



### **A196 Rapid and Automated Chromatographic Analysis of Drugs and Metabolites in Biological Specimens using Disposable Pipette Extraction (DPX)**

*William E. Brewer, BS, PhD\*, Department of Chemistry and Biochemistry, 631 Sumter Street, Columbia, South Carolina, 29208; and Demi J. Garvin, PhD, 5623 Two Notch Road, Columbia, South Carolina, 29223*

After attending this presentation attendees will learn how to automate sample preparation for solid forensic drug case samples.

This presentation will impact the forensic science community by demonstrating how the automated method presented will improve laboratory throughput and minimize sample handling. Most importantly, this method should allow drug chemists more time for case review and courtroom testimony.

Disposable Pipette Extraction (DPX) is a dispersive solid-phase extraction device that mixes solutions in a pipette tip to provide rapid extractions with minimal solvent volumes. By using DPX, extractions can be performed from 30 seconds (for sample cleanup procedures) to less than six minutes. The extractions are performed completely automated using a dual rail GERSTEL MPS-2 instrument.

Several applications of automated DPX are described. One application is for comprehensive screening of basic, acidic and neutral drugs in blood, urine and oral fluid using GC/MS. Another application focuses on opiates for pain management using GC/MS and LC/MS/MS. These analyses are accomplished using cation exchange sorbent (DPX- CX) with reversed phase characteristics.

Another application of DPX combines desalting and phospholipid removal in a single extraction in less than 1 minute for LC/MS/MS analysis. This extraction eliminates the deleterious effects of ion suppression and matrix effects in LC/MS methods of analysis.

This study focuses on the automated extraction of biological samples coupled to GC/MS and LC/MS/MS to provide high throughput analysis "one sample at a time." The concept is to decrease the extraction time so that the extraction of one sample is completed during the chromatographic analysis of the previous sample of a sequence. This type of high throughput analysis is advantageous because all of the samples are being processed exactly the same.

**Sample Preparation, GC-MS, Illicit Drugs**