K1   **Use of a Novel Large Volume Splitless Injection Technique and Sequential Full Scan/SIM for Simultaneous Screening and Confirmation of Toxicological Specimens**

Eric Phillips, BS, Thermo Electron, 2215 Grand Avenue Parkway, Austin, TX 78728*

After attending this presentation, attendees will have the ability to use GC/MS instrumentation to better characterize samples and quantitate unknown compounds.

A novel injection technique coupled with a sequential full scan/SIM acquisition can expand that role and consequently increase the value of GC/MS as an analytical tool. By combining an injection technique that allows injection of up to 35 uL of sample with a sequential full scan/SIM acquisition, the forensic scientist can achieve several objectives with a single injection. SIM analysis enables confirmation of pre-screened presumptive positives, while the presence of full scan data allows investigation into other compounds of interest that may be present in a sample.

The resulting data provided confirmatory, quantitative data about target compounds as well as library searchable results for unknown full- scan peaks. Emphasis was placed on cocaine and metabolites in urine and oral fluid. The custom library contained standards ranging across a broad spectrum of acidic, basic, and neutral drugs. Extraction methods were appropriate for the target compounds. The limit of detection using a standard splitless injection technique was 30 ng/mL for benzoylecgonine (BE) in urine, and this LOD was decreased to 300 pg/mL using an injection volume of 35 uL. The correlation coefficient for BE in urine using the SIM data was 0.991, calibrated from 300 pg/mL to 1200 ng/mL. Run times using the large volume technique were longer than those using the standard technique, due to use of a longer column and a required period of isothermal oven temperature. These longer run times were offset by the decreased detection limits achievable with the large volume injection.

Large Volume Splitless Injection, GC/MS, Sequential Full Scan/SIM