SIGRAY

Sigray AttoMap™-310

X-RAY FLUORESCENCE MICROSCOPE

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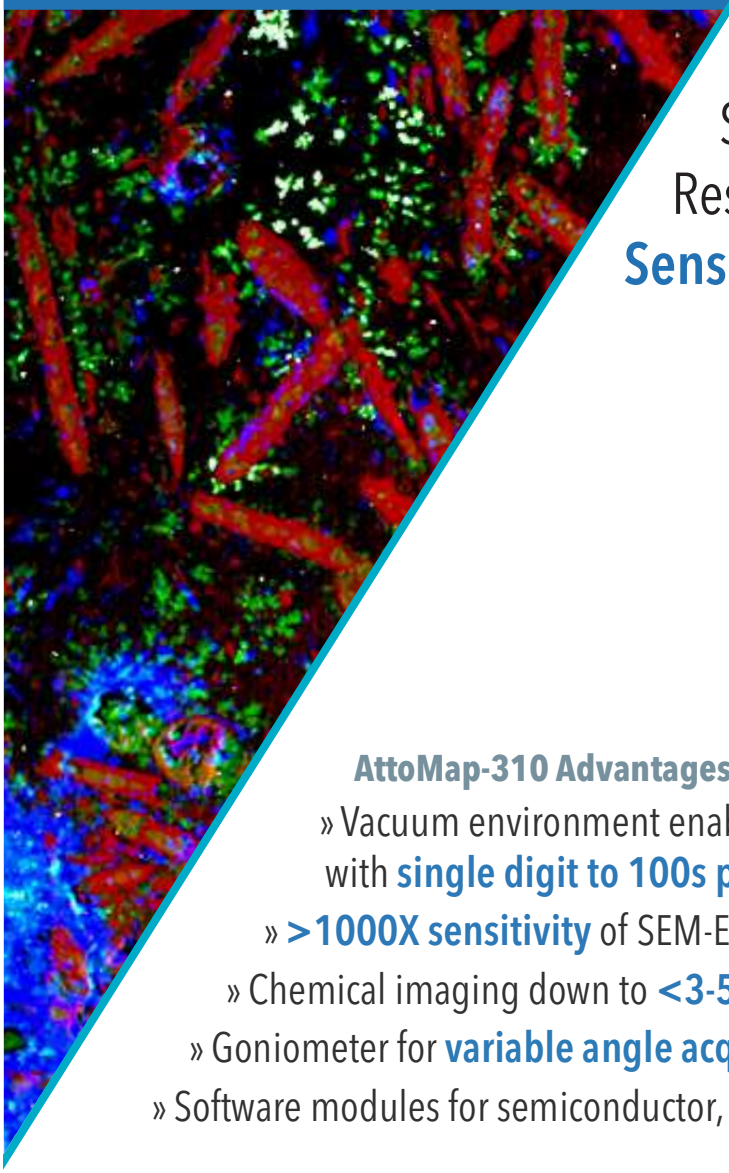
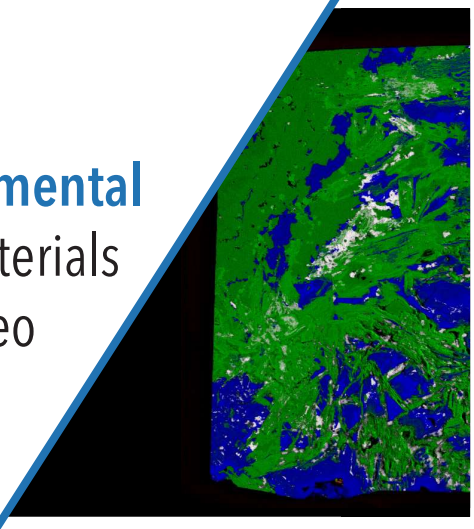
Core rock with dendritic grains. A full spectrum (including elements of interest S, Ba, Si, K, Ca, Fe, Mn, and Ti) was mapped. Shown in composite image are Ca (red), Mn (green), Fe (blue), and Ba (gray).
Sample provided by Dr. Sudipta Dasgupta, IIT Bombay



Quantitative Elemental Microscopy for Materials Science, Biology, & Geo Research **at Sub-ppm Sensitivities**



AttoMap-310 Advantages at a Glance

» Vacuum environment enables simultaneous acquisition of elements down to B, with **single digit to 100s ppm sensitivities for organics** (e.g. C, O, N)

» **>1000X sensitivity** of SEM-EDS, reaching **sub-angstrom** LLDs for thin films

» Chemical imaging down to **<3-5 µm**... and down to **5 ms/point**

» Goniometer for **variable angle acquisition** and removing diffraction peaks

» Software modules for semiconductor, mineralogy, and quantitative weight percent analyses

AttoMap-310 Specifications

Parameter	Specification
Spatial Resolution	Resolution down to 3-5 µm
Sensitivity	Sub-ppm relative detection sensitivity and capable of mapping trace elements. Picogram to femtogram absolute sensitivity (element & acquisition time dependent)
Additional Capabilities	Optical microscopy and x-ray transmission microscopy included
Footprint	54" W x 65.5" H x 38.5" D
Stage Travel	120 x 100 mm
Variable Angle Acquisition	Normal incidence (x-ray central beam to sample surface) at 90 degrees to Near grazing at 3 degrees* *Requires correct sample geometry to achieve
Maximum Sample Size	100 x 100 mm standard operation ~30 x 30 mm at grazing angles | 20 mm thickness
Source	Sigray Patented High Brightness Microfocus Source
Target Material	Multiple x-ray targets (up to 5) includes selection from: SiC, Cr, Cu, Rh, W, Mo, Au, etc.
Power | Voltage | Current	100 W | 20-45 kV | 2 mA
X-ray Optic	Sigray Twin Paraboloidal X-ray Optics (matched to each target material)
Transmission Efficiency	~80%
Magnification	1:1 Magnification Default; Demagnifying optics for higher resolution available upon request
Interior Coating	Platinum (increases collection efficiency of optic significantly)
X-ray Detectors	SDD Detector, 30 mm^2
Energy Resolution	<129 eV at Mn-Ka | <=136 eV at 5.9 keV

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