

**GAC-MAC London 2021**



**November 1-5, 2021**



**Exploring Geosciences Through Time and Space**  
**Explorer les géosciences à travers le temps et l'espace**

## **Rates and Dates: Dating Methods and Applications**

*Organizers:* Eva Enkelmann (University of Calgary) and William Matthews (University of Calgary), [eva.enkelmann@ucalgary.ca](mailto:eva.enkelmann@ucalgary.ca)

### **1 day post-meeting Virtual Short Course, Saturday November 6, 2021**

The objective of this one-day course is to introduce geoscientists to the fundamentals of radiometric dating techniques. Geo- and thermochronology techniques allow scientists to quantify the timing of geologic events and with this the duration and rates of geologic processes. These methods differ in their sensitivity to temperatures ranging from mineral crystallization at  $>800$  °C to upper crustal heating and cooling at  $50$ – $100$ °C. This one-day short course will provide the principles of radiometric dating. Emphasis will be given to geochronology and thermochronology methods such as U-Pb, Ar-Ar, U-Th/He, and fission track dating, and the possibilities to combine multiple methods on individual samples and single grains. Focus will be given to practical aspects that will allow scientists to choose the best method, conduct sampling in the field and core storage facilities, and project budgeting for a wide range of applications.

*Topics covered in this short course:*

1. Differences between geo- and thermochronology
2. Basics of the U-Pb, fission track and U-Th/He methods
3. Application of geochronology to various geologic settings
4. Applications of low-temperature thermochronology
5. Common tools for data analyses, data presentation and interpretation
6. Use of multi-method single-grain analyses
7. Sampling strategies, what and how to sample, budget, and time considerations

*Intended audience:* Industry, Government and Academic Researchers, Students

*Sponsors:* University of Calgary



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