Surface Analysis Technology Vacuum Components



Surface Analysis System Software

Computer Technology

SEM (and SAM)

Application Note

As an extension for users of SPECS standard XPS systems SPECS offers a SEM (Scanning Electron Microscopy) and SAM (Scanning Auger Microscopy) imaging package consisting of

- Digital Image Scanning System DISS 5
- SE-Detector System SED 100
- Electron Source
 - EQ 22 (SPECS) with 100 μm resolution
 - **EK-5-M2 (STAIB)** with 4 μm resolution.

This Application Note shows the lateral resolution of SPECS SEM/SAM images on the basis of standard probes.

Figure 1: MRS-3 Magnification Reference Standard



The sample used for the measurements as described here was a MRS-3 Magnification Reference Standard from Geller Microanalytical Laboratory (http://www.gellermicro.com/). The portion of the Reference Standard used for this work was an array of circles with diameters ranging from 2 to 38 μ m in 2 μ m increments (Fig.1) and 40-100 μ m in 10 μ m increments (Fig. 3). Each of the circles is composed of anti reflective chromium (30nm of CrO₂ on 70nm of Cr) deposited on quartz.



Figure 2: SEM image using EQ 22 electron gun, SED 100 SE Detector and imaging package DISS 5. The lines and spaces are 250 μ m wide. This standard configuration offers a lateral resolution of about 100 μ m and a large field of view for sample adjustment.









Figure 5-7: SEM image of carbon fibres (8 μm nominal thickness) image using the EK-5-M2 fine focus electron gun (STAIB), SED 100 SE Detector and imaging package DISS 5. Nickel mesh hole diameters are 25 μm.
Data courtesy S. Matysik and H. Papp (University of Leipzig, Germany).

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Figure 8-11: SEM image images of metallic samples using the EK-5-M2 fine focus electron gun (STAIB), SED 100 SE Detector and imaging package DISS 5. The nickel mesh holes are 25 μ m in diameter. Data courtesy S. Matysik and H. Papp (University Leipzig, Germany).

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Competence in Surface Analysis