



Engineering Sciences Section – 2008

C52 A Rapid High Volume Sampler for Trace VOCs Collection in the Field

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The goal of this presentation is to introduce a new device and methodology for trace volatile organic compound collection and analysis in situations that require rapid sampling and/or field measurements.

The presentation will impact the forensic community by providing an alternative approach to sampling volatile organic compounds in a variety of field situations involving public health or for investigations where canines require corroborative data.

An adaptable air sampler based on high surface area solid phase microextraction (HSA-SPME) has been developed and characterized for rapid collection of trace VOCs in the field or in buildings. The sampling device consists of a thin wire coated with carboxen/polydimethylsiloxane (CAR/PDMS) material wound in the annular space between two concentric glass tubes and uses post-sampling resistive heating for desorption. Detection limits of 0.2-6.9 ppt (v/v) were observed for several toxic organic compounds via selected ion monitoring GC-MS analysis, resulting in an improvement of several orders of magnitude when compared to dynamic sampling with a commercially available 10 mm CAR/PDMS SPME fiber. The low power requirements and the potential for rapid analyte uptake and good sensitivity using the HSA-SPME design will make it possible to rapidly collect and analyze samples in field settings for situations involving public health.

VOC, SPME, GC/MS