

# BIOENGINEERING & BIOMEDICAL ENGINEERING RESEARCH SEMINAR



## MONITORING FOOD CHEMICAL AND MICROBIOLOGICAL HAZARDS USING RAMAN SPECTROSCOPY AND MACHINE LEARNING

Dr. Lu is Associate professor and Ian & Jayne Munro chair in food safety in the Department of Food Science and Agricultural Chemistry at McGill University. Before that, he was assistant and associate professor at Faculty of Land and Food Systems, The University of British Columbia (2013-2020). His research focuses on food safety and food microbiology. Lu's lab develops innovative and rapid sensing, instrumentation systems, and detection methods for ensuring food safety as well as preventing food bioterrorism and fraud. His lab also applies molecular biology and genomic approaches to investigate stress response and pathogenesis of microorganisms that pose threats to agri-food systems and public health. He has published more than 140 peer-reviewed papers. He is the recipient of Young Scientist Award from Agricultural & Food Chemistry Division, American Chemical Society (2021), Samuel Cate Prescott Outstanding Young Scientist Award from Institute of Food Technologists (2021), Larry Beuchat Young Researcher Award from International Association for Food Protection (2017), and Young Scientist Excellence Award from International Union of Food Science and Technology (2015).

Dr. Xiaonan Lu  
Associate Professor; William Dawson Scholar  
Ian & Jayne Munro Chair in Food Safety  
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Rapid and accurate identification and detection of food chemical and microbiological hazards are critical to ensure agri-food safety. Raman spectroscopy is a vibrational spectroscopic technique that can characterize the changes in the polarizability of functional groups with different vibrational modes. As a result, Raman spectral bands are molecular specific and provide comprehensive information about the chemical composition of an analyte. In this presentation, Raman spectroscopy, surface-enhanced Raman spectroscopy, Raman optical tweezer along with machine learning methods for spectral analyses in Dr. Lu's laboratory will be introduced and their applications in agri-food safety will be presented as well.

September 30, 2022 at 1:30PM  
DUFF 507/509



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Department of **Bioengineering**