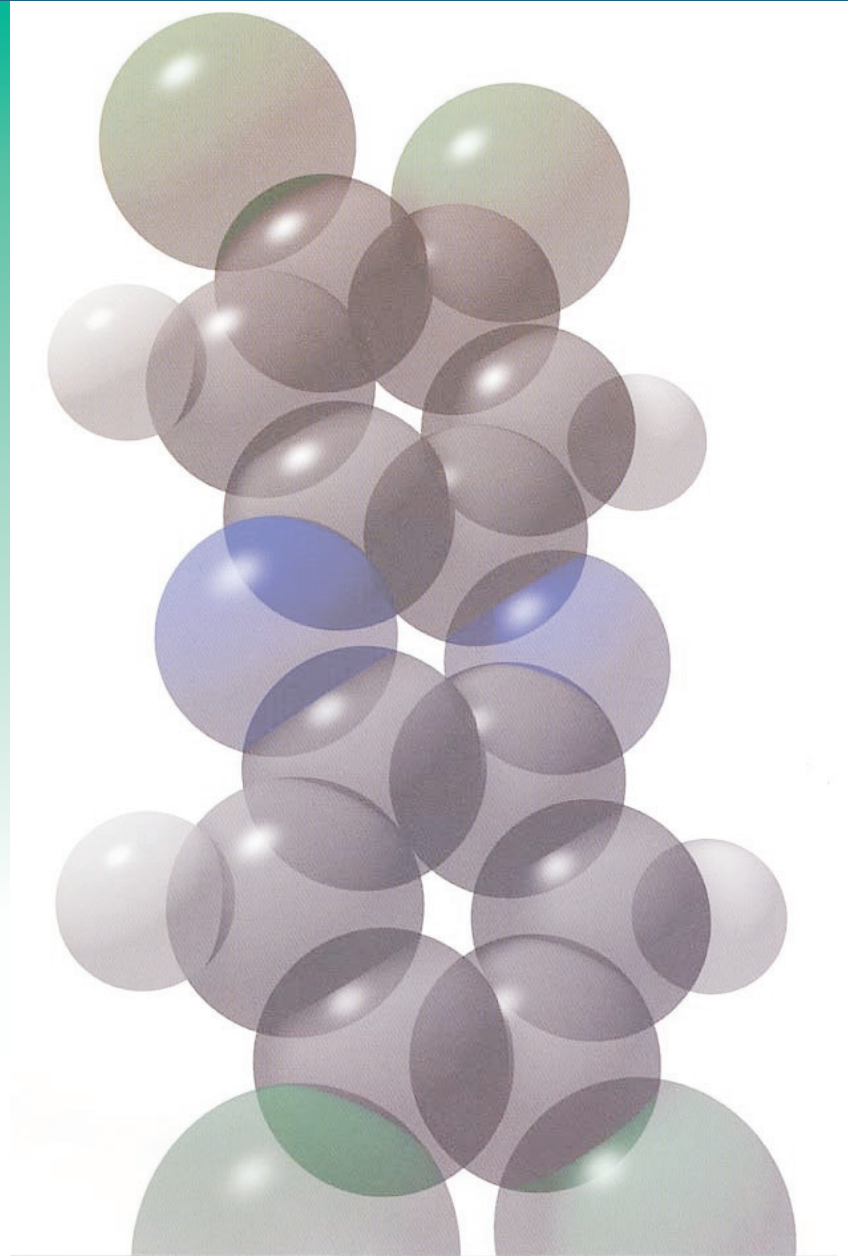


SOLID PHASE EXTRACTION

FEATURES & BENEFITS:

- Easy to transport samples
- Target specific trace organics analyte(s)
- Leave the water behind
- Scalable sample volume with the same equipment
- Low detection limits to femtograms/litre (10^{-15} g/l)
- Reduced potential for sample contamination
- Minimal solvent use
- Easy to automate

*Advanced Water
Quality Monitoring*



SOLID PHASE EXTRACTION

Extract your target analyte in the field; leave the water behind!

SOLID PHASE EXTRACTION

WHAT IS SOLID PHASE EXTRACTION (SPE)?

Solid Phase Extraction (SPE) is a process where a target analyte is selectively removed from a liquid by temporarily bonding it to a solid. Typically, this solid is a divinylbenzene polymer resin such as XAD.

When a liquid solution containing the target analyte is passed through the resin, the target analyte bonds to the resin while the liquid passes through and can be discarded. The degree of analyte retention depends on the relative solubility of the chemical in the liquid as well as other factors such as flow rate, kinetics, steric hindrance and other chemicals present in the liquid.

SPE methodology plays an important role in laboratory chemistry by providing a convenient and specific means of separating analytes of interest from complex solutions. In the laboratory, SPE consists of a 'column' packed with resin through which the liquid is passed, allowing the target analyte to be concentrated from the liquid onto the resin. Through a process called 'elution', the analyte is recovered from the resin for analysis.



Infiltrax Water Sampling

SPE in Field Applications

With the ever-increasing environmental contamination concerns of our water resources, the demands for detecting lower concentrations of target organic contaminate analytes is creating new challenges in the areas of field sampling and instrumentation. To detect extremely low concentrations of contaminants, larger water samples must be taken to provide enough of the target analyte for the analytical instruments to detect.

Traditionally, samples were collected in the field, transported to the laboratory where target analytes were extracted either by SPE or Liquid-Liquid Extraction (LLE). Unfortunately, sample sizes were limited by the quantity of collected water that had to be transported without contamination. AXYS Technologies Inc. (AXYS) has developed a unique solution to the high volume water sampling through the development of the Infiltrax300™ sampling system.

AXYS took the SPE methodology and applied it to field sampling. Analytes can now be targeted and extracted from the water by concentrating the analytes onto a resin 'column' in one step at the sampling site. Costly traditional, large volume sample collection is now unnecessary.

We leave the water behind!

By transporting only the resin columns with the target analytes extracted in situ from the field to the laboratory, the Infiltrax300™ saves time, transportation costs and provides the opportunity to sample larger volumes than any other commercially available sampling system.

Infiltrax300™

The Infiltrax300™ (In situ FILtration and EXtraction) is a self-contained system incorporating a pump, flow meter and the electronics to assist in controlling water flow through the resin columns. Water is pumped first through a pre-filter to remove suspended particulates for analysis, then through a resin column to extract the target analytes. AXYS' SPE columns and pre-filters are specifically designed to target organic analytes in oceans, estuaries, lakes, rivers or industrial process waters.

Please refer to the Infiltrax300™ Brochure for detailed specifications.

SPE Resin Chemistry

The success of the SPE technique hinges on the availability of suitable resins. AXYS Analytical Services (AAS) chemists provide clients with processed resin columns to advanced QC levels of organic analytes. Resin columns from 50 to 250g are available, contact AAS for a complete listing of analysis available (www.axysanalytical.com).

Conclusion

The Infiltrax300™ demonstrates the success of employing SPE methodology in the field. It provides sampling flexibility, remote operation, automated sample gathering, major saving in time and money for sample collection and laboratory workup, as well as a reduction in the use of solvents. The Infiltrax300™ is easy to deploy and can be operated by AXYS field technical staff or by your own operator.

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