

JXA-iSP100 W/LaB₆ EPMA

JEOL is pleased to announce the next generation of EPMA technology. JEOL continues to build on over 50 years of experience in both EPMA and SEM technology to merge the two into a superior imaging and analytical EPMA. This is a state of the art, top of the line, research grade EPMA that provides both high imaging resolution and analytical resolution with a very high and stable probe current for optimum analytical performance. The new EPMA has a new SEM and EDS user interface (GUI) based on the FEG SEM's "SEM Center". This includes new algorithms for the auto functions of both the SEM column and the optical microscope. This new GUI provides a simplified work flow called "Easy EPMA" with built-in software for a broad range of user experience (from the novice/occasional user), with graphic driven procedures, to complete flexibility and capabilities for the very experienced EPMA scientist. A full knob-set and stage control module are both standard. The iSP100 features an automated specimen exchange airlock, with an integrated color stage navigation camera mounted on the roof, providing easy access to the areas of interest on the sample with one click. The software also prompts users when routine maintenance is suggested. The EPMA also allows the transfer of JEOL EDS and or JEOL XRF data directly into the EPMA software which will automatically select the appropriate spectrometers and crystals. New standard software includes "Phase Map Maker" and "Phase Analysis", utilizing both AI (Analytical Intelligence) and principle component analysis.

Features that make this JXA-iSP100 uniquely suitable for a wide variety of analytical applications are: 1) A very flexible, customizable configuration of spectrometers and crystals that can be optimized based on the required application. 2) The EPMA's ability to perform both beam scanned line scans and maps as well as large area line scans and maps with stage scanning. 3) A 30mm² integrated and embedded UTW-SDD-EDS system with high sensitivity including an *in situ* aperture wheel for ultrahigh beam current operation without compromising EDS spectrometer resolution and "Live" survey EDS acquisition to easily help find elements of interest. 4) The specimen chamber supports both a panchromatic high bandwidth imaging CL and a fully quantitative hyper-spectral CL (xLent V System) with no loss of a WDS or any limitation on image collection. 5) The JXA-iSP100 also supports the installation of JEOL's Soft X-Ray Emission Spectrometers (SXES and SXES-ER) for ultra light elements and chemical state analysis. 6) Integration with Probe for EPMA (PFE).



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JEOL's WDS spectrometers can have a Rowland circle of either 100mm or 140mm. The XCE or L-type spectrometer, with a Rowland circle of 140mm, offer a broader spectroscopy range and superior P/B ratios (utilizing either standard or large crystals), while the H-type spectrometer, with a Rowland circle of 100mm, features higher X-ray intensity (for trace element mapping). The user can choose the most appropriate ones according to the application and /or budget.

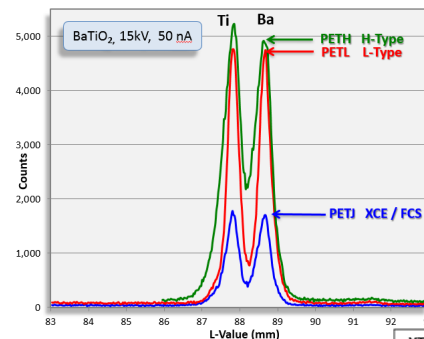


Figure 2: Available light element crystals and performance

Figure 1: Crystal Comparison: (H-Type, Large Crystal) vs (Standard Size Crystal)

Best

Very Good

Good

Possible

XTL	2d (nm)	Be	B	C	N	O	F
STE	10.04						
LDE1	6						
LDE1H	6						
LDE1L	6						
LDEB	14.5						
LDE2	10						
LDE2H	10						
LDE3H	20						
LDESH	8						
LDEGH	12						
LDEGL	12						

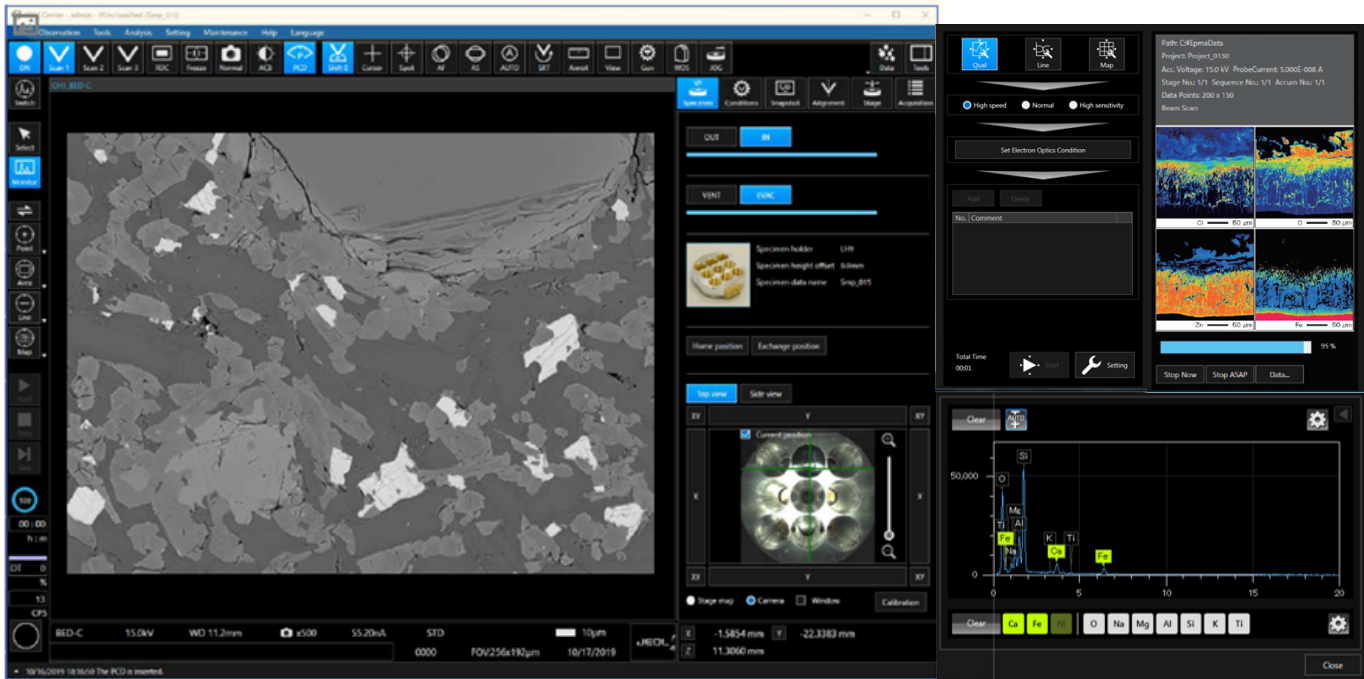


Figure 3: The New GUI "SEM Center", with "Live EDS Analysis" and "Easy EPMA" windows displayed .

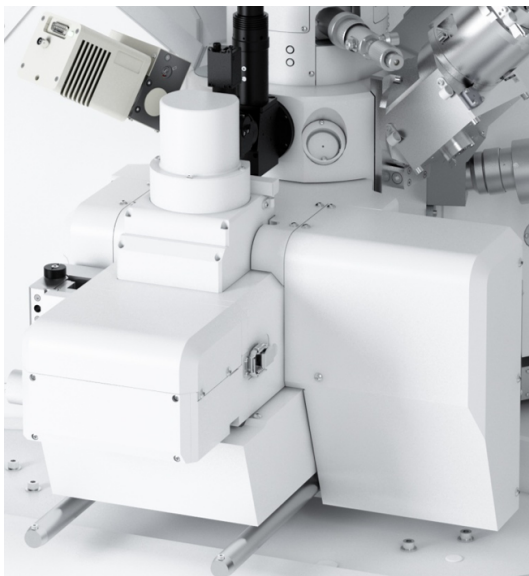


Figure 4: A close up view of the automatic specimen exchange airlock with integrated navigation camera

Applications Examples

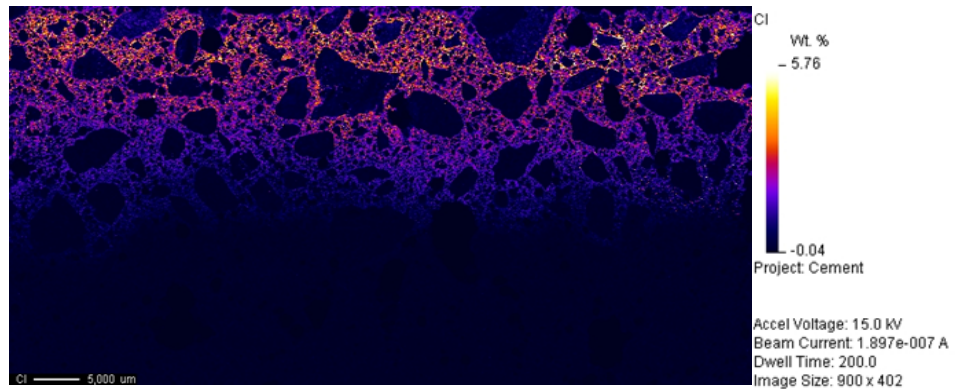


Figure 5: Large area WDS stage scan map of Cl in concrete

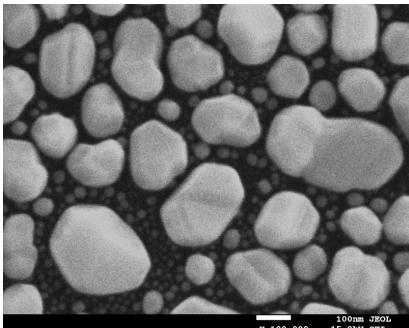


Figure 7: SE resolution image (W) at 15kV, 100,00X

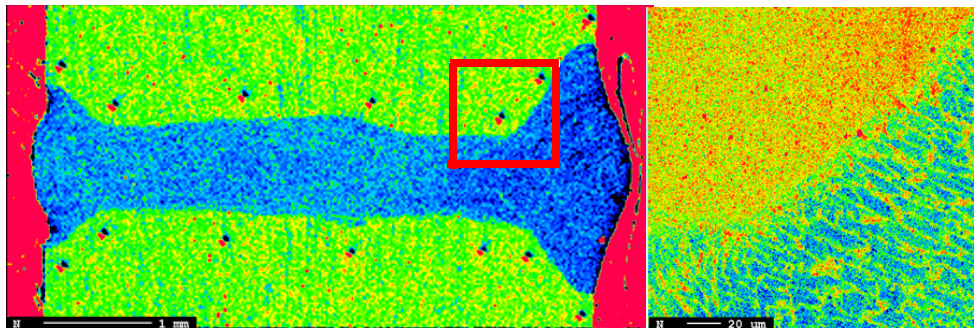


Figure 6: WDS element map for N at <0.4 Wt.% in steel at 10 kV, 1000 nAmps (L), 200 nAmps (R)