

DEPARTMENT OF CHEMISTRY AND ENVIRONMENTAL SCIENCE
SEMINAR SERIES
FALL 2023

WEDNESDAY, MARCH 22, 2023
TIERNAN HALL – LECT. HALL 2
1:00PM-2:20PM

GUEST SPEAKER

Dr. Chrys Wesdemiotis

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Akron, OH

TOPIC

Multidimensional Mass Spectrometry in Polymer and Materials Science

ABSTRACT

Progress in science and engineering relies on synthetic macromolecules with well-defined structures, optimized for specific applications. Mass Spectrometry (MS) provides a powerful tool for the molecular characterization of such compounds. MS unveils molecular weight (MW) and functionality distributions and is ideally suitable for monitoring changes in mass. For complex samples, MS can be hyphenated with liquid chromatography (LC) and/or ion mobility (IM) spectrometry. Conversely, large or crosslinked macromolecules can be made analyzable by coupling MS with mild thermal degradation under ambient conditions. In all cases, additional insight about structure, sequence, and architecture can be gained through tandem mass spectrometry (MS/MS) fragmentation to overall achieve comprehensive, top-down analysis. Such multidimensional characterization approaches have been utilized to elucidate the microstructure of a broad range of polymeric materials, as will be demonstrated for variously shaped (co)polymers, complex conjugate blends, crosslinked materials, and solid surfaces.

BIO



Chrys Wesdemiotis completed his Ph.D. at Technische Universität Berlin (1979). After a postdoctoral fellowship with Fred W. McLafferty at Cornell

University (1980) and military service in Greece (1981–1983), he returned to Cornell as senior research associate (1983–1989). In 1989, he joined the University of Akron, where he currently is Distinguished Professor of Chemistry, Polymer Science, and Integrated Bioscience. Research in the Wesdemiotis group focuses on the development and application of mass spectrometry methods for the characterization and imaging of synthetic polymers, advanced materials, and polymer–biomolecule conjugates. The Wesdemiotis group has published >350 peer-reviewed papers. Prof. Wesdemiotis has mentored 21 Masters and 40 Ph.D. graduates so far. He has served in many Review Panels and Journal Editorial Boards and received several awards, including the 2020 American Chemical Society – Rubber Division George Stafford Whitby Award for Distinguished Teaching and Research.

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