



CHEMISTRY/PHYSICS SEMINAR SERIES

Dr. Paul Mayer

**Professor, Department of Chemistry and Biomolecular Sciences
University of Ottawa**

**Wednesday, September 28th, 2022
11:00 a.m. to 11:50 a.m. in ENW 115**



Join via Zoom! Link: <https://trentu.zoom.us/j/99943376311?pwd=WkE1UkdNd0J2THF0THZNOVMvREZlZz09>
Meeting ID: 999 4337 6311 Passcode: 665586

Exploring the chemistry of interstellar and atmospheric species by mass spectrometry and synchrotron radiation

ABSTRACT

My presentation this morning will be about control. Control over the internal energy content of ions and the study of their unimolecular chemistry. To this end, we will juxtapose lab-based collision experiments in tandem mass spectrometry with those carried out at the Swiss Light Source synchrotron, namely imaging photoelectron photoion coincidence spectroscopy (iPEPICO). The talk will start with a discussion of what goes into making a mass spectrum, and how the coincidence method differs from more traditional methods of making ions. Examples from our explorations of the dissociative ionization of polycyclic aromatic hydrocarbons relevant in interstellar environments will highlight these differences. We will then return closer to earth and see how we can use iPEPICO to learn about the early stages of the pyrolysis of molecules found in biomass conversion processes.

BIOGRAPHY

P. Mayer hails from Winnipeg, MB where he obtained his BSc in Chemistry. Along the way he worked three summers with Prof. John Westmore wetting his appetite for mass spectrometry with projects like the comparative dissociation of ionized stereoisomeric steroids, the dissociation of protonated dinucleotides and the computational exploration of ionized peptides. He continued on to Ottawa where he obtained his PhD with John Holmes. His thesis dealt with free radical thermochemistry and the spectroscopy of keV ion-gas collisions. Postdoctoral work at the UNC-Chapel Hill with Tom Baer introduced him to PEPICO and gas phase ion kinetics. He followed this with a year at the Australian National University with Leo Radom doing computational chemistry. He started back at the University of Ottawa in 1998. He has published 163+ papers on topics ranging from gas phase ion chemistry, food chemistry (plant extract analysis), biomass conversion and substandard pharmaceuticals, using GC-MS, LC-MS and physical chemistry research tools. He has been the director of the JLH Mass Spectrometry Core Facility since 1999, President of the Canadian Society for Mass Spectrometry (2013-2017) and continues to support the organization as treasurer. He chaired the 2016 International Mass Spectrometry Conference in Toronto, the first time this biannual meeting was held in the Americas. For the past 24 years he has organized the annual Trent Conferences in Mass Spectrometry, the only graduate student-focused mass spectrometry conference in Canada.