

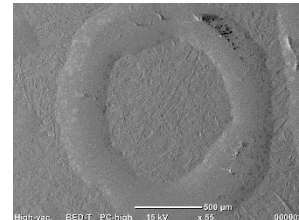
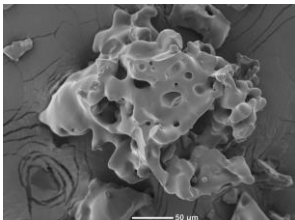
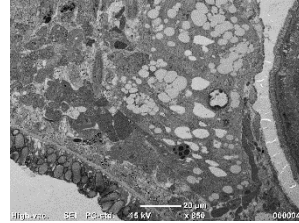
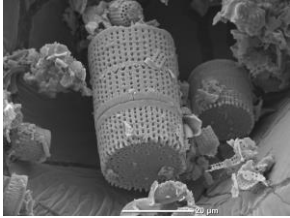


The NEW NeoScope

Jeffrey D. McGinn
June 16, 2016



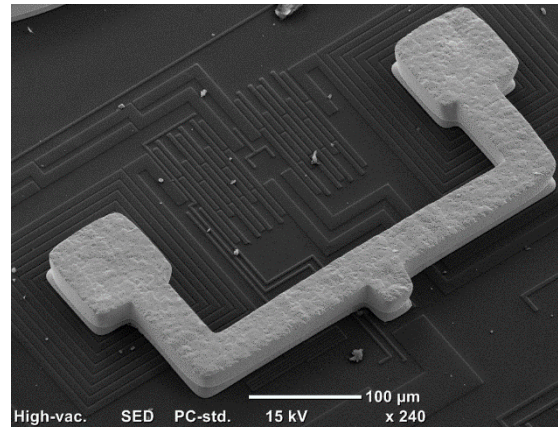
The JEOL JCM-6000PLUS



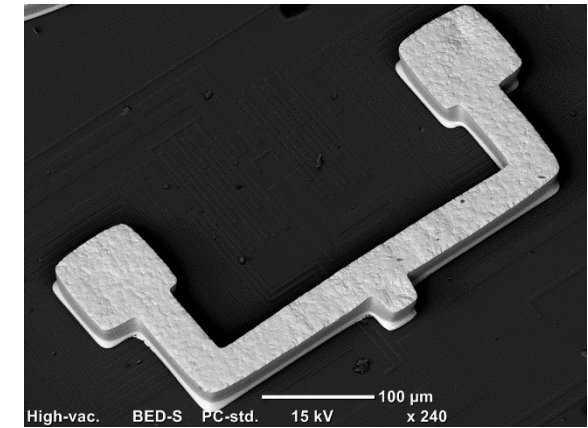
- **Small Footprint, Fits on a Common Laboratory Bench**
- **High Performance Electron Optics (W Source)**
- **Real Magnification up to 60,000X**
- **Both High Vacuum and Low Vacuum Modes**
- **Two Imaging Detectors:**
 - ET Type Secondary Electron Detector
 - Solid State Backscatter Electron Detector
- **Large chamber – Max Sample 70mm D x 50mm H**
- **Tilt Rotation Motorized Holder**
 - T = -15° to +45°, R = 360°
- **Options:**
 - XY Motor Stage
 - EDS

The JEOL JCM-6000PLUS - Applications

Semiconductor



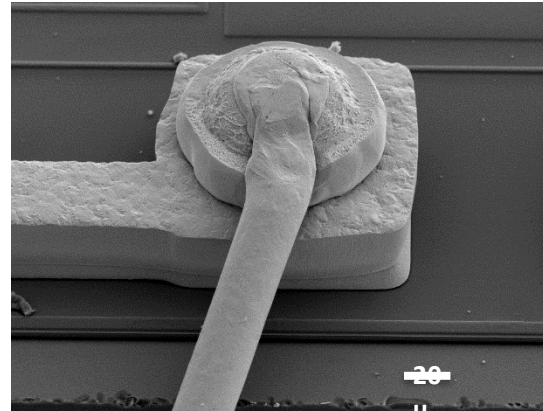
Secondary Electron Image



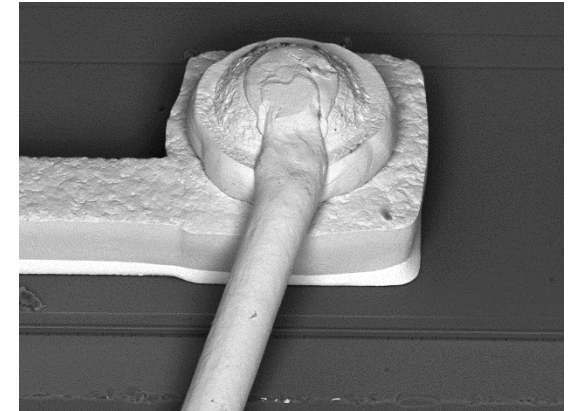
Backscatter Electron Image

The JEOL JCM-6000PLUS - Applications

Semiconductor



Secondary Electron Image

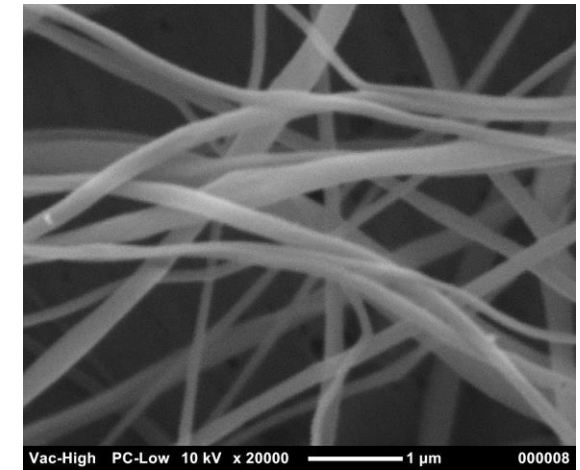
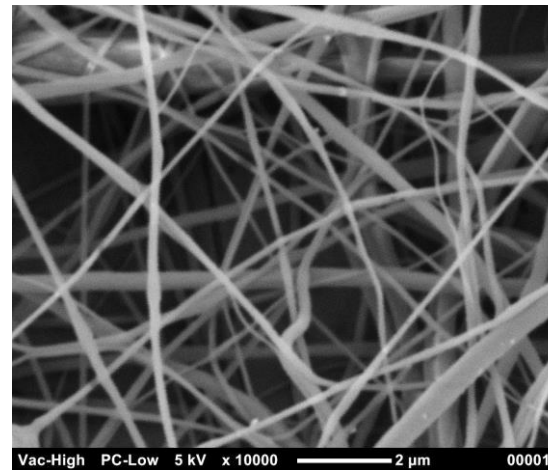


Backscatter Electron Image

The JEOL JCM-6000PLUS - Applications



Polymer Nanofibers



Secondary Electron Images
Sample courtesy of Scott Forbey, Virginia Tech

The JEOL JCM-6000PLUS - Workflow



Load Sample



Automatic Evacuation



Automatic Filament Saturation



Auto Adjust and Image!



The JEOL JCM-6000PLUS – Software Control

The screenshot displays the JEOL JCM-6000PLUS software control interface. The main window shows a large SEM image of a porous material. A hand is pointing at a specific region in the image. The interface includes a menu bar (File, View, Setup, Maintenance, Help), a toolbar with icons for Search, Scaler, Analysis, Fast, Slow, Photo, and Settings, and a status bar at the bottom showing observation conditions: Vac., Link, High-vac., SEI, 15kV, Fil-std., PC-std., x900, 20µm, and 000003. On the right side, there is a vertical panel with a filament on/off indicator, a power button, an image list, auto functions (Full-auto, Alignment, Focus, Stigma, Brightness), manual control (Focus, Stigma, Brightness, Fine shift, Rotation, Alignment), and preset magnifications (x40, x400, x2000, x4000, x10000, x600, Set). Annotations with blue arrows point to various elements: 'Filament On/Off' points to the filament indicator; 'Image list in current directory' points to the image list; 'Auto Functions' points to the auto function buttons; 'Manual Control' points to the manual control buttons; 'Preset Magnifications' points to the magnification buttons; and 'Observation Conditions' points to the status bar.

Filament On/Off

Image list in current directory

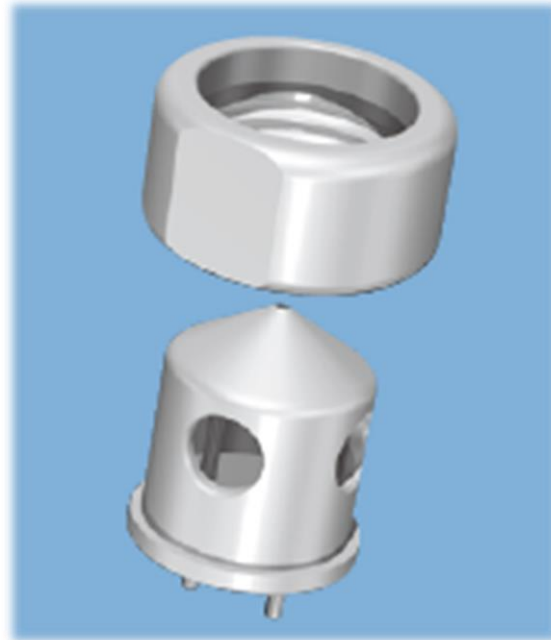
Auto Functions

Manual Control

Preset Magnifications

Observation Conditions

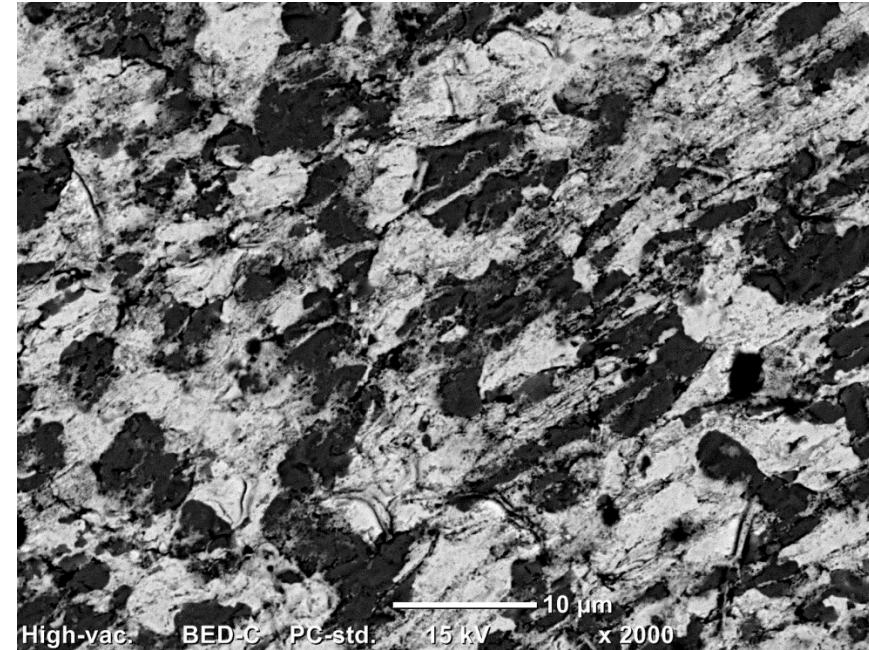
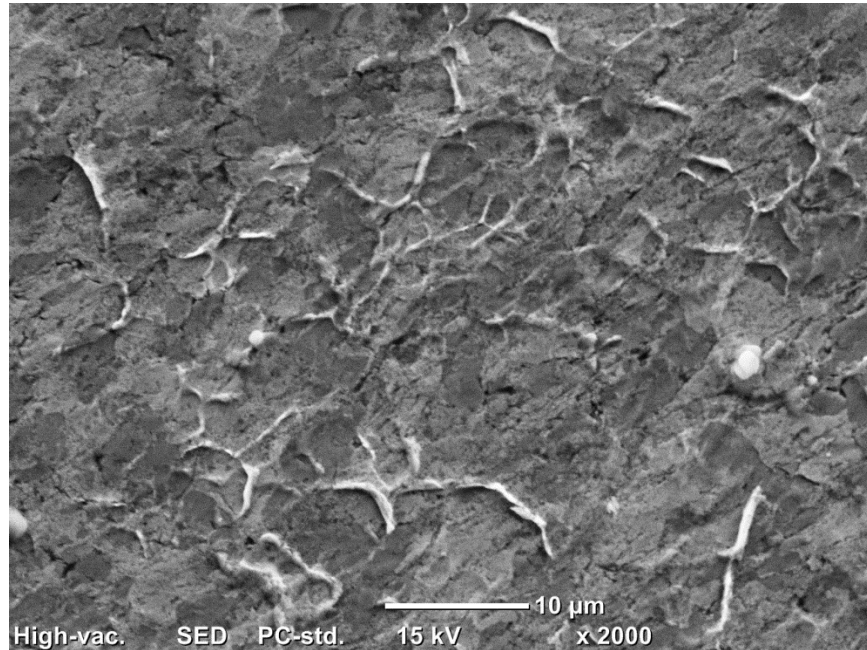
The JEOL JCM-6000PLUS – Maintenance



Cartridge electron source for easy filament exchange.

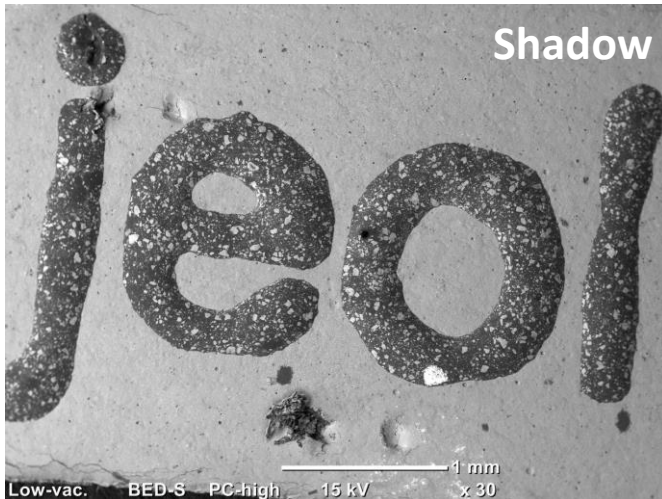
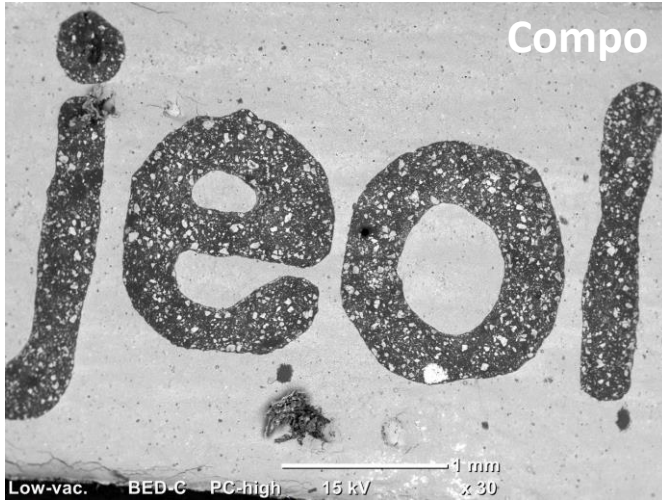
Cleaning and centering are not required and axis alignment is automatic!

The JEOL JCM-6000PLUS – SE and BSE Detection



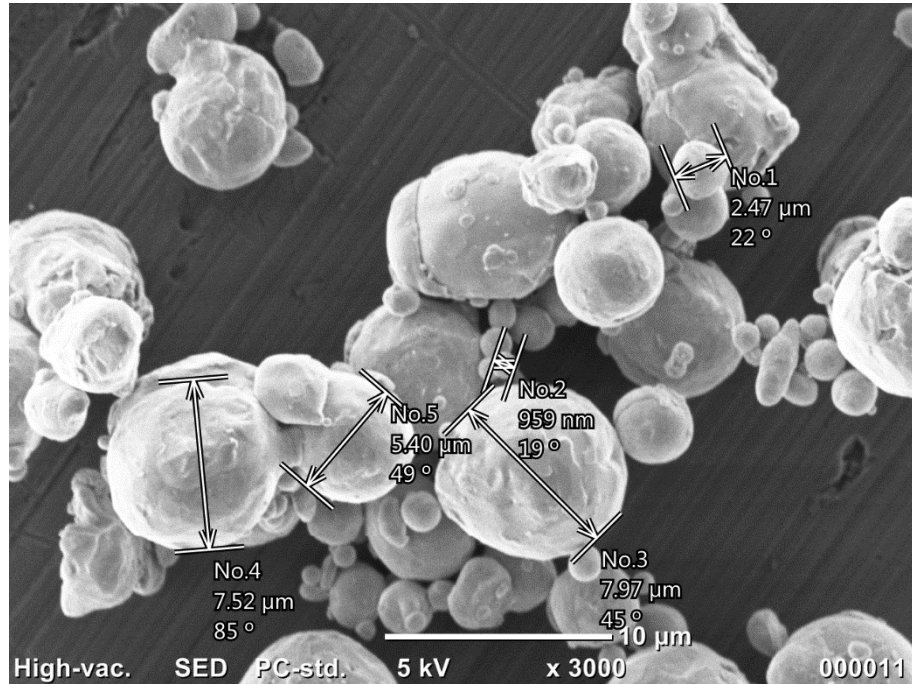
Lead/Tin Solder

The JEOL JCM-6000PLUS –BSE Detector



Composition, Topographic and Shadow modes (combination of composition and topographic information)

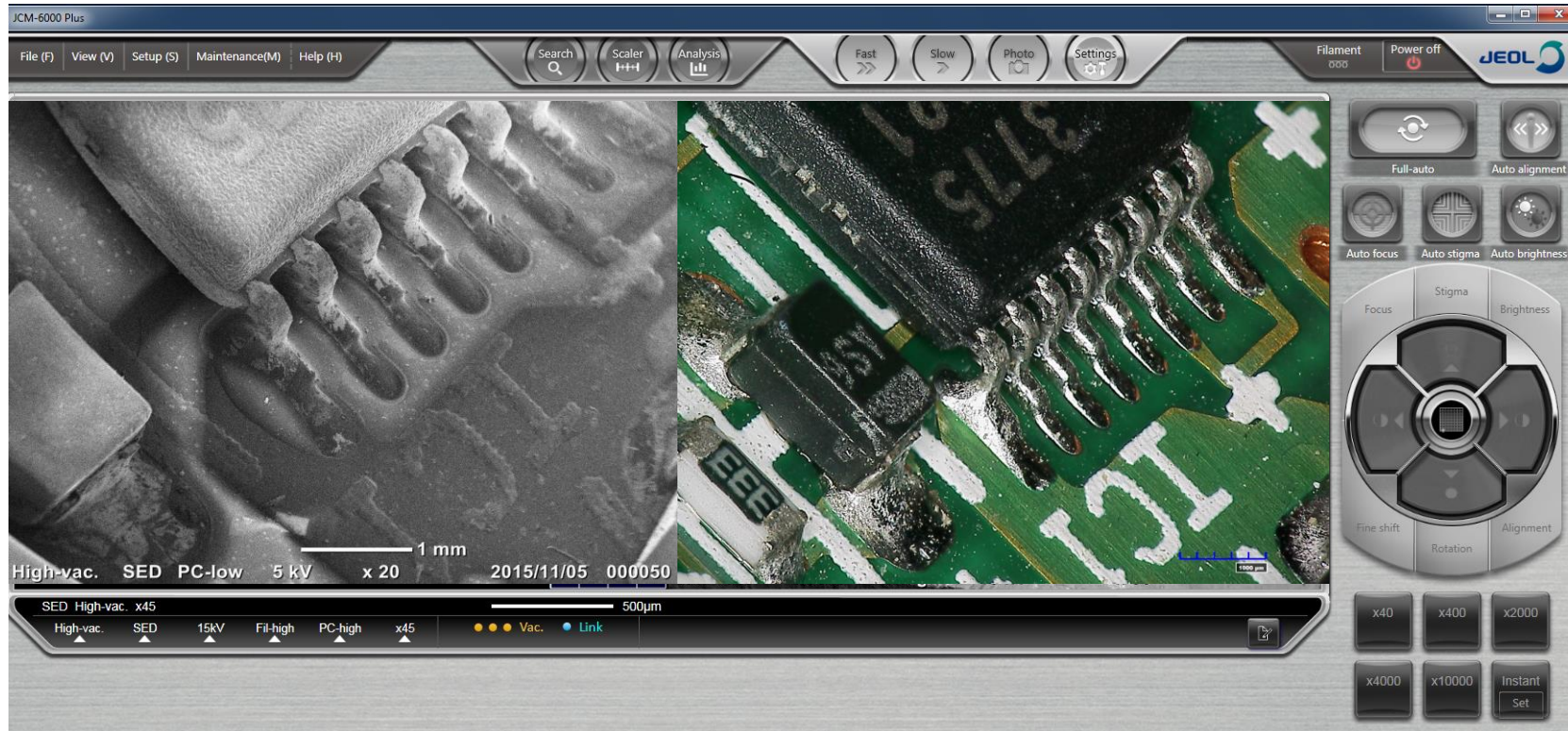
The JEOL JCM-6000PLUS – Measurement



Basic Measurement Built In with
Output as CSV File

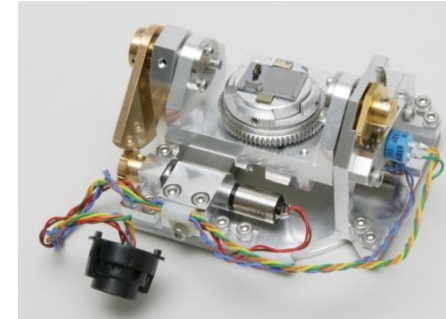
No.	Length	[unit]	Angle[deg]
1	2.47	um	22
2	959	nm	19
3	7.97	um	45
4	7.52	um	85
5	5.4	um	49

The JEOL JCM-6000PLUS – Compare



Dual View – Compare Live Image with any stored image

The JEOL JCM-6000PLUS – Motor Control Stage



Tilt/Rotation Motorized Holder
(TRMH)
Standard

XY motor control stage coupled with TRMH for 4 axis motor control

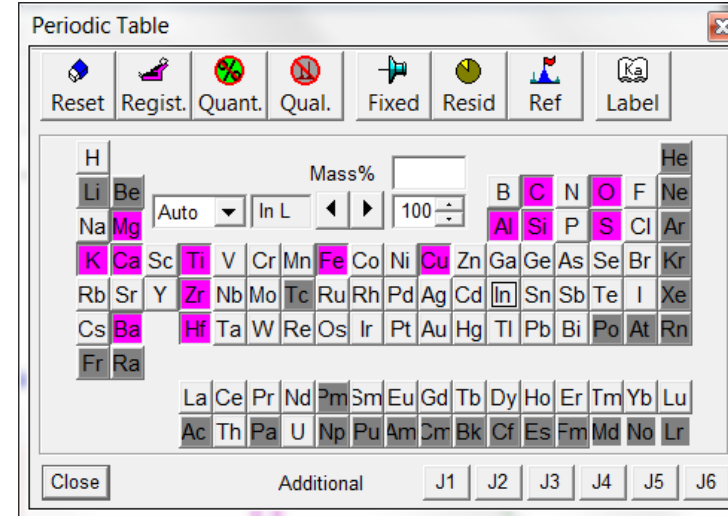
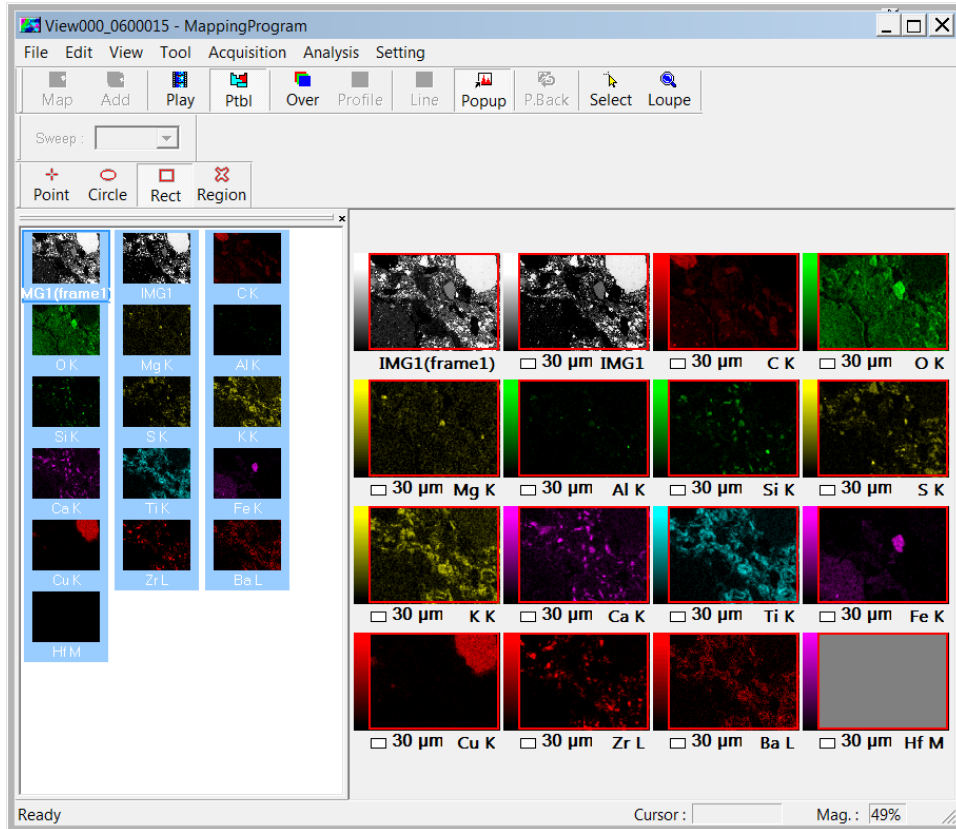
The JEOL JCM-6000PLUS – EDS



Key Features:

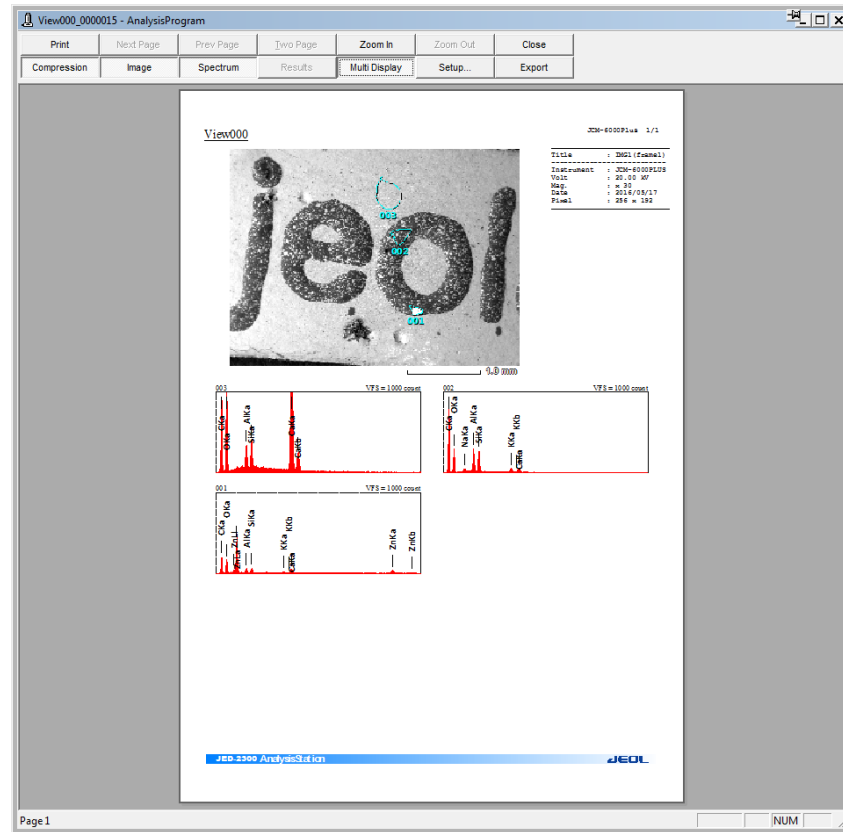
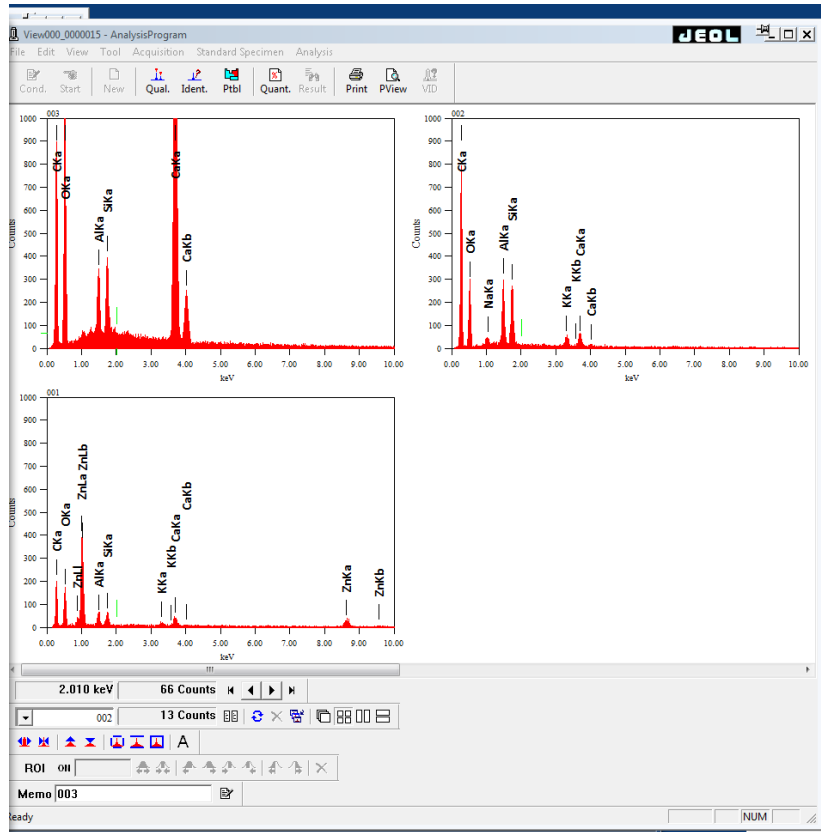
- 10mm² SDD; Guaranteed resolution of 133eV or better
- Ultra Thin Window for Detection from B to U
- Full area, Partial Areas, Multiple Point and Line Scan EDS Analysis
- Active Spectral Mapping (up to 4096 x 3072 pixels), Quant Map, Time Resolved Map built in
- Extracted Area Spectra from Map data
- Drift Compensation

The JEOL JCM-6000PLUS – EDS



- Spot, area, line and X-ray mapping functionality

The JEOL JCM-6000PLUS – EDS Report



The JEOL JCM-6000PLUS – Hooke College SEM Class



Key Features:

- 5 day course
- Hands-on
- SEM setup and operation
- EDS qualitative and quantitative analysis
- Secondary and backscatter imaging
- Basic and advanced courses onsite at Hooke College



Thank you for joining us.

Jeffrey D. McGinn

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