

SINERGY SEMINAR SERIES

NUS Synthetic Biology for Clinical and Technological Innovation (NUS SynCTI)

Member of Singapore Consortium for Synthetic Biology (Sinergy)



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Charles Sturt University

Updates and Applications: Ambient Ionization Mass Spectrometry

Mass spectrometry (MS) is an important analytical technique with high sensitivity and selectivity. However, all known ambient MS ionization methods are significantly hindered by ion suppression that is caused by ion charge competition other than the target molecules. To eliminate this key problem without using chromatography and/or sample preparation which may be tedious and time consuming, current methods were developed through (i) integrating surface chemistry with ambient ionization source, (ii) developing a library of selective surfaces and (iii) integrating two or more ionization sources.

The key advantage of this innovation is that molecules of interest can be directly and rapidly sampled from complex mixtures without sample preparation/chromatography for detection by MS. It should prove beneficial for portable MS applications because relatively low detection limits can be obtained without the use of additional gadgets and can produce intact molecular ions.

Morphy Dumlao is a Research Fellow at the National Wine and Grapes Industry Centre (NWGIC), Charles Sturt University. He is currently detailed at the University of New South Wales (UNSW) to develop a portable and rapid mass spectrometry device for the detection of phytochemicals and related analytes of wine and grapes.

Morphy worked several years as forensic chemist in the Philippine National Police and UN Directorate for Peacekeeping Operations with field assignments in Sudan (2009) and Timor-Leste (2011). He received a research fellowship from the Organization for the Prohibition of Chemical Weapons (OPCW) with Prof Renato Zenobi at ETH Zurich where his project focused on developing plasma-based ionization mass spectrometry. He pioneered the plasma-based ionization at UNSW which resulted to numerous awards, published high impact factor papers and a cover article.

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Hosted by: A/Prof Yew Wen Shan

