UBC Centre for High-Throughput PHENOGENOMICS

CHTP News

Monday, June 13, 2016

In this issue:

Synchrotron imaging seminar

On June 1, 2016, the Centre for High-Throughput Phenogenomics (CHTP) successfully hosted a one-day event with Dr. Tomasz Wysokinski to boost awareness of BioMedical Imaging and Therapy (BMIT) beamline at Canadian Light Source (CLS). BMIT is one of only three dedicated synchrotron-based medical beamlines in the world, and the only one in North America. The facility is located in Saskatoon, Saskatchewan.

Dr. Wysokinski's visit is part of BMIT's cross-Canada campus tour and first stop in Western Canada. He introduced the capabilities of the biomedical beamline along with some scientific highlights of CLS synchrotron facility. He also highlighted recent development of new soft-tissue imaging techniques using synchrotron and an astounding ability to deliver large doses of radiation to highly targeted sites. After his talk, CHTP also hosted small-group meetings for individual researchers and students that are interested in accessing the CLS facility for their research to discuss their projects with Dr. Wysokinski.

Dr. Wysokinski is a beamline scientist at the Canadian Light Source synchrotron facility who has has solid background in applied and medical physics, electrical and mechanical engineering and IT technology. He is an expert in superconductive-systems, cryogenic and vacuum systems, lasers, spectrometers and clean-room technology.

BioMedical Imaging and Therapy (BMIT) Facility
The BMIT facility at CLS is a national research institute that delivers a comprehensive set of synchrotron-specific imaging and radiation therapy capabilities. The facility is available for use by researchers from across Canada. Research time (free of charge) at BMIT is determined by a competitive peer review of submitted proposals and thus awarded based on scientific merit of proposed research.

If you have any question about BMIT, please visit their website or follow them on Facebook/YouTube/Twitter or contact us by microscopy@dentistry.ubc.ca.

bmit.lightsource.ca
www.youtube.com/user/05ID2
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Facilities & Equipment

Facilities

- Main Lab
- Cell Culture Facility
- Data Analysis Room

Scanning Electron Microscopy

- Helios FIB-SEM
- Hitachi SU3500

Light Microscopy

- Nikon Confocal
- Leica White Light Laser Confocal
- Axioplan II Fluorescent Microscope
- Zeiss AxioVision/PALM Laser Capture
- Optical Projection Tomography (OPT)
- Olympus LEXT Confocal

X-Ray Imaging

- Micro-CT Specimen Scanner
- Micro-CT *In Vivo* Scanner

Mass Spectrometry

- MALDI

Sample Preparation

- Leica Cryostat
- Leica EM MED020 Coating System
- Critical Point Dryer
- Microwave Preparation
- Grinding/Polishing Suite

New Users

To access the equipment housed within the Centre for High-Throughput Phenogenomics, principal investigators (normally

CHTP sample grinding/polishing suite

In line with the high-throughput philosophy of CHTP, a state-of-the-art grinding polishing system from Buehler has been purchased to specifically prepare samples for electron backscatter diffraction (EBSD). Such a system will minimize the time required for creating a high quality polished surface prior to a final stage sample polish with the Helios NanoLab 650 FIB-SEM.

The new grinding/polishing suite includes a Cast N' Vac 1000 System which is a vacuum impregnation system for epoxy resin mounting. The Cast N' Vac accelerates the infiltration of epoxy resin by removing trapped air from the mounting material, while facilitating the filling of voids in the specimen. The Buehler EpoThin™ resin characteristics are ideal for embedding all types of materials and cures rapidly at room temperature.

Once embedded the sample can undergo grinding and polishing using Buehler's grinder/polisher system, the EcoMet 250 Pro Grinder-Polisher with the AutoMet 250 Power Head. this power head design provides loading forces ranging from 5-260 N and is ideal for grinding/polishing a wide range of sample types. The automated burst dispensing system ensures that the exact amount of polish is applied, maximizing reproducibility and high throughput.

Also, a VibroMet 2 Vibratory Polisher system removes minor deformations remaining after mechanical preparation with the AutoMet Pro. It is designed to prepare EBSD quality polished surfaces on a wide variety of materials with minimal deformation and a stress free surface.

In the event that these polishing steps do not provide artifact free surfaces for EBSD (common in soft materials) the surface can be gently polished using the focused ion beam on the Helios 650 Nanolab. The integration of both polishing systems will give users the ability to resolve EBSD patterns on samples that was not previously possible. This innovative approach will be a unique addition to the EBSD sample preparation capability at UBC in the Centre for High-Throughput Phenogenomics.

More news briefs. . .

Data analysis room: The CHTP recently added another computer to the data analysis room. This computer, referred to as Windows 2, can be booked by users via the calendar on the CHTP website. This computer workstation has 16 GB of RAM and includes a variety of software packages including: ImageJ, 3D Slicer, Leica LAS-AF Lite, FEI MAPS, Image Composite Editor, Nikon EZ-C1 Free Viewer, TSL OIM, as well as msIQuant for MALDI quantitation. This new Windows workstation will supplement our currently existing Windows workstation, which is used primarily for Amira. Together, they offer a complete suite of image analysis programs in an easy-to-use Windows environment.

New web address: The Centre for High-Throughput Phenogenomics has a new web address: chtp.ubc.ca. This new URL is relayed to the existing site, but much easier to remember! Both addresses will remain active.

Publications: The CHTP is adding user publications to the website. If you have a publication resulting from your use of CHTP equipment, send us the information and we will add it to the list (microscopy@dentistry.ubc.ca). Please make sure to acknowledge the CHTP and our funding sources.

faculty) need to fill in an Access Request Agreement Form (PDF).

Access Updates for Registered Users

Have new personnel in your laboratory who need access to the Centre? Fill in an Add User Form (PDF).

Have current personnel who need access to additional equipment? Fill in an Add Equipment Form (PDF).

Submit Forms

Submit completed forms to Dr. Nancy Ford, Director of the Centre, at nlford@dentistry.ubc.ca

Pricing

Pricing for each item of equipment, as well as sample preparation, professional assistance and training is conveniently posted online.

Review the pricing sheet (PDF)

Booking

Registered users may book equipment online. Click the **booking link** on the CHTP homepage to find booking calendars for each item of equipment.

Construction update: Construction is set to begin in the Pharmaceutical Sciences and Life Sciences Centre buildings on June 23 and is scheduled to be completed August 23. An email has been circulated regarding the potential impact for users—primarily restrictions to walkways around the buildings. Helios users may have imaging problems due to vibrations. For more information, please contact the director (nlford@dentistry.ubc.ca) or sem@dentistry.ubc.ca.

Summer student access: The CHTP is happy to support summer student research by training your students on the equipment. Please note that all summer students who come to the CHTP must be registered users, even if they are accompanied by your research team. The CHTP is also planning a demonstration session for the summer students to learn about different techniques. If you have summer students in the lab, who are not using the CHTP equipment themselves, but would like them to see the facility, the demonstration sessions will be a valuable opportunity. More information will be sent out be email to CHTP users in the coming weeks regarding this new initiative.

About CHTP

The Centre for High-Throughput Phenogenomics offers a comprehensive suite of imaging technologies. Its broad goal provides two- and three-dimensional information and analysis about the structure of specimens using scanning electron microscopy, optical imaging, X-ray imaging, and mass spectroscopy.

The CHTP is a core facility, and welcomes collaborative, interdisciplinary research projects from across universities, research organizations, and corporate users.

CHTP Corporate Sponsors

Significant in-kind CFI support provided by the following corporate sponsors:

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