

## **70h Application of L3 Sponge Phase in Preconcentration of Polycyclic Aromatic Hydrocarbons**

*Kun-Chih Hung and Bing-Hung Chen*

Application of L3 sponge phase in preconcentration and extraction of polycyclic aromatic hydrocarbons (PAH) in aqua was studied in this work. Conventional surfactant-based extraction techniques mainly utilize the hydrophobic affinity between micelles and hydrophobic extract, and phase transition of surfactant solutions for preconcentration of these hydrophobic compounds. Especially this method is called "Cloud-Point Extraction (CPT)", if clouding phenomena of micellar solutions is involved in the technique. One of the main advantages of CPT techniques is cost-effective and environmentally friendly, reflected in the use of water as solvent, instead of organic solvent. Nonetheless, it is not impeccable. For example, its preconcentration factor usually is less than 100 and only around a few tens. To improve the performance of surfactant-based extraction techniques, an isotropic L3 sponge phase is employed in contrast to the isotropic L1 micellar phase used in the CPT. As L3 is bicontinuous and has a better hydrophobic affinity than the L1 micellar phase, it is expected that L3 phase could result in a much higher preconcentration factor. Factors influencing the phase boundaries are investigated empirically. In this work, surfactants of the same homologous series were used. Consequently, a preconcentration factor near 200 is obtained, in contrast to ca. 50 found in the CPT.