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JEOL USA Newsletter August 2007

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JEOL Papers at M&M Scientific Program

A10B - New Methods for Cross-Section Sample Preparation Using Broad Argon Ion Be
K Ogura, M Kamidaira, S Asahina; JEOL Ltd , Japan; N Erdman; JEOL USA Inc
8/6/07 Monday, Room - Palm B, 15:00 [15 min] Platform

P01P - Triboelectricity of Toner Particles Studied by Electron Holography with Double Electric Shields
D Shindo, H Okada, Y Murakami; Tohoku University, Japan; H Kawase; RICOH Co , Ltd , Japan; T Oikawa; JEOL Ltd , Japan
8/6/07 Monday, Room - Exhibit Ha, 15:30 [13:30 min] Poster

M&M 2007 Preview

MM 2007
Ft. Lauderdale, Fl, USA

Looking forward to seeing you in Ft. Lauderdale! Stop by and say hello at **Booth 1608** where the JEOL booth theme "**Power of SEM - Power of TEM**" will be represented by five instruments ready for customer demos: *JSM-6490LV, JSM-7000F, JSM-7500F, JEM-1400, Cross Section Polisher*, as well as a workstation for the *JXA-8500F* microprobe.

In addition to the booth, JEOL products are represented in 19 papers and posters in the scientific program. Several JEOL USA SEM and TEM Team members will be participating in presentations including: Natasha Erdman, Vern Robertson, Charles Nielsen, Mike Kersker, Toshi Aoki, Barbara Armbruster, Jaap Brink, Masa Kawasaki, and Tom Isabell.

JEOL Products to See:

- **JEM-1400**, new high-contrast, high-resolution 120kV TEM with remote operation
- **JSM-7500F**, cold cathode FE-SEM with LABe and unmatched imaging of 1,000,000X
- **JSM-6490LV**, versatile and robust LVSEM with unique, integrated stage navigation system
- **JSM-7000F**, high resolution FE thermal gun provides outstanding analytical results and LV operation
- **JXA-8500F**, unique field emission electron probe microprobe, for nanocentric surface analysis
- **Cross Section Polisher**, unique argon-beam technology for clean, polished cross sections

B07P - JADAS: JEOL Automated Data Acquisition System For Cryo-EM
J Zhang, N Liang, H Khant; Baylor College of Medicine; N Nakamura, Y Shimizu, T Shinkawa; JEOL Ltd , Japan; W Chiu; Baylor College of Medicine
8/6/07 Monday, Room - Exhibit Ha, 15:30 [13:30 min] Poster

P01B - SEM and TEM Analysis of Cryomilled Nanocrystalline Al Powder
B Ahn; University of Southern California; N Erdman; JEOL USA, Inc; S Nutt; University of Southern California
8/6/07 Monday, Room - Palm A, 15:00 [15 min] Platform

P08P - An Application of a Thin Film Preparation Apparatus with a Broad Ar Ion Beam (Ion Slicer) to Corrosion of a Gold Plated Copper Alloy
N Endo, H Takahashi, H Nishioka; JEOL Ltd; M Kersker; JEOL USA
8/6/07 Monday, Room - Exhibit Ha, 15:30 [13:30 min] Poster

P03P - The Non-destructive Chemical State Analysis of Al-Cu Intermetallic Compound by Ultra-soft X-ray Spectrometer with Al L-alpha.
T OGIWARA, T KIMURA, S FUKUSHIMA; National Institute for Materials Science, Japan; K TSUKAMOTO, T TAZAWA; JEOL, Japan; S TANUMA; National Institute for Materials Science, Japan
8/7/07 Tuesday, Room - Exhibit Ha, 15:30 [13:30 min] Poster

A02B - Direct Observation of Site Hopping of Individual Dopant Atoms in Si Crystal, by Cs-corrected STEM
J Yamasaki; Nagoya University; E Okunishi, H Sawada; JEOL, Ltd; N Tanaka; Nagoya University
8/7/07 Tuesday, Room - Palm B, 15:00 [15 min] Platform

A16B - Determining the Efficiency of Four Different Backscatter Electron Devices for Use in Low Dose Imaging of Biological Samples
CA Ackerley; Hospital for Sick Children Canada; N Erdman, V Robertson, CH Nielsen; JEOL USA
8/7/07 Tuesday, Room - 118, 15:00 [15 min] Platform

B06A - New Technique for Ultra-thin Serial Brain Section Imaging Using Scanning Electron Microscopy

Zooming in on Atoms from a TEM Far, Far Away

Sirius remote TEM operation

M&M Hawaii 2005 - 6,000 miles from the TEM at NorthwesternUniversity, JEOL operates a JEM-2100F field emission TEM in Evanston, Illinois from the floor of the convention center in Honolulu.

JEOL USA in Winter 2006 -TEM experts operated the Lehigh TEM from a picnic table outside, proving "untethered TEM" from their wireless cell phone connection.

M&M Chicago 2006 - JEOL TEMs around the western hemisphere were ready and waiting for a series of live demonstrations from the JEOL booth.

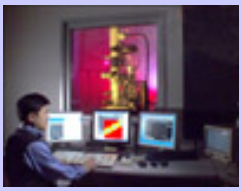
M&M Ft. Lauderdale 2007 - Remote operation can be done FROM just about anywhere, so stop by our booth and ask us where we'll be!

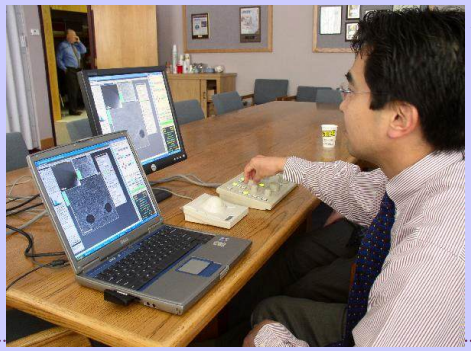
Untethered TEM operation is a unique capability from JEOL made possible with a simple instrument control knobset and laptop computer outfitted with a cellular communications card. JEOL introduced Sirius remote TEM operation using a hardwired connection to the Internet more than two years ago. Now, wireless broadband capability makes it possible to operate the microscope from non-traditional settings outside of the lab environment.

Remote Possibilities

The TEM at Lehigh University is remotely operated by microscopists at the NASA Goddard Space Flight Center outside of Washington, D.C. The instrument, located in the laboratory of Professor Christopher Kiely and maintained and operated by Dr. David Ackland, uses either an 18 Mbit OC3 commercial internet connection or a 100 Mbit Internet 2 connection.

Remote TEM operation is already the norm in laboratories across the U.S. Oakridge National Laboratories has designed a TEM facility that isolates the TEM environment from motion and temperature changes for their sensitive processes. The TEM is also being remotely operated by researchers at Imperial College in London.





At the University of Texas Medical Branch, the Biosafety Level 3 laboratory allows scientists to remotely operate the cryo-TEM to examine deadly viruses from outside the containment area or from halfway around the world. Remote operation makes it possible for universities and research labs to share microscope time with students or researchers from other organizations, and wireless broadband further expands the flexibility of JEOL TEM operation.

N Kasthuri; Harvard Univeristy; K Hayworth; University of Southern California; J Lichtman; Harvard University; N Erdman; JEOL; C Ackerley; Hospital for Sick Children
8/7/07 Tuesday, Room - 203, 9:45 [15 min] Platform

C40P - Electron Holography on Superconducting States of QMG-YBa2Cu3O7-y
M Nakata, Z Akase, D Shindo; Tohoku University, Japan; M Morita; Nippon Steel Corporation, Japan; T Oikawa; JEOL Ltd
8/7/07 Tuesday, Room - Exhibit Ha, 15:30 [13:30 min] Poster

P01P2 - Evaluation of Polycrystalline Silicon Substrates for Solar Cells by TEM
T Kagawa, T Satoshi, H Kurozaki, A Ogura; Meiji University, Japan; Y Ohshita, A Koji; Toyota Technological Institute, Japan; T Kuba; JEOL, Japan
8/7/07 Tuesday, Room - Exhibit Ha, 15:30 [13:30 min] Poster

A01P - Performance Characteristics of an Aberration-Corrected Jeol JEM 2100F STEM/TEM at the University of South Carolina
D Zhao; University of South Carolina; T Aoki; JEOL USA Ltd; G Koley, Z Cai; University of South Carolina
8/8/07 Wednesday, Room - Exhibit Ha, 15:30 [13:30 min] Poster

A04A - Performance of a Monochromator for a 200 kV Analytical Electron Microscope
M Mukai, W Inami, K Omoto, T Kaneyama, T Tomita, K Tsuno; JEOL Ltd; M Terauchi, K Tsuda, Y Sato; Tohoku University, Japan; M Naruse, T Honda; JEOL Ltd; M Tanaka; Tohoku University, Japan
8/8/07 Wednesday, Room - 315, 11:30 [15 min] Platform

A05P - Advances and Challenges in Electron Tomography
BL Armbruster, J Brink, M Kawasaki, T Isabell, R O'Donnell, M Kersker; JEOL USA, Inc
8/8/07 Wednesday, Room - Exhibit Ha, 15:30 [13:30 min] Poster

A07P - Theoretical Study about Si L2,3 Spectra with The Cluster Calculation S Fukushima, T Ogiwara,

Western Regional Sales Manager Dick Lois Moves to JEOL USA Headquarters

Dick Lois has sold JEOL electron microscopes for the past 30 years, and has worked from his Houston home as a sales manager for the southwestern states for the last 25. This spring he was promoted to National Sales Manager, and oversees the JEOL sales force throughout the U.S. He relocated to JEOL USA headquarters in Peabody, Massachusetts and has moved to a new home in nearby Boxford.

The opportunity to be involved with the company on a national rather than local level appealed to Dick even though it required a move across the country to a new way of life. Though he will continue to travel and represent the company nationally, he says it takes some getting used to when you no longer have the day-to-day customer contact.

Working in sales for JEOL, he says, has been "rewarding when people that have worked and dealt with you in the past call you unsolicited because of the way you dealt with them."

Customers that Dick worked with for many years will now be represented by JEOL sales people that have been with the company for a number of years and are expanding their territory. For the regional sales person near you, visit our website's contact pages.

T Kimura; National Institute for Materials Science, Japan; T Kazunori, T Toyohiko; JEOL, Japan; T Shigeo; National
Institute for Materials Science, Japan
8/8/07 Wednesday, Room - Exhibit Ha, 15:30 [13:30 min] Poster

A07P - Quantitative X-ray microanalysis
Applications of the Field Emission Electron Probe Microanalyzer to Metals
A Sato, M Takakura, N Mori; JEOL, Japan; C Nielsen; JEOL USA
8/8/07 Wednesday, Room - Exhibit Ha, 15:30 [13:30 min] Poster

P01E - Structural and Elemental Analysis of Single-Component and Bi-Metallic Nanostructures in Analytical Electron Microscopy
T Oikawa; JEOL Ltd , Japan; C Langlois, D Alloyeau, C Ricolleau; University Paris 7, France
8/8/07 Wednesday, Room - Palm A, 11:15 [30 min] Platform (Invited)

P06P - Observation of Crystalline Contrast with Using Low Energy Electrons in SEM
N Kikuchi, T Shinzawa, T Negishi, K Ogura; JEOL Ltd, Japan; C Nielsen; JEOL USA, INC
8/8/07 Wednesday, Room - Exhibit Ha, 15:30 [13:30 min] Poster

A04C - Applications of Electron Energy-Loss Spectrometry and Energy Filtering in an Aberration-Corrected JEM-2200FS STEM/TEM
M Watanabe; Lehigh University; M Kanno; JEOL Ltd; D Ackland, C Kiely, D Williams; Lehigh University
8/9/07 Thursday, Room - 315, 9:30 [30 min] Platform (Invited)

Technical Tip:

"Quick & Dirty" Wehnelt Cleaning

For decades, cleaning the Wehnelt cap after each blown W filament was a tedious task (even worse if it was Lab6 that had been in for months and months or a lazy microscopist just replaced the filament several times with out cleaning each time, which we all know NEVER happens).

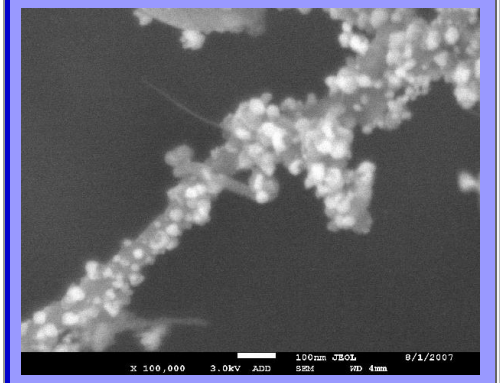
It involved lots of scrubbing with Pol Polish, Wenol Polish or some equivalent to the point of blisters on your fingers. The task was always to remove both the evaporated W and the hydrocarbon build up. The hydrocarbons (the brown film) came off very easily but the W (blue grey deposit) was quite resistant.

Experience has shown that there is an easier way to remove the W. Place the Wehnelt hole side up in a small beaker, mix 1 part water and 1 part Micro 90 (a commercially available glass cleaner) and sonicate for 5 -20 minutes depending on the amount of W deposited on the Wehnelt. CAUTION Micro 90 is a concentrated basic solution with a very high pH. If there is any hydrocarbon left a light wipe with a Q-Tip & Pol will remove it. Check for completeness of cleaning using a ~10X Stereo microscope.

The next steps are as they always have been. Rinse in water then alcohol/acetone and dry with a heat gun being sure to wear gloves or handle with lint free cloths to avoid fingerprints containing the leftover potato chips you had for lunch.

Other questions you'd like answered by JEOL experts? Contact us at *JEOLink@jeol.com and* we may feature the answer in future issues of *JEOLink.*

Extreme Image



Catalyst particles on carbon nanotube. 3kV mixed SE and BSE image. Sample courtesy of Ian Barney, Wright State University.

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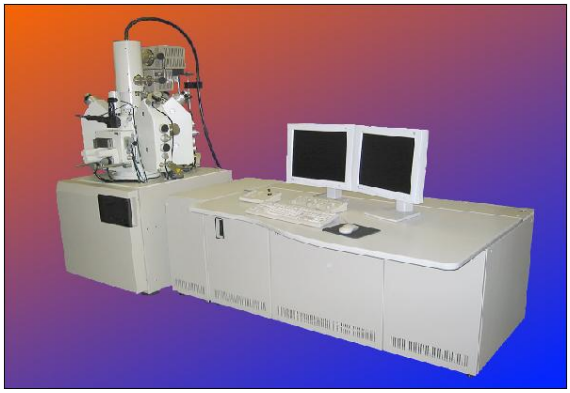
JEOL USA Mission Statement

Achieve customer fulfillment and loyalty by delivering outstanding technology and superior support while maintaining a leadership position in the industries and institutions that we serve.

Upcoming Meetings and Tradeshows

Microscopy & Microanalysis - Ft. Lauderdale, Florida

"Super Microprobe" Installed at NIST



JEOL USA has completed installation and acceptance of its first thermal field emission electron microprobe in the United States. The microprobe was installed at NIST in Gaithersburg, Maryland, in one of the world's most technically advanced laboratories for developing new technologies and standards for a wide range of nanotechnology fields.

A fully-automated, high-throughput versatile electron probe microanalyzer (EPMA), the JEOL JXA-8500F is a unique type of electron microscope with analytical ability that surpasses that of even the most advanced scanning electron microscopes (SEM) available today. While most manufacturers and researchers choose the SEM, the EPMA has more of a niche market for customers requiring the ultimate quantitative results and data acquisition.

The ability to simultaneously utilize an energy dispersive x-ray spectrometer (EDS) and up to five wavelength dispersive x-ray spectrometers (WDS) increases speed for elemental analysis of nanometric sample areas. All but a few of the elements on the periodic table can be analyzed. As a result, this "super" microprobe is ideal for the materials, geological, and petrological fields.

The JXA-8500F is the only EPMA to use a Schottky-type field emission gun. The probe diameter is 1/10th the size of conventional probes.

"This new FE gun allows us to analyze extremely small features by operating at low kV and high beam currents," Charles Nielsen, vice president of JEOL USA, Inc. "The analytical ability of this instrument makes it possible to measure features and map them with a resolution approaching one hundred nanometers."

The analytical ability of the microprobe comes at a higher price than the SEM, Nielsen adds, noting that the price is about 20% higher than conventional EPMA. JEOL, with headquarters in Akashima, Japan, is the market leader in sales of microprobes.

REALab

San Joaquin Delta College: A Unique Program for Electron Microscopists

For nearly 40 years, students enrolled in the San Joaquin Delta College electron microscopy curriculum have been part of a unique two-year certificate program dedicated to practical, hands-on training of the future EM technician. It is one of only two such programs at the community college level in the country.

International Materials Research Congress -Cancun, Mexico

13th Canadian Semiconductor Conference - Montreal, Quebec

ACS Fall - Boston, Massachusetts

BACUS - Monterey, California

Read more about SJ Delta College's Center for Microscopy and Allied Sciences on JEOL's REALab pages.