
MICRO EXTRACTION BY PACKED SORBENT (MEPS): THE NEW WAY FORWARD IN SMALL SCALE TRACE ANALYSIS BY GC-MS

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The analysis of chemicals with very small concentrations (trace analysis) has always been a challenge. Method development in trace analysis focussed on the enrichment of the chemical of interest through trapping on a solid adsorbent. If concentrations were very low, the volume of the sample (air or aqueous) can usually be increased in order to increase the final concentration of the analyte. Another method is through the use of special detectors that will increase the detection limit. The main disadvantage is that often the sample size is quite small and hence increasing the volume is problematic or that the use of expensive specific detectors is required.

Micro Extraction by Packed Sorbent (MEPS) in contrast reduces the need for increased volume size of the sample to be analyzed and can be used with any chromatographic technique. Analysis with MEPS can be carried out off-line, but its real advantage is when it is used on-line with either gas chromatography or liquid chromatography. It reduces sample preparation time as well as the volume of solvent needed. In addition it allows analysis of samples as low as 5µl.

In this presentation the benefit of MEPS is demonstrated in the trace analysis of three benzodiazepines: diazepam, oxazepam and temazepam. Concentrations as low as 50 ppt could be detected in a single run. The reliability and limit of detection of MEPS will be discussed as well as its further use in the analysis of a wide range of controlled substances such as cannabis.