



Newsletter

Major Analytical Instrumentation Center

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Digital Imaging on the JEOL 200CX TEM

By K. Siebein

We are pleased to announce that digital image capture is now available on the JEOL 200CX TEM. The digital images are acquired using a Gatan Model 692 Multi Scan camera that was installed in July. The camera is mounted above the phosphor screen and is fully retractable for conventional TEM use. The camera provides a wide field of view, about 6 times larger than film at the same magnification. The CCD is 1024 x 1024 pixels, 24 microns each. It has a high resolution YAG scintillator and a fiber optical coupling that delivers high sensitivity and resolution.

The camera is cooled with a Peltier cooler to extend it's the dynamic range to 14-bits. The digital camera operates with Gatan's Digital Micrograph software. Images can be collected, saved and joined to form a montage of a very large field of view.

The set up is very easy to use and a great addition to the 200CX. Authorized users of the TEM JEOL 200CX interested in training on the use of the camera should contact Kerry Siebein at ksieb@mse.ufl.edu

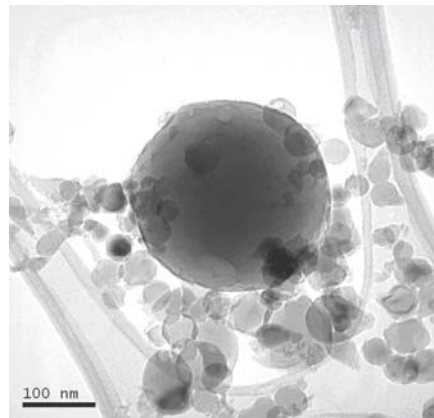


Image of Al nano-particles analyzed in the TEM 200CX (by Kerry Siebein)



Image of type-I collagen prepared by cryofracture and analyzed in the TEM 200CX (by Dr. Matt Olszta)

Director's Corner by L.A. Dempere

At MAIC, we have added new accessories to the instruments in MAIC. A CCD multi-scan camera has been added to the JEOL 200CX TEM, an EDS Link ISIS system has been added to the SEM JSM-6400 (2), an Autoprobe 200 micromanipulator has been added to the FEI DB 235 FIB, and an E-Beam Coater has been added to the FIB lab for sample coating. Training on the CCD camera and new micromanipulator is available for authorized users of these instruments. Also, in the last few months MAIC staff participated in the 2004 Annual Symposium of the FLAVS-FSM-FLACerS and the MSE Teach workshop offered by the Materials Science and Engineering Department this past summer.

Autoprobe 200: *an in-situ micro-manipulator for the FIB*

By G. Bourne

The FEI DB 235 Focused Ion Beam microscope has been upgraded with Omniprobe's Autoprobe 200. The Autoprobe 200 is an electro-mechanical probe enabling the micromanipulation of samples and the ability to make in-situ TEM lift outs. Samples manufactured with this technique have a high success rate and can be thinned further, if necessary, after TEM examination. The Autoprobe's computer control includes the ability to save and return to stored positions while providing an extremely user-friendly stage reference for probe translation.

Authorized users of the FIB interested in training on the use of the Autoprobe 200 should contact Jerry Bourne at grb@ufl.edu



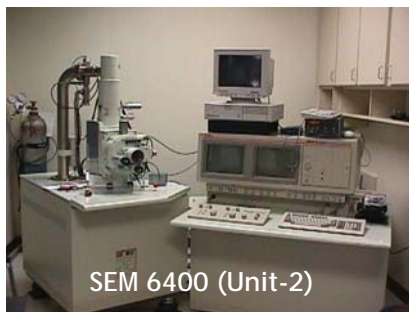
Autoprobe 200

(Picture taken from the manufacturer's web site: www.omniprobe.com)

The JSM-6400 (2): *newly equipped with EDS*

By A. Dempere

The JSM -6400 (Unit -2) has been equipped with an EDS Link ISIS system from Oxford Instruments. The system enhances the capabilities of this microscope allowing for elemental qualitative and semi-quantitative analysis. This unit is used mainly for teaching and training purposes and a proficient operation of this system is required as a pre-requisite for further training on our Field Emission Scanning Electron Microscopes, Microprobe Superprobe 733, and Auger Electron Spectrometer (AES). The Link ISIS system allows for linescans, x-ray mapping, phase mapping, intensity histograms, and surface roughness measurements. In most cases, the SEM course is a pre-requisite for SEM training at the MAIC. This course (EMA 6507C) is offered every year in the Summer and Fall semesters.



SEM 6400 (Unit-2)

The MAIC welcomes ORBUS Medical Technologies, Inc. and Westinghouse Savannah River Company to the MAIC Membership Program

Conferences 2005

By A. Dempere

The 2005 Annual Joint Symposium of the Florida Chapter of the AVS Science and Technology Society (FLAVS), the Florida Society for Microscopy (FSM) will be hosting the conference Applied Surface Science 2005 from March 13-17 at the University of Central Florida in Orlando.

The deadline for submission of student posters in January 21, 2005. For more information regarding the symposium and poster competition visit the symposium web site at:

www.flavs.org

The conference Microscopy and Microanalysis 2005 will be held in Honolulu, Hawaii from July 31 to August 4, 2005. The call for papers is expected in the next few weeks with a deadline for submission in mid February 2005. For more information visit the Microscopy Society of America (MSA) web site at www.microscopy.com.

MAIC GRADUATE ASSISTANTS

Bradley Jay Willenberg:

Brad is a graduate student in the department of Biomedical Engineering. He is working in Dr. Chris Batich's group on the development of novel biomaterials for use as tissue engineering scaffolds. At the MAIC Brad operates the SEM JSM-6400, FEG-SEM, XL-40, EDS ISIS systems from Oxford, and SEM sample preparation facilities for services and training.

The image on the right is a false color compositional map of a new hydrogel tissue scaffold. Green represents the barium cross-linked polymer matrix. Voids are black, and the blue within the voids is the scaffold material behind the current imaging plane. The red-pink spots often with yellow borders are sulfur rich crystalline particles. The yellow "eyelash" formations seen mainly at the upper edge of the voids are copper rich nanoparticle aggregates. The yellow-orange streak present at the bottom of the image is a charging artifact, while the blue highlights in the upper portion of the image are a result of local specimen topography and tilt. Neither feature is indicative of sample composition.

