



16th SGA BIENNIAL MEETING SHORT COURSE

Fundamentals of spectral reflectance for mineral exploration and mining

2-day short course, 26 - 27 March 2022

SHORT COURSE DESCRIPTION

Spectral reflectance can provide accurate mineralogical identification and mineral chemistry information that can be used to inform exploration and mining programs. This workshop will cover the fundamentals and applications of reflectance spectroscopy from the visible (350 nm) to the thermal infrared (15,000 nm). It will focus on integration with other geological datasets (e.g., geology, geochemistry) to produce integrated parameters related to alteration and mineralising processes. The applications of new technologies will be reviewed through case studies and hands-on exercises using real world data. The course is aimed at industry, academics and students interested in the applications of spectral reflectance across the minerals value chain.

SHORT COURSE SCHEDULE

The course will consist of 6 sessions, each of 1.5 hrs.

Session	Date	Time (NZDT)	Title	Session leader
1	26 March	11:00	Introduction to Spectral Mineralogy and Applications Across the Value Chain	Jessica Stromberg
2	26 March	16:00	TIR reflectance spectroscopy for mineral exploration and mining of critical metals deposits	Carsten Laukamp
3	26 March	22:00	Hyperspectral imaging technology for geological and mining application	Ekaterina Savinova
4	27 March	11:00	Use of hyperspectral reflectance of alunite supergroup minerals in lithocap environments	Lejun Zhang
5	27 March	16:00	New interpretations of chlorite and white mica spectral signature	Jonathan Cloutier
6	27 March	22:00	Case studies of hyperspectral reflectance in mineral exploration and mining	All



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PRESENTERS



From left to right:

Jonathan Cloutier (CODES, Utas/Geoscience Australia): jonathan.cloutier@utas.edu.au

Carsten Laukamp (CSIRO): Carsten.Laukamp@csiro.au

Ekaterina Savinova (UQ): e.savinova@uq.edu.au

Jessica Stromberg (CSIRO): jessica.stromberg@csiro.au

Lejun Zhang (CODES, UTas): lejun.zhang@utas.edu.au

Jonathan Cloutier

Jonathan is a senior researcher in mineral systems at Geoscience Australia and CODES. He has worked as an exploration geologist and research scientist at CSIRO, as well as a researcher at Memorial University in Newfoundland, lecturer at the University of St Andrews in Scotland, and at the University of Tasmania. His interests are focused on understanding hydrothermal mineral systems using a multiscale and integrative approach, supported by fieldwork and various high-precision analytical techniques.

Carsten Laukamp

Carsten is a principal research geoscientist at CSIRO Mineral Resources (Perth, Australia) and leading the AuScope National Virtual Core Library Infrastructure Program. Carsten explores the potential for combined use of reflectance spectroscopy, geochemistry and geophysics for 3D mineral mapping and exploration through cover.

Ekaterina Savinova

Ekaterina is a Research Fellow with the W.H. Bryan Mining and Geology Research Centre, Sustainable Minerals Institute, University of Queensland. She is a geologist with a specialization in hyperspectral data analysis as applied to mineral identification and interpretation, with big data integration. She has 15 years' experience working on greenfield, brownfield and mining projects of various scales around the world. In her earlier roles, as an exploration geologist, she worked on uranium deposits in Canada, the USA, and Australia, with a focus on the system controls and definition of hydrothermal alteration mineral zonation and spatial patterns.

Jessica Stromberg

Jess Stromberg is a Research Scientist and the Team Leader of the Mineral Footprints Team in CSIRO Mineral Resources (CMR), based in Perth, Western Australia. In CMR, Jess works across multiple commodities, applying and developing spectroscopic and geochemical techniques for industry challenges in the exploration and orebody knowledge contexts.

Lejun Zhang

Lejun Zhang is a Senior research fellow at CODES, University of Tasmania. His research is focused on characterising the geochemical footprints of porphyry-epithermal systems. He is specialising in the application of alteration mineral chemistry, SWIR and whole-rock data for enhancing exploration in lithocap and green rock environments.

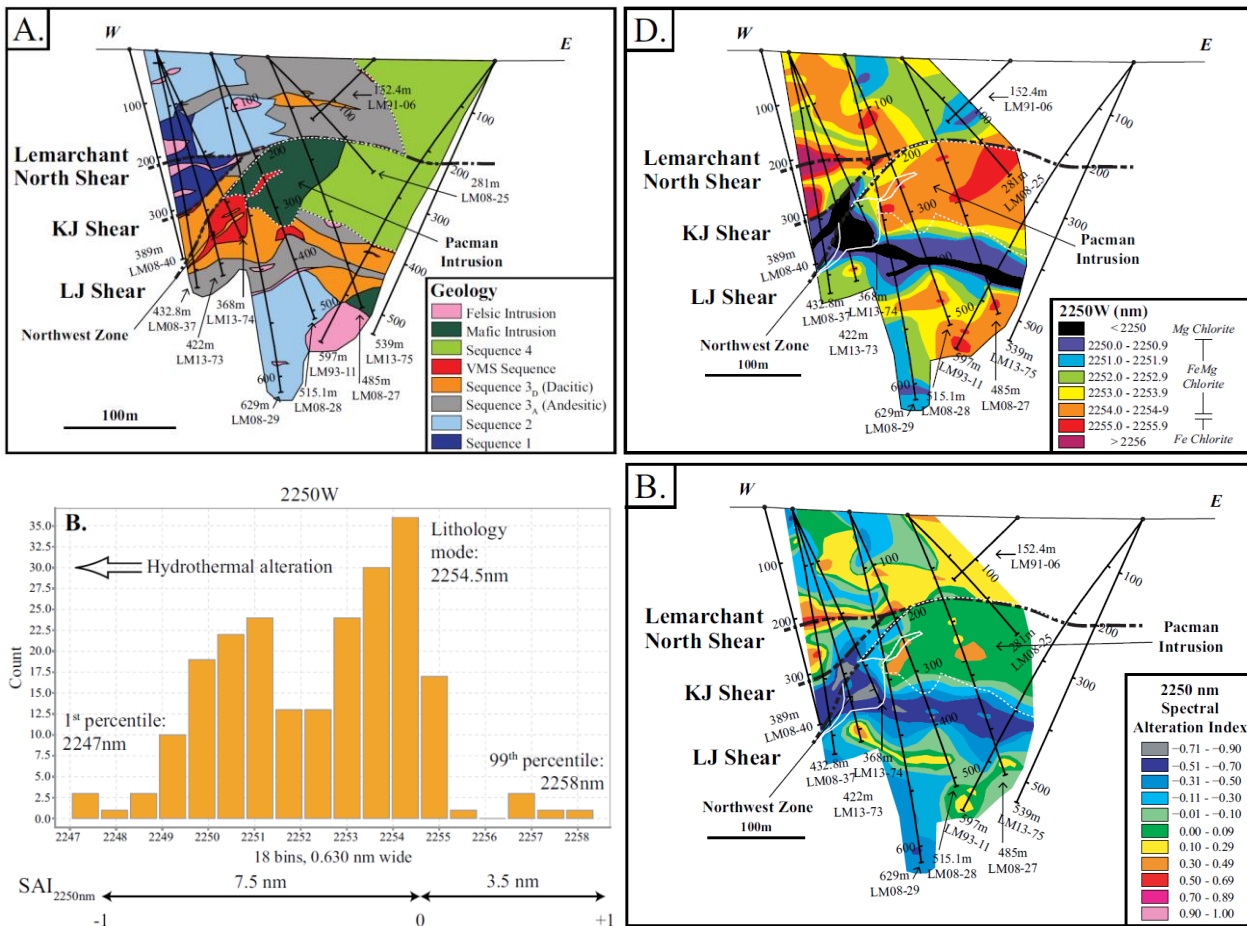
FEES

\$200 for members, \$250 for non-members, \$100 for student or retired members and \$120 for student or retired non-members. Register at <https://confer.eventsair.com/sga2022/registration>

FURTHER INFORMATION

Email Jonathan Cloutier at jonathan.cloutier@utas.edu.au

GALLERY



Example of integration of hyperspectral reflectance with the geology, geochemistry and structural geology at the Lemarchant deposit (From Cloutier and Piercey 2020).