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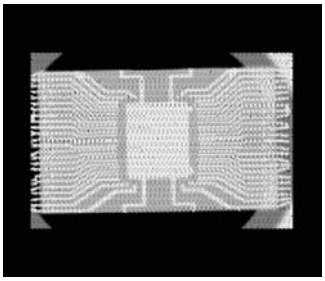
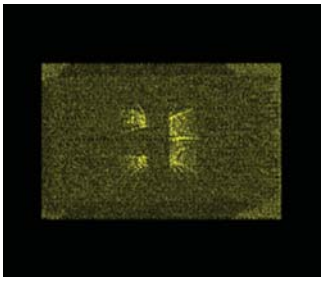
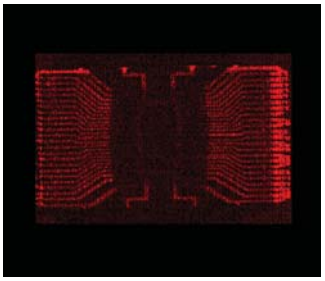
XROS MF30

X-ray analytical microscope-microprobe

XROS MF30 – laboratory x-ray microscope-microprobe for studies of the objects by the methods of the optical microscopy, radiography, local element XRF microanalysis with possibility of the element mapping.

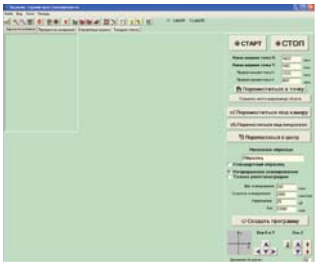
Instrument features:

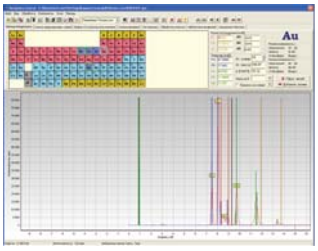
- microfocus x-ray tube
- polycapillary lens for making of an x-ray probe with the variable size
- set of primary radiation filters
- video-camera for selection of the analysis area
- optical digital microscope for investigation of the analysis area
- optical microscope axis combined with an x-ray probe axis
- automated system for selection of the work distance
- automated X, Y-coordinate sample stage for positioning and scanning of the analysis area
- automated movement of the analytical unit along Z axis
- detector for radiographic studies
- silicon drift detector for local XRF analysis
- vacuumized measuring chamber for the analysis of light elements
- built-in autonomous system for water cooling of X-ray tube

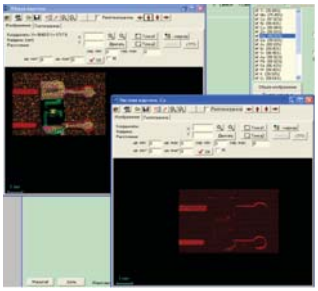





Software:

- **system control**
  high-voltage generator
  sample and beam positioning
  vacuum
- **local elemental analysis and elemental mapping**
  calibration with single certified sample
  calibration curve with several certified samples
  determination of energy and intensities of characteristic lines
  qualitative and semi-quantitative analysis (fundamental parameter method)
  spectra comparing and searching for analogs from the spectra library
  element mapping of user-defined sample area
  spectra and mapping results storing to data file
  comparison, subtraction, normalization of the stored spectra
  overlay spectra mapping image results on optical and radiographic images
  automatic analysis at user-defined points of sample
- **radiography**
  digital brightness and contrast control
  zooming
  measurement of distance between image points
- **logging and data storage**
  storing images in a database
  saving measurement results and export to other Windows programs
  digitized images record to external media
  images and protocols printing

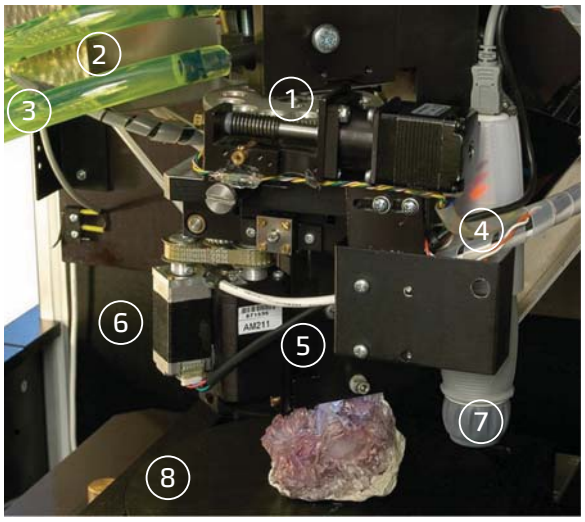






Design:

Moving along Z axis with an accuracy of 12 µm



1 block of primary radiation changeable filters (12 filters)
2 x-ray tube
3 built-in water cooling system
4 silicon drift detector
5 review video camera
6 optical microscope axis combined with the axis of the microprobe (automatic adjustment of sharpness)
7 optical microscope (manual adjustment of sharpness)
8 sample X,Y – stage with an accuracy of 10 µm

Configuration:

Beam source	
Microfocus X-ray tube:	
• X-ray tube max. voltage	45 kV
• X-ray tube max. power	500 W
• anode material	Mo, other by request
Polycapillary lens for x-ray beamforming with a variable size of beam	
• X-ray beam diameter	30-1 000 μm
Set of primary beam filters	Zr, Ti, Mo, Ag, Al, Cu, Cl

Optical study	
Optical digital microscope:	
• max. zoom	200x

Sample positioning and mapping	
Video camera to select the area of analysis	
Optical microscope combined with the axis of the X-ray probe to control the area of analysis	
Sample and probe moving system:	
• automated system for the working distance selection	
• analytical unit moving along Z axis	
• Z positioning accuracy	12 μm
• automated stage for XY object positioning and scanning over a user-defined sample area	
• XY positioning accuracy	10 μm
• max. scan area	150x150 mm
• sample max. size	300x210x100 mm
• sample max. weight	1 kg

X-ray fluorescence analysis	
Energy-dispersive semiconductor detector for local elemental analysis:	
• silicon drift detector (SDD)	
• energy resolution of the detector on the Mn line Kα	<150 eV
• spectral range	1 - 40 keV
• max. counting rate	1 000 000 cps
• concentration range	from 1 ppm to 100%

Radiography
Point detector of transmitted through the sample radiation for radiographic studies (optionally CCD detector)

Analytical unit	
Power supply	230 V, 50 Hz
Size (W x D x H)	615 x 665 x 650 mm
Weight	85 kg

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