LES MARDIS DE LA CHIMIE

Amphithéâtre Herpin, Bâtiment Esclangon, Campus Jussieu

6 février 2018, 16 h 45 (thé à 16 h 30)

Direct and ambient analysis of chemical compounds from surfaces by Desorption Electrospray Ionization

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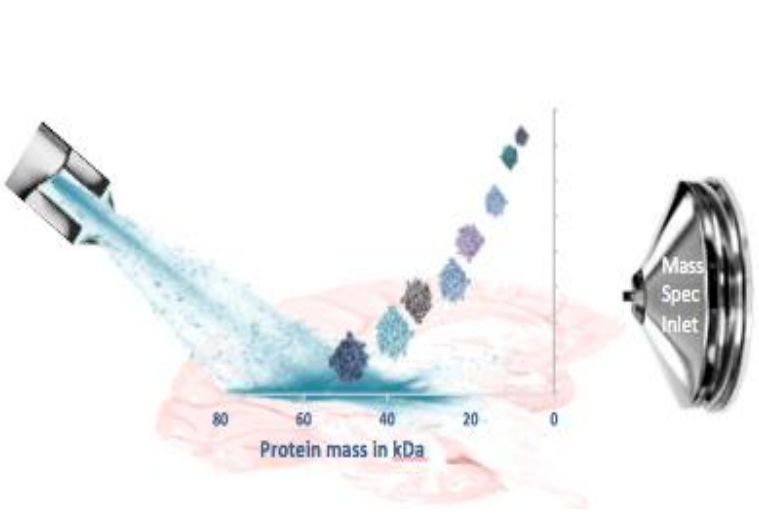

Summary: Analysis and imaging of the surfaces of samples by ambient mass spectrometry is an important new analytical tool that has been used for tumor detection and identification, to study drug actions, catalyst development and other important applications. One of the most widely used ambient ionization mass spectrometry methods is Desorption Electrospray Ionization (DESI). With DESI-MS an electrospray plume is directed at a sample surface to cause both the desorption and ionization of organic molecules, which are then immediately analyzed by mass spectrometry.

Unfortunately, DESI-MS is currently limited to only the analysis of small molecules such as lipids, fatty acids, and other small molecules. Developing the ability to analyze proteins and determine their spatial distribution in tissues and cells would make imaging DESI-MS much more useful for pathology and biotechnology applications.

We have investigated the origin of the mass dependent loss in sensitivity that is experienced with DESI-MS. Based on our findings, I will present some preliminary results on current efforts to improve on the detection of proteins by DESI-MS. These include the addition of ammonium bicarbonate, a very effective signal improving buffer, other additives such as serine, and the implementation of a novel delayed desorption DESI ion source.

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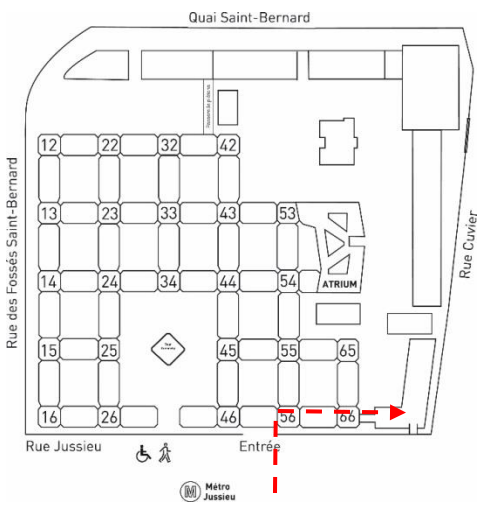

Biographical Notes: Andre Venter is an Associate Professor at Western Michigan University, USA. Born in South Africa, he completed both his bachelor and master degrees at the University of Pretoria. He also received his Ph.D. in 2003 with Prof. Egmont Rohwer from the University of Pretoria where he developed a comprehensive multidimensional supercritical fluid and gas chromatography (SFC x GC) method for petrochemical and natural product analyses. He worked as a postdoctoral researcher at Purdue University, West Lafayette, Indiana with Prof. Graham Cooks. At Purdue University he investigated fundamentals of desorption electrospray ionization mass spectrometry and other ionization methods. At Western Michigan University, as an Assistant Professor of Chemistry since 2008, and as an Associate Professor since 2014, his research group studies spray ionization mechanisms and ambient surface analysis mass spectrometry. He also heads the WMU Hops Analysis Laboratory providing chemical services to hops farmers and microbreweries in Michigan and further afield.

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