



Advances in automated Sample Preparation

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Accelerated solvent extraction (ASE) is now widely used in the environmental, food, and polymer analysis areas to increase the efficiency of the sample preparation process. Using ASE, sample preparation times can be shortened and the required amount of extraction solvents dramatically reduced. While the saving of time and solvent are always favorable, the ability to rapidly and quantifiably extract contaminants from a variety of matrices is very important as well. ASE methodology is specified in environmental methods such as USEPA Method 3545A and as part of the Contract Laboratory Program (CLP SOW OLM04.2). ASE methodology is also specified in methods in Germany (German Method L00.00-34) and China (Chinese Method GB/T 19649-2005), as well as ASTM standard practice D 7210.

ASE can be used to automatically extract samples without user intervention. Recent advances in the use of adsorbents in the extraction cell have enhanced the capability of this technique. For example, adsorbents have been used to retain a wide variety of interfering species including lipids, ionic compounds, colored compounds such as chlorophyll and others. Sequential extractions with solvents of varying polarity can also achieve selective extractions and fractionations. For example, samples can be extracted with nonpolar solvents first to remove nonpolar interferences prior to the extraction of polar analytes.

This paper will discuss the use of adsorbents in the extraction cell to automatically produce extracts that can be analyzed without additional sample pretreatment. Automatic sequential extraction of samples to produce unique fractionation and selectivity in ASE will also be presented.