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2nd Alberta JEOL TEM User Meeting

(Protochips) In-Situ Electron Microscopy Workshop

JEOL Canada/Protochips Inc. and the nanoFAB Centre at the University of Alberta cordially invite you to attend the **2nd Alberta JEOL TEM User Meeting/In-Situ Electron Microscopy Workshop**. This full-day event, held at the nanoFAB Centre, University of Alberta, features new development of **Aberration-Corrected Microscopy** and **In-Situ Electron Microscopy**. Hands-on demonstrations of **Heating** and **Liquid Cell** microscopy will be performed on the JEOL ARM 200cf S/TEM microscope.

Date: **Wednesday, May 1st, 2019** Location: **ETLC E1-018**	
9:30 – 10:15 AM	**Advances in Aberration-Corrected Microscopy and Other New Frontiers** *Patrick J Phillips, Ph.D, JEOL USA*
10:15 – 11:00 AM	**Introduction to In Situ EM and Fusion (Heating)** *Jordan Moering, Ph.D, Protochips*
11:00 –1:00 PM	**Hands-on Demonstration of Fusion (Heating)** *Jordan Moering, Ph.D, Protochips*
1:00 – 2:00 PM	**Lunch Break**
2:00 – 3:00 PM	**Introduction to Poseidon Select (Liquid Cell)** *Kate Marusak, Ph.D, Protochips*
3:00 – 5:00 PM	**Hands-on Demonstration of Poseidon Select (Liquid Cell)** *Kate Marusak, Ph.D, Protochips*

Please **register** to confirm your attendance. If you have any questions, please contact:

Peng Li, nanoFAB (Peng.Li@ualberta.ca)
Richard Humphrey, JEOL Canada (humphrey@jeol.com)

Advances in Aberration-Corrected Microscopy and Other New Frontiers
Patrick J Phillips, Ph.D, JEOL USA

Choosing the correct microscope high tension, or accelerating voltage, is an important experimental consideration for TEM imaging and microanalysis. Higher accelerating voltages naturally lead to better spatial resolution for imaging, but will also lead to accelerated specimen damage. For microanalysis, lower accelerating voltages mean more beam spreading and worse spatial resolution, but also enhanced microanalysis cross sections for EDS and EELS. A new generation of aberration corrected microscopes gives the user the flexibility to operate over a wide range of high tension with unprecedented imaging and chemical spatial resolution. This means that on the same instrument, the voltage can be dialed in for a given experiment and readily changed as different experimental needs arise. The addition of a cold field emission gun, advanced aberration correctors and advanced detectors only enhances operation at both high and low voltages, further adding to instrument flexibility. The latest in JEOL instrument technology will also be discussed at length.

Introduction to In-Situ EM
Jordan Moering, Ph.D, Protochips

Analyzing samples using in situ EM techniques has enabled unprecedented discovery in research fields ranging from catalysis to drug delivery. The Protochips product suite brings heating and electrical testing and liquid or gaseous environments to any TEM/STEM and in this presentation we will give an overview and show recent results from all of the Protochips systems.

Introduction and Hands-on Demonstration of Fusion Heating
Jordan Moering, Ph.D, Protochips

Learn how adding in situ electrical characterization, thermal analysis, or combined electrothermal stimuli can transform the TEM/STEM into a nanoscale laboratory. This presentation will explain how the fusion system delivers precise sample control in the context of numerous applications enabled by this functionality.

See how the fusion system enables accurate, uniform sample heating within your TEM. See how Clarity software controls enable precise control of experiment conditions with a simple, user-friendly interface.

Introduction and Hands-on Demonstration of Poseidon Select
Kate Marusak, Ph.D, Protochips

Learn how imaging dynamic events in real, wet environments is changing the way research is conducted inside the TEM/STEM. This presentation will feature an overview of how Poseidon works, and its numerous applications.

Experience all steps of Poseidon Select operation including holder assembly, leak check operation, and imaging conditions. Witness real samples undergoing nucleation and growth within the electron microscope.