

Soil Spectroscopy: The nuts and bolts of soil spectroscopy science and applications

The main objective of this full-day pre- CSSS-CSA 2026 conference workshop, co-organized by experts from the Ontario Ministry of Agriculture, Food and Agribusiness (OMAFRA), University of Guelph, University of Dalhousie, Woodwell Climate Research Center and collaborators is to provide an end-to-end exploration and hands-on experience of soil spectroscopy.

The workshop will cover instrumentation, data acquisition, modelling approaches, interpretation, and best practices for spectral data management. Participants will gain practical experience with spectrometers, work with example Vis-NIR and MIR datasets, and apply practical R/Python based workflows. This workshop also aims to establish a foundational Soil Spectroscopy Community in Canada.

Logistics



Date: Sunday, June 21st, 2026



Venue: Alexander Hall (Alex 265), University of Guelph

Direction to Alex 265: <https://www.uoguelph.ca/maps/locations/alexander-hall>



Moderator: Tegbaru Gobezie, Land Resources Specialist, OMAFA

Workshop Agenda

Morning Session		
8:30 – 9:00 AM ¹	Participants registration	
9:00 – 9:10 AM	Introductions	Participants
9:10 – 9:20 AM	Opening Remarks	Asim Biswas (University of Guelph)
9:20 – 10:00 AM	Challenges and opportunities to make predictive soil spectroscopy operational across scales	Guest Speaker: José Lucas Safanelli (Woodwell Climate Research Center)

¹ Note that all workshop times are in Eastern Daylight Time (EDT)

Full-day Pre-Conference Workshop Agenda – June 21, 2026

10:00 – 10:45 AM	Soil Spectroscopy 101	Anshu Beri, Ashley Hornby and Moazame Mesgar (University of Guelph)
10:45 – 11:00 AM	<i>Refreshment Break</i>	
11:00 – 12:00 PM	Soil spectroscopy instrumentation Demo (Bruker Invenio and Alpha II FT-IR and FieldSpec4)	Anshu Beri, Ashley Hornby and Moazame Mesgar (University of Guelph)
12:00 PM – 12:30 PM	QUANT 3 New Features and Application to Mid-IR Data of USDA–NRCS National Soil Survey Center	Peter Krygsman (Bruker Ltd.)
12:30 – 1:30PM	<i>Lunch Break (Group photo)</i>	
Afternoon Session		
1:30 – 3:30 PM	Predictive Soil Spectroscopy	José Lucas Safanelli (Woodwell Climate Research Center)
3:30 – 3:45 PM	<i>Refreshment Break</i>	
3:45 – 4:15 PM	Predictive Soil Spectroscopy (Continued)	José Lucas Safanelli (Woodwell Climate Research Center)
4:15 – 4:45 PM	Evaluating inter-laboratory comparability in soil analysis: insights from the Canadian Soil Data Portal ring test	Weixi Shu (University of Dalhousie)
4:45 – 4:55 PM	Towards establishing Soil Spectroscopy Community – “Soil Spectroscopy Working Group” within the Pedology Commission of the CSSS	Tegbaru Gobezie (Ontario Ministry of Agriculture, Food and Agribusiness) and Gordon Price (Dalhousie University)
4:55 – 5:00PM	Closing Remarks and Adjourning	Adam Gillespie (University of Guelph)