Looking for Alternatives to High Resolution Mass Spectrometry

William A. Spencer

Savannah River National Laboratory, Aiken, SC

The Savannah River National Laboratory is looking for alternatives to large high resolution mass spectrometers for measurement of trace ppm and ppb level impurities in bulk gases as well as support for helium and deuterium analysis. Alternative systems based on simple NDIR detectors and micro gas chromatography with helium plasma detectors are currently under investigation. The laboratory has investigated using smaller quadrupole mass spectrometers with high frequency drivers to achieve resolutions suitable for 4He and D2 resolution. Additional techniques using multi-pass Raman probes and FTIR spectrometers are being tested. The presentation will cover some of the trades between the instrumentation, the compounds detected, and the detection ranges that can be achieved. The goal of the research is to achieve a compact boxed sized analyzer with superior detection capability equivalent to that achieved with a large multi-sector high resolution gas mass spectrometer.