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High performance gas chromatography mass spectrometry in addressing the challenges of metabolomic studies - separation in time and mass

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Comprehensive metabolomics requires the application of many analytical tools. The complexities of matrix and diversity of analytes types creates many challenges not readily addressed by one technique. Gas chromatography with detection using mass spectrometry is one of the more established techniques in Metabolomic analysis owing to its robustness and relative simplicity of use. Advances in recent years have enabled GC-MS to be even more impactful in its capabilities. Specifically, more common use of, and advances in, time of flight mass spectrometry have empowered investigators and made impacts. Examples of the application of GC-TOF-MS and its utility in plant, animal and cellular metabolomic studies will be presented for discussion. Extension of these experiments to the comprehensive two-dimensional GC-TOF-MS experiment will support the benefit of the additional dimension in detecting more metabolites in these same types of studies. Finally, the capability of high resolution time of flight (HRT) interfaced to GC will be demonstrated in various metabolomic studies with a focus on structural definition and unknown identification. Linking these and other tools together to create information for the metabolomic scientist will be at the core of examples data sets.

Biography

Dr. Jeff Patrick is the Director of Marketed Technology at LECO based in Saint Joseph, MI. He is responsible for applications, new products and marketing for their line of GC-TOF-MS Products. Prior to his role at LECO he was in the Pharmaceutical Industry as a leader in Bioanalytical Mass Spectrometry for 18 years. Jeff is a graduate of Purdue University (Ph.D. in Analytical Chemistry) where he studied with Graham Cooks and the University of South Carolina (M.S.) where he studied with John Baynes. Jeff has more than 30 publications and book chapters to his credit.

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