

XROS MF30

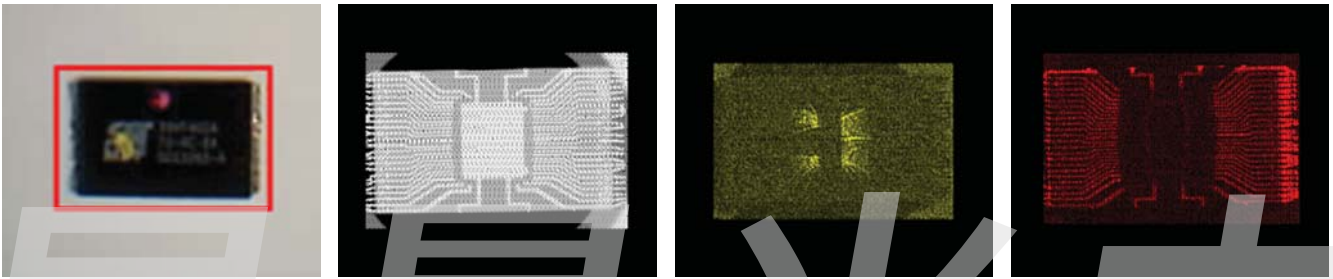
X-ray analytical microscope-microprobe



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.

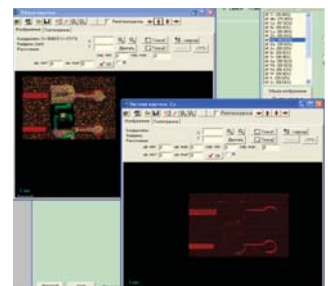
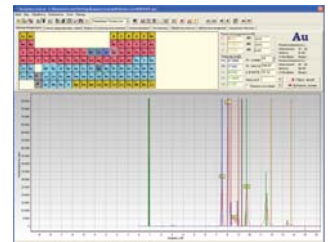
Instrument features:

- 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



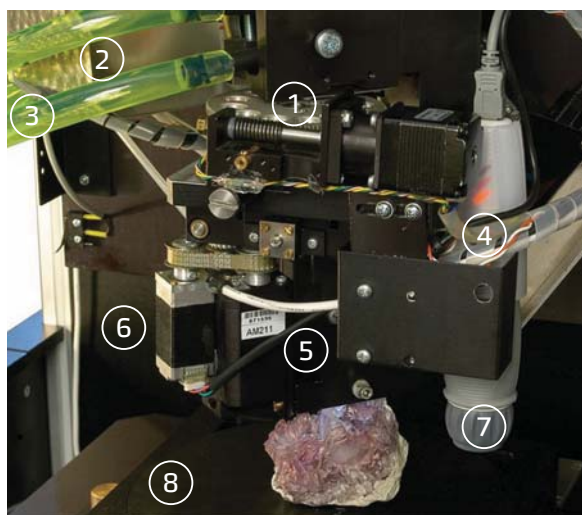
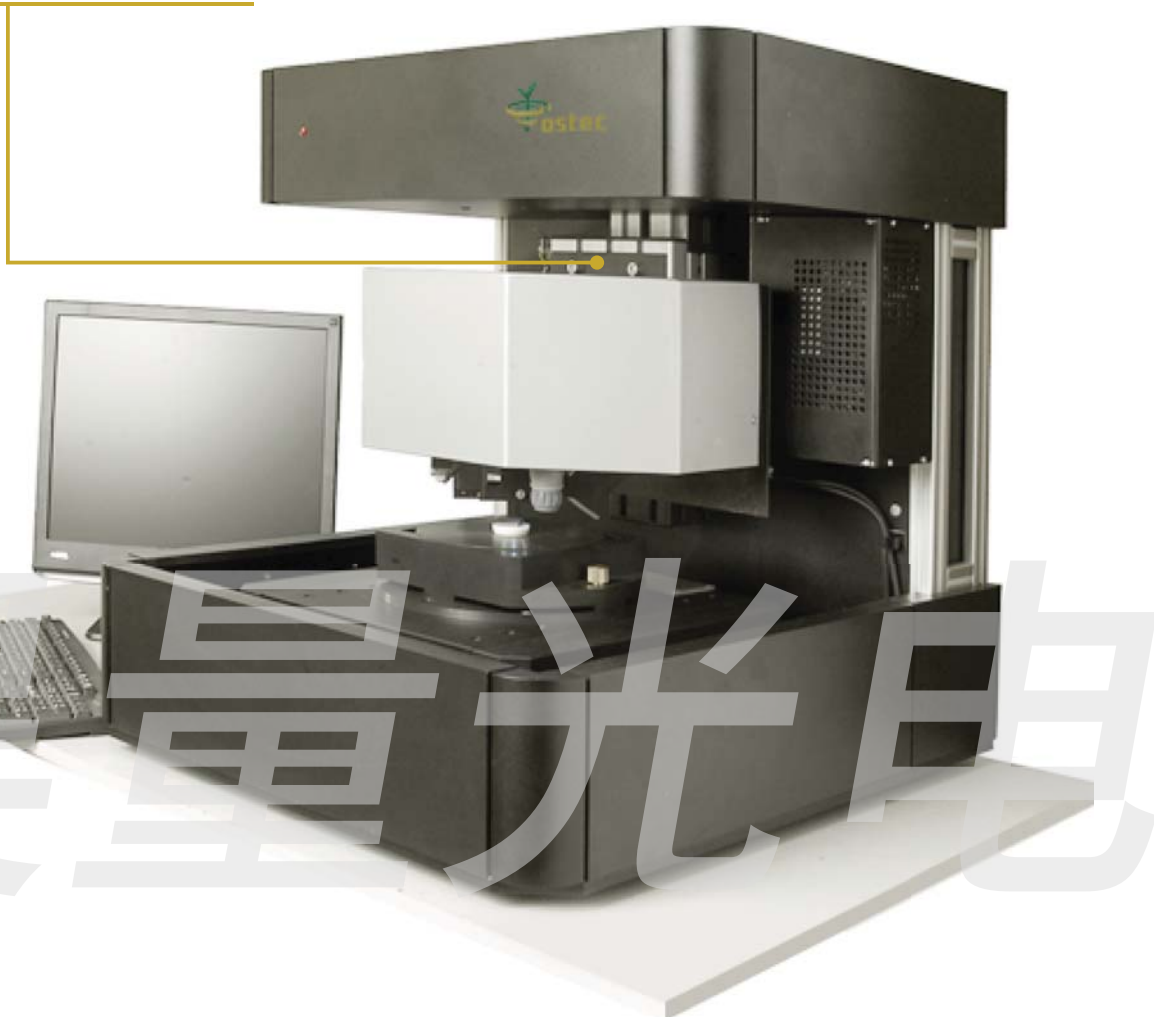
Software:

- **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: <ul style="list-style-type: none"> X-ray tube max. voltage X-ray tube max. power anode material 	45 kV 500 W Mo, other by request
Polycapillary lens for x-ray beamforming with a variable size of beam <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> automated system for the working distance selection analytical unit moving along Z axis <ul style="list-style-type: none"> Z positioning accuracy automated stage for XY object positioning and scanning over a user-defined sample area <ul style="list-style-type: none"> XY positioning accuracy max. scan area sample max. size sample max. weight 	12 μm 10 μm 150x150 mm 300x210x100 mm 1 kg

X-ray fluorescence analysis	
Energy-dispersive semiconductor detector for local elemental analysis:	
<ul style="list-style-type: none"> silicon drift detector (SDD) energy resolution of the detector on the Mn line $K\alpha$ spectral range max. counting rate concentration range 	<150 eV 1 - 40 keV 1 000 000 cps 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