CHROMTECH

SPDE™ the Magic Needle

Application Note SP403e

SPDE™ *Extraction Cooler* – the *SPDE*™ Enhancement for Highly Volatile Compounds

Since the introduction of ***SPDE,*** many customers have expressed interest in trapping highly volatile compounds even more effectively. Since the ***SPDE*** needle usually has an ambient temperature, a loss of highly volatile compounds can sometimes be observed . This limitation is also well known to SPME™ users. SPDE is able to overcome this restriction, however, with a new enhancement: the ***SPDE Extraction Cooler***.

With this new device, it´s now possible to extract even very highly volatile compounds such as MTBE. Figure 1 shows the ***Extraction Cooler*** in schematic view. In principle, it is a peltier regulated cooling device for the SPDE needle. This device is mounted on the ***CHROMTECH*** Single Magnet Mixer (***SMM***, see fig. 2) and reduces the needle's temperature by 40° C. So at 25° C (room temperature), the ***Extraction Cooler*** enables the needle to trap the volatiles at –15° C. Fig. 3 demonstrates this effect in the case of MTBE (methyl tertiary-butyl ether).

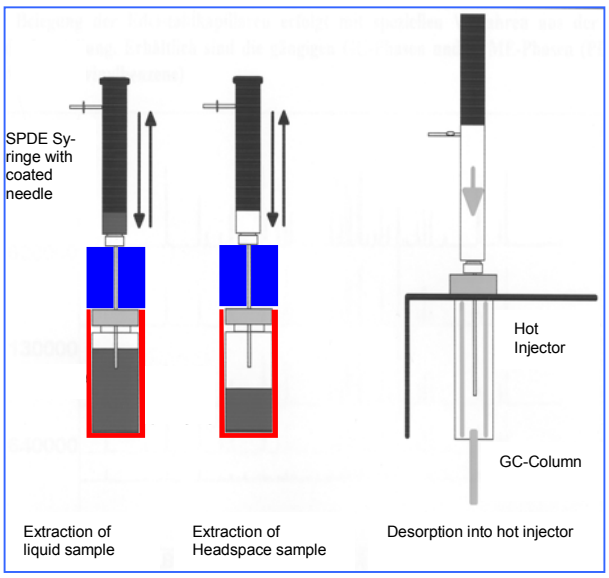

Fig. 1: Automated SPDE-Extraction with ***Extraction Cooler***: The analyte is purged through the SPDE-needle at a temperature of -15° C. Meanwhile the sample is constantly heated to 50° C. So the sample is heated while the SPDE-needle is cooled during the extraction process.

Fig. 2: The ***SPDE Extraction Cooler*** is an enhancement that mounts on a Single Magnet Mixer. The ***SPDE*** needle protudes only a few millimeters into the vial.

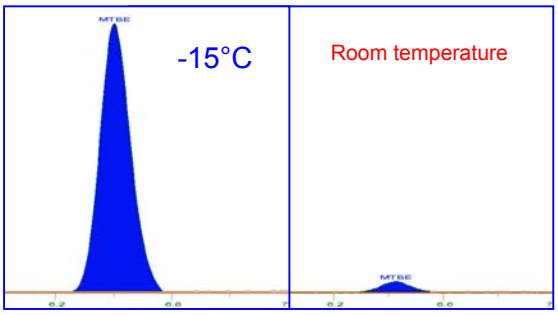

Fig. 3: 0,9 µg/L MTBE extracted with ***SPDE SMM*** and ***SPDE Extraction Cooler*** (-15° C), and without cooling (25° C). The sample was heated to 50° C. For all other conditions, refer to application note SP404e.