

CDSolutions

APPLICATIONS INFORMATION USING ADVANCED SAMPLE HANDLING TECHNOLOGY

Purge & Trap Using a Quartz Tube Microtrap

Filling a quartz Pyroprobe tube with a sorbent like Tenax makes a simple and easy way to introduce a variety of samples into a GC. The sorbent material fills the center half of the tube, and is held in place using plugs of quartz wool. The sorbent is then conditioned by placing the tube into the Pyroprobe filament and heating to 350°C for several minutes. Organic volatiles are collected onto the trap from a gas stream, and then the coil filament of the Pyroprobe is used to heat the microtrap rapidly at the beginning of the GC run.

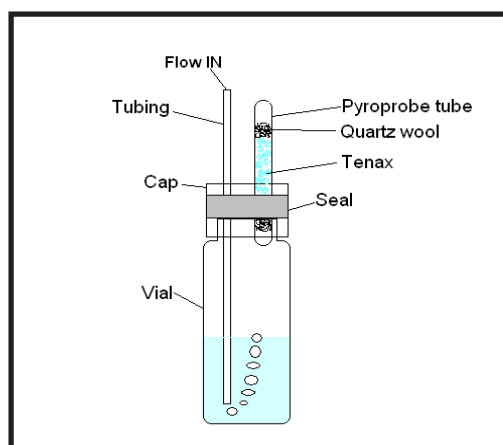


Figure 1. Microtrap in vial for purging.

In this example, the microtrap was inserted through the seal of a standard 25 ml screw-cap vial, as shown in Figure 1. A flow of helium, at 35 ml/min for 10 minutes, was brought through the cap using PEEK tubing, which extended below the surface of the water. The purge flow exited the vial through the filled tube, which trapped the volatiles. The trap was then placed into the coil filament of the Pyroprobe, which was inserted into the interface and heated to 350°C to desorb the analytes.

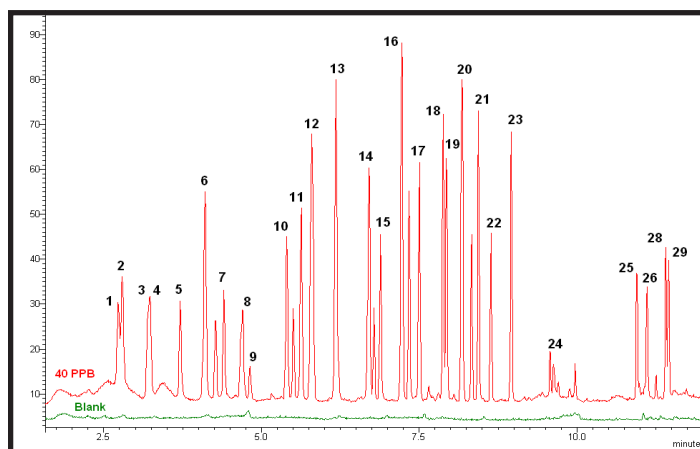


Figure 2. 5 ml sample (40 PPB) and trap blank.

Figure 2 shows the results of purging a 5 ml sample of water with various volatiles at the 40 PPB level. To evaluate the efficiency of desorbing the trap in the Pyroprobe, a second run on the same tube was conducted, shown as the blank run in Figure 2.

For Figure 3, several analytes at the 10 PPB level were purged from a 10 ml sample, indicating that samples in the unit PPB range can easily be assayed in this way.

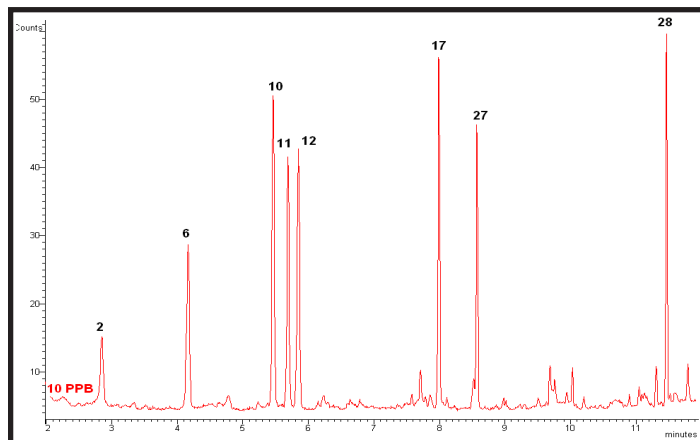


Figure 3. 10 ml water sample (10 PPB).

Equipment

Table 1

Pyroprobe 5200

Interface:	325°C for 4 minutes
Filament:	350°C for 30 seconds
Valve Oven:	325°C
Transfer line:	325°C
Trap desorption:	325°C for 4 minutes

GC/MS

Column:	30 m x 0.25 mm 5% phenyl methyl silicone
Carrier:	Helium
Split:	50:1
Oven program:	40°C for 2 minutes 10°C/min to 300°C

1. 1-Propene, 1,1-dichloro-
2. Benzene
3. Trichloroethylene
4. Propane, 1,2-dichloro-
5. 1-Propene, 1,3-dichloro-, (Z)-
6. Toluene
7. Propane, 1,3-dichloro-
8. Tetrachloroethylene
9. Ethane, 1,2-dibromo-
10. Benzene, chloro-
11. Ethylbenzene
12. Benzene, 1,3-dimethyl-
13. Styrene
14. Benzene, (1-methylethyl)-
15. Benzene, bromo-
16. Benzene, 1-chloro-3-methyl-
17. Benzene, 1,3,5-trimethyl-
18. Benzene, tert-butyl-
19. Benzene, 1,2,4-trimethyl-
20. Benzene, 1,4-dichloro-
21. Benzene, 1-methyl-2-(1-methylethyl)-
22. Benzene, 1,2-dichloro-
23. Benzene, butyl-
24. Propane, 1,2-dibromo-3-chloro-
25. Benzene, 1,2,4-trichloro-
26. Naphthalene
27. D-Limonene
28. 1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
29. Benzene, 1,2,3-trichloro-

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