

Did You Know?

Sample Pretreatment Prior to SPE May Improve Extraction Performance

Performance Tip

In this month's Performance Tip we will consider how and why some difficult sample matrices should be further pre-treated (in addition to proper pH adjustment) before being applied to an SPE cartridge or well plate. When dealing with dirty, viscous, or particle-laden samples, one of the most problematic concerns a SPE operator faces is clogging of the SPE device. On occasion, samples can be sufficiently homogenized by vortexing. This is typically the case when dealing with heparanized plasma samples that have gross accumulations of fibrin due to repeated freezing/ thawing. One can also dilute the sample 1:1 with the appropriate buffer or solution prior to sample addition. Dilution typically promotes better flow dynamics within a SPE device. Centrifugation and filtra-

tion are other viable options that can be employed to remove larger particulates from a sample. Biological fluids such as serum and plasma also contain large amounts of protein that can readily clog SPE frits and membranes. Proteins may be precipitated using a polar solvent (e.g., acetonitrile), an acid (e.g., TCA), or inorganic salt (e.g., ammonium sulfate). Precipitated proteins can then be removed via centrifugation or filtration, and the remaining supernatant or filtrate is either diluted first, or applied directly onto the SPE unit. Although clogging is a major issue when performing SPE on difficult samples, it can easily be circumvented with one or more pre-treatment techniques.

TRADEMARKS:

CARBOWAX - Union Carbide Corp.
Carboxen, Discovery, Equity, Supelclean, SUPELCOSIL, SUPELCOWAX - Sigma-Aldrich Co.
Microseal - Merlin Instrument Company
RheFlex, Rheodyne - Rheodyne, Inc.
SSI - Scientific Systems, Inc.
Teflon, Tefzel, VESPEL - E.I. du Pont de Nemours & Co., Inc.

PATENTS:

SPME - Technology licensed exclusively to Supelco. US patent #5,691,206; European patent #523,092

