Seeing the Real World Through Ambient Mass Spectrometry—Based Chemical Imaging

For Analysis—Why Is Mass Spectrometry So Important?
- Universal Analysis
- Elements
- Organic and inorganic molecules
- Nanostructured materials
- Macromolecules
- Targeted Identification
- Unknown Identification
- High Sensitivity
- High Specificity

Addressing the Challenges to Enable Spatially Resolved Molecular Chemical Analysis of Interfaces Under Real World Conditions

Scientific Challenges
- Understand the physico-chemical phenomena involved with the various desorption processes
- Dramatically enhance molecular ion yield
- Understand and implement the means to efficiently collect and transport ions at atmospheric pressure

Molecular Cartography: Chemical and Topographical Imaging Using Complementary Multi-Mechanism Techniques

Proximal Probe Millimeter to Nanometer Spatially Resolved Thermal Desorption Surface Sampling/Ionization

Combined Topographic and Spatial Chemical Imaging with an AFM-Based Laser Desorption/Ionization Microprobe Mass Spectrometer

Micrometer Scale Chemical Imaging with Desorption Electrospray Ionization

Physical Sciences Directorate