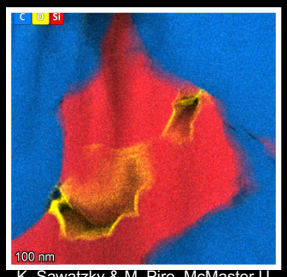
# 2025 CHARACTERIZATION OF NUCLEAR MATERIALS WORKSHOP

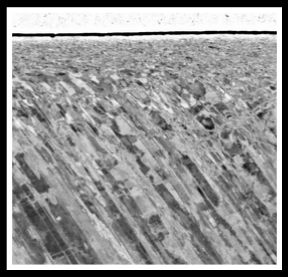
## FEATURED TOPICS

**Hot Work / Sample Prep**

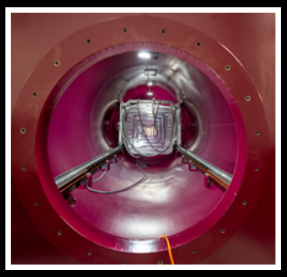



K. Sawatzky & M. Piro, McMaster U

**Electron Microscopy Capabilities**



**Surface Science Analysis**



**Beam Line Science**

Join us for a two-day workshop at McMaster University, jointly hosted by Canadian Nuclear Laboratories and Idaho National Laboratory. This workshop is designed to provide a comprehensive understanding of the latest techniques and technologies in nuclear material characterization, focusing on four pivotal areas: hot work/sample preparation, electron microscopy and its capabilities, surface science, and beam line science. In addition to insightful presentations, attendees will have the opportunity to participate in an engaging poster session, guided tours of state-of-the-art facilities, and a career night designed to connect aspiring professionals with industry leaders. This event brings together academic PIs, industrial researchers, and government scientists, fostering a collaborative environment that promotes knowledge exchange and networking. Whether you're a seasoned researcher or new to the field, this workshop offers valuable insights,  and unparalleled networking opportunities. Mark your calendars and prepare to engage with the forefront of nuclear materials science.

**APRIL 28 - 29, 2025**

**McMaster University**
**In-person**

Workshop is FREE but space is limited.

**REGISTER NOW**

**ABSTRACT SUBMISSION**

For deadlines and details visit
**ccem.mcmaster.ca**

CCEM Canadian Centre for Electron Microscopy

McMaster University

Nuclear Operations & Facilities

Canadian Nuclear Laboratories

INL Idaho National Laboratory

CCEM ACADEMY

# Workshop Overview

Monday, April 28, 2024

| | |
|---|---|
| 8:00 | Check-in |
| 8:30 | Opening |
| 8:45 | Keynote |
| 9:30 | Facility Highlights |
| 10:15 | Break |
| 10:30 | Hot Work / Sample Preparation |
| 12:15 | Lunch |
| 13:15 | Electron Microscopy and Capabilities |
| 15:30 | Break |
| 15:45 | Lightning Poster Pitches |
| 16:00 | Tour CANS/CCEM/Reactor |
| 17:15 | Reception/poster session |
| 18:30 | Wrap-up |

Tuesday, April 29, 2024

| | |
|---|---|
| 8:15 | Check-in |
| 8:30 | Electron Microscopy and Capabilities |
| 11:15 | Break |
| 11:30 | Surface Science |
| 13:15 | Lunch |
| 14:15 | Beam Lines |
| 16:00 | Break |
| 16:15 | Tour CANS/CCEM/Reactor |
| 17:30 | Reception/Career Fair & Student Mixer |
| 18:30 | Wrap-up |

# Special Thanks to Our Sponsors

SFR SYSTEMS FOR RESEARCH

McMaster University

Nuclear Operations & Facilities

INL Idaho National Laboratory

Canadian Nuclear Laboratories
Laboratoires Nucléaires Canadiens

CCEM ACADEMY

# Monday, April 28, 2025

## McMaster University, CIBC Hall, MUSC 319

| Time | Presenter | Title |
|---|---|---|
| 8:00 | | Check-in |
| 8:30 | John Preston, McMaster University | Opening Remarks |
| 8:45 | David Williams, Ohio State University | Why is Characterization so Important? Evolution of TEM Techniques and Their Impact on Nuclear Materials |
| 9:30 | Nabil Bassim, CCEM | Multiscale Correlative Materials Imaging for Nuclear Applications |
| 9:45 | INL | Facility Highlights |
| 10:00 | CNL | Facility Highlights |
| 10:15 | | Break |
| 10:30 | Nicolas Huin, CNL | Active Material Forensic Examination |
| 11:00 | Brandon Miller, INL | High Quality Sample Preparation of Highly Radioactive Materials |
| 11:30 | Derek Cappon, McMaster University | Hot Work Capabilities at the CANS Facility |
| 12:00 | | Panel Q&A |

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# Monday, April 28, 2025

## McMaster University, CIBC Hall, MUSC 319

| | | |
|---|---|---|
| 12:15 | | Lunch |
| 13:15 | Wolfgang Jaeger, Institute for Materials Science, Christian-Albrechts-University Kiel | Fundamental studies of irradiation-induced phenomena utilizing transmission electron microscopy |
| 13:45 | Suraj Persaud, Queen's University | Application of novel microscopy methods to understanding corrosion mechanisms relevant to nuclear power systems |
| 14:15 | Mike Phaneuf, FIBICS | Ga-FIB/SEM 3D Volume Electron Microscopy at the Nanometer Scale |
| 14:45 | Daniel Murray, INL | TBD |
| 15:15 | | Panel Q&A |
| 15:30 | | Break |
| 15:45 | | Lightning Poster Pitches |
| 16:00 | | Tour CANS/CCEM/Reactor |
| 17:15 | | Reception/Poster Session |
| 18:30 | | Wrap-up |

CCEM ACADEMY

# Tuesday, April 29, 2025

## McMaster University, CIBC Hall, MUSC 319

| Time | Presenter | Title |
|---|---|---|
| 8:15 | | Check-in |
| 8:25 | Nabil Bassim, CCEM | Opening Remarks |
| 8:30 | Joven Lim, UK Atomic Energy Authority | Overview of UK R&D activities on characterisation of neutron irradiated materials using modern S/TEM |
| 9:00 | Markus Piro, McMaster University | Electron Microscopy Applications in Nuclear Fuels and Materials at McMaster |
| 9:30 | Karen Wright, INL | The Use of Electron Probe Microanalysis in Elucidating Irradiated Nuclear Fuel Behavior |
| 10:00 | Frederick Meisenkothen, NIST | Chemical and Isotopic Analysis of Fine Environmental Particles via Atom Probe Tomography |
| 10:30 | Grace Burke, INL | The Critical Role of Correlative Materials Characterization in Understanding Irradiation Damage in Structural Materials |
| 11:00 | | Panel Q&A |
| 11:15 | | Break |
| 11:30 | Brad Payne, CNL | Applications of Surface Analytical Techniques to Study Reactor Component Degradation Mechanisms |
| 12:00 | Brooke Campbell, INL | Surface Science Analytics and Applications in the Nuclear Energy |
| 12:30 | Jamie Noel, Western University | Electrochemical, microscopic, and spectroscopic characterization of nuclear fuels to evaluate their chemical reactivity under deep geologic repository conditions |
| 13:00 | | Panel Q&A |

CCEM ACADEMY

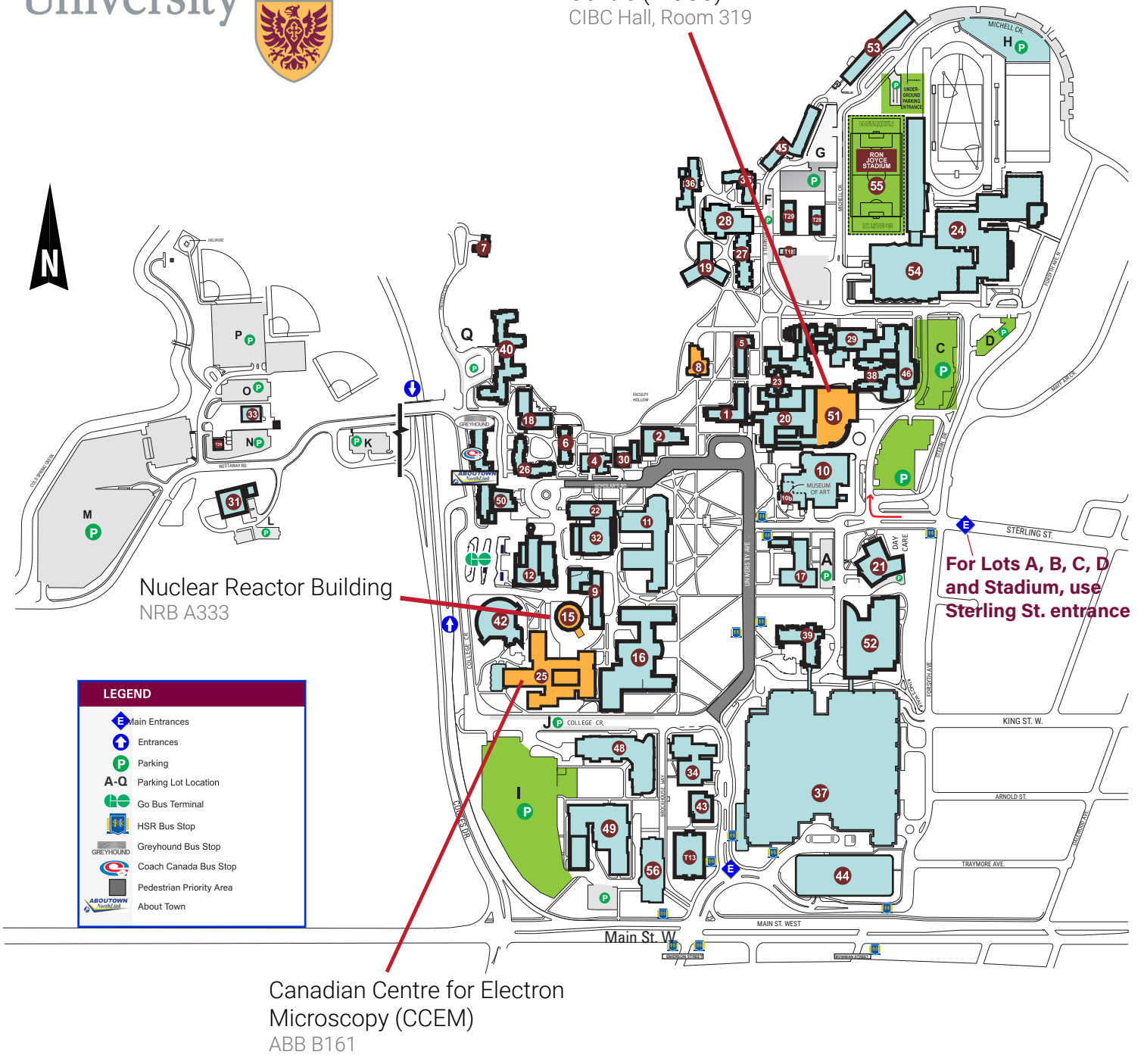
# Tuesday, April 29, 2025

## McMaster University, CIBC Hall, MUSC 319

| Time | Presenter | Title |
|---|---|---|
| 13:15 | | Lunch |
| 14:15 | Andrew Payzant, ONRL | Using nuclear reactors to study nuclear reactors: applications of neutron scattering for the characterization of nuclear materials |
| 14:45 | Pat Clancy, McMaster University | The Canadian Neutron Beam Laboratory at McMaster: Opportunities for Characterization of Nuclear Materials with Neutron Beams |
| 15:15 | Peter Mascher, McMaster University | Positron Annihilation Spectroscopy: A Unique Tool to Study Open-Volume Defects in Solids |
| 15:45 | | Panel Q&A |
| 16:00 | | Break |
| 16:15 | | Tour CANS/CCEM/Reactor |
| 17:30 | | Reception/Career Fair & Student Mixer |
| 18:30 | | Closing |

McMaster University

McMaster University Student Centre (MUSC)
CIBC Hall, Room 319




# 2025 Characterization of Nuclear Materials Workshop

## April 28 - 29, 2025

Paid parking available in Lots A, B, C, D and Underground Stadium - Enter campus from Sterling Street
Paid parking available in Lot I - Enter campus from Main Street