

# **Mineralogical Association of Canada**

# www.mineralogicalassociation.ca

## **GAC-MAC LONDON 2021 JOINT ANNUAL MEETING**





3-5 November 2021

#### The University of Western Ontario (Western) in London, Ontario, Canada

**Exploring Geosciences through Time and Space** 

#### Explorer les géosciences à travers le temps et l'espace

The GAC–MAC Joint Annual Meeting, the premier annual geoscience conference in Canada over the last six decades, is organized by the Geological Association of Canada (GAC<sup>®</sup>), in concert with the Mineralogical Association of Canada (MAC). The two associations have long enjoyed a close relationship and have united the Canadian Earth sciences community annually at GAC–MAC, a formal gathering of the best geological minds in the country, to celebrate our achievements, discuss new findings, and develop further relationships.

## **Meeting Themes**



Four meeting themes (LEFT TO RIGHT): Earth & Planetary Systems; Life, Climate & Environment; Tectonic Processes & Geohazards; and Resource Geoscience. ARTISTIC RENDERING BY MATEA DRLJEPAN.

# Venue: Western University, London, Ontario, Canada



Middlesex tower in the autumn. PHOTO BY SCOTT FEENEY.



Grad club patio. PHOTO BY PHIL MCCAUSLAND.

Established in 1878, Western is considered one of Canada's most beautiful campuses, with large expanses of trees and green space and historic buildings. Join us in London for this unforgettable experience.

#### Program

There will be 40 sessions within 4 themes, 8 workshops or short courses, and 5 field trips. The conference will consist mainly of oral and poster contributions, arranged in thematic special sessions and symposia as well as in general topical sessions. A small number of invited presentations and lectures will also be featured, reflecting the conference themes. The schedule will be organized to promote discussion among meeting participants. For details go to www.gacmac2021.ca

## Abstracts

GAC–MAC 2021 welcomes abstract submissions for oral and poster presentations, for both in-person and virtual participation.

Abstract Submission Deadline: 12 July 2021

## **Conference** Format

The London 2021 Local Organizing Committee is monitoring COVID-19 updates from regional and national authorities, and is planning accordingly. We are currently planning to deliver a hybrid conference with a mix of in-person and virtual talks and events. Room capacities are being set according to the prevailing COVID-19 conditions in London (Ontario, Canada), following guidelines set by Western and the Middlesex-London Health Unit. Presenters, attendees, and exhibitors will have the option to participate in person or virtually.

## Registration

Early-Bird Registration Deadline: **17 September 2021** Website: https://gacmac2021.ca E-mail: gacmac2021@uwo.ca

# MAC SPONSORED EVENTS AT GAC-MAC 2021

## Short Course

**Fluid and Melt Inclusions: Applications to Geologic Processes.** 30–31 October 2021 (2-Day Pre-Meeting, Virtual).

The focus of this short course will be on application of fluid inclusions to solve geologic problems. It will include talks from world experts in fluid and melt geochemistry applied to hydrocarbons, diagenesis, metamorphic and igneous processes, Earth's deep interior, and economic mineral deposits.

**ORGANIZERS:** Matthew Steele-MacInnis and Pilar Lecumberri-Sanchez (University of Alberta)

#### Lecturers will include:

- Jaques Pironon (University of Lorraine, France)
- Andras Fall (University of Texas at Austin, USA)
- Martin Appold (University of Missouri, USA)
- Omar Bartoli (University of Padua, Italy)
- Evan Smith (Gemological Institute of America, California, USA)
- Jake Hanley (Saint Mary's University, UK)
- Rosario Esposito (Colorado College, USA)
- Matthew Steele-MacInnis (University of Alberta, Canada)
- Pilar Lecumberri-Sanchez (University of Alberta)
- Simone Runyon (University of Wyoming, USA)

**Contact information**: Matthew Steele-MacInnis, University of Alberta, E-mail: steelema@ualberta.ca

## Workshop – Berry School

#### **Canadian Powder Diffraction Workshop**

31 October to 2 November 2021 (4-Day Pre-Meeting)

This workshop is intended for students and practitioners who would benefit from an improved understanding of the basic theory and practice of powder and related X-ray diffraction techniques for analyzing crystalline materials. Sessions will cover the basic theory of powder diffraction, experimental considerations, sample preparation, and data analysis. Examples of some simple and some more difficult powder diffraction, Rietveld, 2-D, and 3-D diffraction analyses will be presented. Other diffraction and scattering techniques will also be presented, appropriate for the characterization of powders, in situ solids, thin films, single crystals, nanostructured and disordered materials. A variety of diffraction software will be introduced during the presentations and used in the afternoon's practical sessions. Several practice data sets will be supplied. Participants are also invited to bring data from their own research to be worked out at the Workshop with expert advice from the instructors who will be present. There may also be an opportunity to collect diffraction data on various instruments at Western University (if on-site, pandemic permitting). On-site participation in the workshop will be limited to 40 participants. The workshop is intended to be run in person, but a virtual format will be implemented if necessary (in the event of COVID-19 restrictions).

**ORGANIZERS:** Roberta Flemming (Western University) and Jim Britten (McMaster University). **CONTACT INFORMATION**: Roberta Flemming, Western University, E-mail: rflemmin@uwo.ca

#### **Symposia**

#### Low-Temperature Mineralogy

This session will focus on the precipitation, dissolution, and transformation of minerals in low-temperature environments (<100 °C). This session will include both field and laboratory studies: research that combines multiple approaches is encouraged. Topics in low-temperature mineralogy may include, but is not limited to, descriptions of new minerals, occurrences of minerals in novel environments, kinetics of dissolution or precipitation, uptake of trace metals, stable isotope fractionations, and microbe–mineral interactions. We are also interested in research into pathways of mineral transformation/precipitation, such as intermediate metastable minerals, non-classical crystallization, and biomineralization. Research into the synthesis or use of low-temperature minerals for industrial purposes, such as carbon capture use and storage (CCUS), or the transformation of minerals in mined environments/mine tailings are welcome.

**CONVENORS:** Maija Raudsepp, Avni Patel and Colton Vessey (University of Alberta)

#### **Special Sessions**

# Diamonds in Cratons, Diamond-Bearing Rocks, and Mantle Xenoliths

The aim of this special session is to provide a forum for discussion of research related to diamond origin, entrainment, and dispersal. This session seeks to bring together perspectives from academic, government, and industrial partners to improve the current understanding of diamond deposits. Contributions are invited from a large spectrum of topics, including, but not limited to, mineralogical, petrological, geochemical, geochronological and isotopic studies on diamonds and their inclusions, the origin and evolutionary history of cratons, diamond host rocks and their entrained mantle xenoliths, as well as the development of future exploration methods/techniques, including geophysical and geomicrobiological methods. Novel approaches implemented to address unanswered questions are particularly welcomed.

**CONVENORS:** Song Gao and Roberta L. Flemming (Western University), Carl Ozyer (GSC Calgary)

#### SyntheticandNaturalMinerals,FromHigh-toLow-Temperature, from Mines to Mountaintops, from Earth to Mars

This special session celebrates the career of Dr. Ronald C. Peterson (Queen's University). Ron is a versatile mineralogist – a mineralogical "Jack of all trades". He has characterized mineral structure, composition, cation ordering, and reactivity as functions of temperature, pressure, composition, Eh, pH, and humidity. He has synthesized new minerals and found them in the field (where he predicted they would be!) and predicted their occurrence on other planets. Sulphate minerals hold a predominant position in Ron's recent research, but over his career he has examined every group in Dana's classification system. We invite contributions probing mineral behaviour anywhere on Earth and beyond, which seek to link mineral structure and stability to geological and environmental processes.

**CONVENORS:** Roberta L. Flemming (Western University), Lee Groat (UBC); Bryan Chakoumakos (Oak Ridge National Laboratory)

# General Session

Contributions in Mineralogy, Crystallography, and Mineral

**Physics:** this general session seeks contributions on research in mineralogy, crystallography, and in mineral physics in the Earth and planetary sciences, as well as in materials science.

