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The Chromatography Forum of Delaware Valley Events Series
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PLASTIC WASTE ANALYSIS THROUGH COMPREHENSIVE TWO-DIMENSIONAL GAS CHROMATOGRAPHY

Petr Vozka

Associate Professor of Chemistry and Biochemistry
California State University

Abstract

Plastic waste presents dual analytical challenges: microscopic fragments dispersed in the environment (microplastics, MPs) and chemically complex mixtures formed during thermal conversion into waste plastic pyrolysis oils (WPPOs). Accurate, high-resolution chemical measurements are essential for both understanding the organic composition of MPs and optimizing the valorization of plastic waste. This talk surveys recent advances in the use of comprehensive two-dimensional gas chromatography (GC×GC) to unravel the molecular complexity of WPPOs and MPs. Finally, it outlines future research and implementation priorities needed to expand the role of advanced analytics in supporting responsible and effective plastic waste management.

EVENT TIMES
06:45 PM

Location
Crowne Plaza Princeton
900 Scudders Mill Rd, Plainsboro Township, NJ 08536

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BIOGRAPHY

Petr Vozka is an associate professor of chemistry and biochemistry at California State University, Los Angeles, where he directs the Complex Chemical Composition Analysis Laboratory (C3AL). He holds a B.S. in Chemistry and Chemical Technologies, an M.S. in Chemistry and Technology of Fuels and Environment from the University of Chemistry and Technology, Prague (UCT Prague), and a Ph.D. from Purdue University specializing in the analytical chemistry of liquid transportation fuels. His group develops and applies state-of-the-art methodologies, particularly comprehensive two-dimensional gas chromatography (GC×GC) coupled with mass spectrometry, to resolve the composition of challenging chemical mixtures. Application areas span alternative fuels, microplastics, and forensic matrices such as fingerprints. He has authored peer-reviewed publications that contribute to the measurement of science underpinning fuels and environmental systems. He is a committee member of the Multidimensional Chromatography Workshop (MDCW) and was named a Rising Star in Separation Science by LCGC in 2023.

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