

## G. B. FROST MEMORIAL LECTURE

The Grenville Frost Visiting Lectureship in Chemistry was established in 1966 by a bequest from the estate of the Honourable Leslie M. Frost, Premier of Ontario, in memory of his brother, Grenville. This fund is used to invite a Visiting Lecturer to Queen's.

Grenville Frost completed his education at the University of Toronto and, after graduating, went on to the University of California where he worked under the famous G.N. Lewis. Dr. Frost was appointed Lecturer at Queen's in 1924 and Full Professor in 1944. He became Head of the Department of Chemistry in 1956 and served in this post until retirement in 1961.

Dr. Frost was also the Supervisor to H.G. McAdie, who was the first Ph.D. Graduate in the Department of Chemistry.

## SELECTED PUBLICATIONS

- "Near-Field Enhancement of Optical Second Harmonic Generation in Hybrid Gold-Lithium Niobate Nanostructures," Ali, R. F.; Bushe, J. A.; Kamal, S.; Masiello, D. J.; Gates, B. D., *Light: Science & Applications*, **2023**, 12 (99), 1-12.
- "Mesoporous Platinum Prepared by Electrodeposition for Ultralow Loading Proton Exchange Membrane Fuel Cells," Paul, M. T. Y.; Gates, B. D., *Scientific Reports*, **2019**, 9, 4161.

## PREVIOUS FROST LECTURERS

2022 • Vojislav Stamenkovic

2021 • Christopher C. Cummins

2019 • Paul Anastas

2018 • Gerhard Erker

2016 • Lisa McElwee-White

2015 • Graham Cooks

2014 • Guy Lloyd-Jones

2011 • John M. Brown

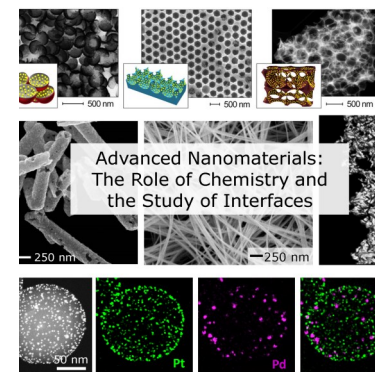


Department of Chemistry  
Queen's University

is honoured to host the  
2023 Frost Lecturer:

**Dr. Byron Gates**  
Simon Fraser University,  
Burnaby, BC

"At the Interface of  
Nanomaterials: Challenges  
and Opportunities in Creating  
and Utilizing Advanced  
Nanomaterials"



Friday, December 8, 2023  
11:30 AM  
Chernoff Hall, Room 117

## DR. BYRON GATES



### Byron D. Gates

Professor of Chemistry  
Associate Chair  
Department of Chemistry  
Simon Fraser University  
Burnaby, BC, Canada  
email: [bgates@sfu.ca](mailto:bgates@sfu.ca)  
<http://www.sfu.ca/chemistry/gates/>

**Byron Gates** is a Professor of Chemistry and Associate Chair of the Department of Chemistry at Simon Fraser University. He obtained his B.Sc. from Western Washington University in the USA studying high temperature catalysts with Mark Bussell. He joined Younan Xia's group as a graduate student at the University of Washington to study the development of methods for nanomaterials synthesis and the creation of materials through self-assembly techniques. After obtaining his Ph.D. in Chemistry and Nanotechnology in 2001, Byron joined George Whiteside's group at Harvard as a postdoctoral fellow to pursue the limits of soft lithography, patterning of electrets, and creation of nanolithography techniques. He began his independent career as an assistant professor at Simon Fraser University in September 2004. He has served as a scientific advisor to start-up companies, served on the editorial advisory boards of a few journals, and served as a director and co-founder of 4D LABS at SFU, a core facility for advanced materials research and development.

Byron's research pursues advanced materials for a variety of applications through the creation of collaborative, interdisciplinary teams of researchers from around the world. His research interests lie at the intersection of materials chemistry, surface science, and analytical science, which he utilizes to create, study, and apply advanced nanomaterials. From these pursuits he has over 150 peer-reviewed publications and 5 patents. Significant achievements include creating designer syntheses of nanoscale materials (e.g., semiconductors, metals, metal oxides, alloys, composites), developing new methods for fine tuning the surface chemistry of materials, analyzing the transformations within and on the surfaces of nanomaterials through externally triggered processes, and enhancing the performance of nanomaterials used in clean energy production and energy storage. He has also led the creation of techniques for assessing the impact of exposure to engineered nanomaterials, methods to trace nanomaterials in the natural environment, and established guidelines for handling engineered nanomaterials. And building upon his passion for teaching, he has also designed new approaches to hands-on classes for training both undergraduate and graduate students in the fields of analytical and materials sciences.

## SELECTED AWARDS & HONOURS

- Canada Research Chair in Surface Chemistry, (2005)
- Faculty of Science Excellence in Teaching Award (2018)
- Vebleo Fellow (2020)

### Selected Contributions of Service

- Head, Centre for Soft Materials at SFU (Advanced EM Facilities and hydrogen safe fuel cell laboratory, \$12.5M; 2013-2018)
- Director, Nanofabrication Facilities, 4D LABS at SFU (commissioning \$22M of advanced analytical instrumentation and set-up of Class 100 Clean Room; 2008-2012)
- Principal Organizer of Nanolytica Annual Conference at SFU (2013-present)