Comprehensive Two-Dimensional Gas Chromatography with Time-of-Flight Mass Spectrometer (GCxGC-TOFMS)

Cutting Edge Microarray Technology

Microarray procedure:
Labeled cDNA targets derived from the mRNA of an experimental sample are hybridized to nucleic acid probes attached to the GeneChip.

Cutting Edge Microarray Technology

Laser Scanning Confocal Microscope

Detection of pesticide residues in food by Ultra-high Performance Liquid Chromatography/Tandem Mass Spectrometry (UPLC-MS/MS)

Metals Speciation Analysis by ICPMS-DRC-HPLC
Inductively Coupled Plasma-Mass Spectrometer with the Dynamic Reaction Cell technology linked to the High Performance Liquid Chromatography system

Why do Speciation?
To learn more about a contaminant
+ Bioavailability
+ Toxicity
+ Environmental Mobility

Method 1668B -- PCB Congener analysis by High Resolution Mass Spectrometry (HRMS)

Permeability of Agricultural Tarps:

Qualitative analysis with Automated Peak Find and True Signal Deconvolution® algorithms.

Metals of Interest:
Arsenic, Selenium, Chromium, Tin, Mercury and others

• ACQUITY UPLC™ 1.7 μm particle size columns for faster speed, higher sensitivity and resolution of analytes.
• Enhanced triple quadrupole mass spectrometer for higher sensitivity, better selectivity and confirmation.
• Analysis of over 400 pesticides in 15 minutes or less.

• Collaborating with USDA-ARS to develop and validate a new method to test permeability of agricultural tarp to fumigants.
• Headspace analysis of fumigants by gas chromatography/mass spectrometry.
• Generates tarp permeability database for risk assessment and buffer zone credit calculation.
• Outcome may assist EPA to establish rules to reduce emissions and workers exposure to fumigants.