



The Geochemical Toolbox for Mineral Exploration One Day Short Course

Audience: This one-day short course is aimed at geoscientists from both industry and academia who wish to gain a better understanding of how state-of-the-art geochemical methods can be applied to a wide range of mineral systems for the purposes of *mineral exploration*.

Course Content: This course will provide a fundamental background, along with case studies, to demonstrate how modern geochemical techniques (with a particular focus on microanalytical methods) can be successfully exploited for both the purpose of understanding how different mineral systems operate, as well as for aiding in mineral exploration. The course will discuss various approaches to sample characterization, analytical methods and strategies, and demonstrate how the various geochemical methods can be used for the purposes of mineral exploration. Covered topics will include:

- Sample characterization, including using TIMA and Tornado systems
- Strategies, methods, and case studies for dating mineralization using a wide range of minerals and isotope systems (U-Pb, Ar-Ar, Re-Os, Rb-Sr).
- Isotope mapping of lithospheric architecture to locate potentially mineralized regions
- Sanukitoids, related rocks, and their relevance to gold exploration
- The use of a wide range of minerals as metallogenic “fertility indicators”
- The application of sulfur isotopes for exploration in orogenic gold systems

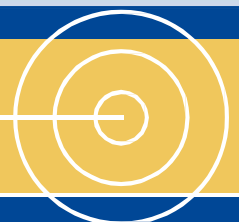
Duration: 1 day- 08:00 to 17:30, 17:30 onwards sundowner (Perth time - GMT+8)

Location: The University Club of Western Australia, Entrance 1, Hackett Drive

Cost: CET Members AU\$318.18 + GST | Non-Members AU\$450 + GST | University Postdocs and Fellows AU \$100 + GST | UWA Students attend for free

Registration: For registration and payment information please visit our website:

www.cet.edu.au and for more information please email us at info.cet@uwa.edu.au



Who will be looking after you -



Chris Fisher

Dr. Chris Fisher is an isotope geochemist and geochronologist at the CET, where he currently works in the CMCA laser ablation laboratory as a senior research fellow. Chris has experience in in situ analysis for U-Pb geochronology, trace element geochemistry, as well as radiogenic isotope systematics, which he applies to a wide range of geologic problems including mineral fertility studies and the dating of mineralization events.



Laure Martin

Dr. Laure Martin is a petrologist and isotope geochemist at the CMCA, where she leads the Secondary Ion Mass Spectrometry (SIMS) platform. She uses a wide range of microanalytical techniques applied to minerals and rocks to understand complex geological histories and processes at play in a wide range of contexts from subduction zones, orogenesis to ore deposits.



Aleksey Sadekov

Dr. Aleksey Sadekov is an academic leader for the Inductively Coupled-Plasma Mass Spectrometry (ICP-MS) platform at UWA, responsible for development, management, and operation of this advanced analytical research platform. His research interests lie in isotope geochemistry, in-situ analytical geochemistry, and their applications in geology and environmental sciences, paleoclimatology, and biomineralization.

Schedule

TIME	TOPIC	PRESENTER
FRIDAY 16/02/2024	The Geochemical Toolbox for Mineral Exploration	
08:00-08:25	REGISTRATION	
08:25-08:30	Welcome and Overview	Chris Fisher (CET)
	TOPIC: Sample characterization techniques and strategies	
08:30-09:00	Sample Characterization for Microanalysis	Laure Martin (CMCA)
09:00-09:15	Automated Mineralogy for Mineral Exploration	Lauri Virnes/Jason Bennett (CET)
09:15-09:30	M4 Tornado μ -XRF Scanner	Rebecca Pohrib (BHP)
09:30-10:00	COFFEE BREAK	
	Topic: Dating Mineralization	
10:00-10:30	LA-ICPMS Dating of U Bearing Accessory Minerals	Chris Fisher (CET)
10:30-11:00	The Rb-Sr Revival: <i>In situ</i> Rb-Sr Dating of Mineralization	Dan Bevan (CET)
11:00-11:45	Re-Os and Pb-Pb Isotope Systems: Applications to Metallogenic Systems	Svetlana Tessalina (Curtin)
11:45-12:15	Advances in $^{40}\text{Ar}/^{39}\text{Ar}$ Dating (with a Ore Deposit Flavor)	Fred Jourdan (Curtin)
12:15-13:15	LUNCH BREAK	
	Topic: Geochemical Tracers for Mineral Exploration	
13:15-13:45	The Utility of Zircon and Apatite as Copper and Gold Fertility Indicators	Giulia Consuma / Bob Loucks (CET)
13:45-14:30	Trace elements in Minerals: Indicators for Magmatic Sulfide Deposits	Louise Schoneveld (CSIRO)
14:30-15:15	Working Towards Sulfur Isotope vectors in Orogenic Gold Systems: some examples from Precambrian orogenic Gold Deposits in Canada	Crystal LaFlamme (Univ. of Laval/CET)
15:15-15:45	COFFEE BREAK	
	Topic: Isotope Mapping of Lithospheric Structure and Mineralized Regions	
15:45- 16:30	Isotope Mapping in mineral exploration: modern and Archean Perspectives	Yongjun Lu (GSWA)
16:30-17:15	Sanukitoids and related Rocks, and their Potential Relevance in Gold Exploration	Hugh Smithies (GSWA)
17:15-17:30	Closing Remarks-Questions for Speakers	Chris Fisher, Laure Martin, Aleksey Sadekov
17:30 onwards	SUNDOWNER	