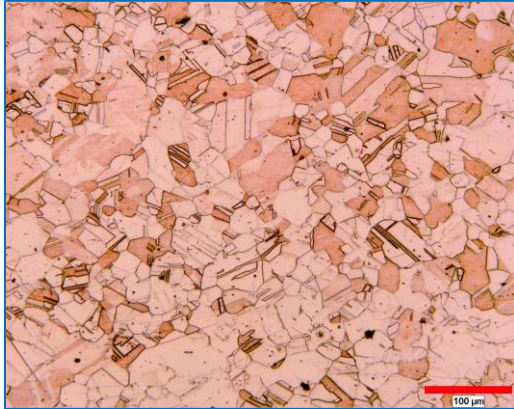
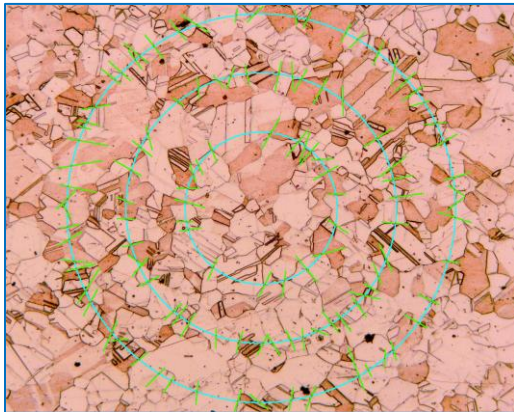


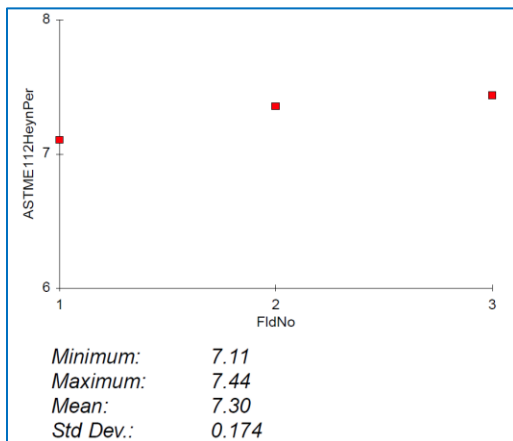
## GRAIN SIZE ANALYSIS IN COPPER



**Figure 1:** Original image.



**Figure 2:** Manually drawn intersections (green) on concentric circles and automatically deduced intercepts (cyan) as measured.



**Figure 3:** ASTM E112 grain size measurement and corresponding statistics over 3 fields of the sample.

### Sample Description

Five prepared copper sheet samples were submitted for analysis

### Purpose of Analysis

Demonstrate the ability of the **Clemex Vision image analysis system** can perform semi-automatic grain size measurements.

### Procedure

Three concentric circles are placed as overlay over the field being analyzed. The system stops and asks to the user to draw lines where the grain network goes across the circles. When the user is done, the circles are automatically disconnected at specified intersections. Artifacts are eliminated prior to automatic measurements. The stage moves to the next field to be processed.

### Equipment

**Image Analysis System:** Clemex Vision/Grain size module  
**Microscope:** Leica DM LM  
**Camera:** Clemex Dcam  
**Magnification:** 200X  
**Stage:** Marzhauser Ek321M

### Results

ASTM E 112 grain size measurements are performed on each section using Heyn method. Automated statistics and graph are generated and cumulated over all analyzed fields (3 in that case) as shown in Figure 3. Final results can be printed directly from Clemex Vision. Raw data are linked to their respective objects for validation purpose. Raw data can also be exported in Excel format.