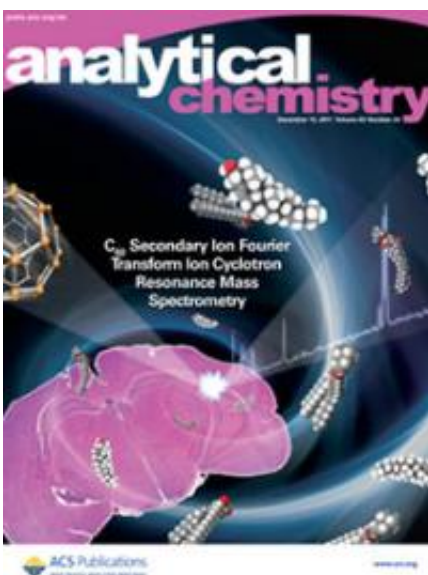


C60 SIMS FTICR MS raises bar for mass accuracy, resolving power

January 11 2012



C60 SIMS FTICR MS, a research first, is featured on the cover of the December 15 issue of Analytical Chemistry.

In biology, what molecules are located where dictates much about how any biological system functions.

A new high-resolution [mass spectrometer](#) developed by EMSL users now allows the biological research community to identify and map the location of biomolecules on a sample with higher mass accuracy and mass resolving power than ever before. Because [biological molecules](#) with very different functions can have almost identical masses, this

holistic analysis will open new doors in biological research and offer scientists unique insights into biological systems and how they work.

Called C60 SIMS FTICR MS, the new tool couples C60 (also called [buckminsterfullerene](#), or [buckyball](#)) secondary ion mass spectrometry, which has high spatial resolution chemical imaging capabilities and minimizes damage to biological samples during analysis, with high-magnetic field (9.4 or 12 Tesla) Fourier transform ion cyclotron resonance mass spectrometry, which has impressive mass spectral performance.

Featured on the cover of the December 15, 2011 issue of *Analytical Chemistry*, the team demonstrated the potential of C60 SIMS FTICR MS using mouse brain tissue. They achieved mass accuracy and mass resolving power 10 times higher than previously reported for SIMS. A solid and exciting first step for the biological research community, optimizations for the system are already underway and include achieving sub-micrometer resolution and building advanced data handling and analysis tools.

More information: Smith DF, EW Robinson, AV Tolmachev, RMA Heeren, and L Pasa-Tolic. 2011. "C60 Secondary Ion Fourier Transform Ion Cyclotron Resonance Mass Spectrometry." *Analytical Chemistry* 83:9552-9556.

Provided by Environmental Molecular Sciences Laboratory

Citation: C60 SIMS FTICR MS raises bar for mass accuracy, resolving power (2012, January 11) retrieved 26 April 2024 from <https://phys.org/news/2012-01-c60-sims-fticr-ms-bar.html>

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