

## SBS Seminar Announcement

### Development and Application of Matrix Compatible SPME Devices for Food and Biological Investigations

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#### Abstract

The ever-increasing requirement for determination of contaminants along with studies of comprehensive metabolite networks in food and biological samples parallel advancements in solid phase microextraction (SPME) technique. The availability of state-of-the-art analytical instrumentation offering higher sensitivity and specificity has contributed to an increased range of applications covered by the SPME technique. The presentation will summarize the most underlying aspects in SPME development addressing some of the challenges encountered in the analysis of food and biological material samples, with particular emphasis placed on complex sample analysis. In addition, the development of new extracting materials and novel sampling configurations as well as approaches compatible with high throughput lab and/or on-site determinations will be outlined. To serve as a guide to potential opportunities for continued innovation in SPME food applications, special emphasis will be placed on the evolution of on-site and in vivo SPME techniques and their feasibility for both targeted determination of organic pollutants and biologically active compounds, as well as for global metabolite analysis.

In recent years, there has been a lot of interest in monitoring levels of biologically active compounds in living systems in their natural environments. These efforts are a significant departure from conventional 'sampling' techniques, where a portion of the system under study is removed from its natural environment, and the compounds of interest extracted and analyzed in a laboratory environment. There are two main motivations for exploring these types of investigations. The first one is the desire to study chemical processes in association with the normal biochemical milieu of a living system, and the second one is the lack of availability or impracticality of removing suitable samples from a living system, frequently because of size.

In the presentation I will describe the use of solid-phase microextraction (SPME) for *in vivo* sampling of drugs and metabolites in the tissue of freely moving animals, which eliminates the need for tissue withdrawal in order to obtain quantitative analytical information. In comparison to the established in-vivo technique of microdialysis, in vivo SPME provides the advantages of reduced matrix effect, improved spatial resolution, better compatibility with LC-MS due to minimization of ionization suppression effects, improved extraction of unstable species and hydrophobic compounds. In contrast, in vivo microdialysis provides better temporal resolution and capability to extract hydrophobic compounds.

**Tuesday, 08 Oct 2013 10.30am to 11.30am SBS Classroom 7 (SBS-B1n-17)**

Host: Associate Professor Newman Sze