NEW

Leading the way in material characterization

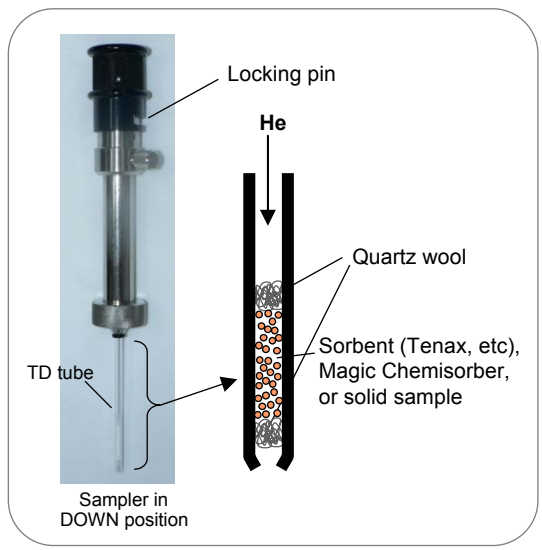
"Micro Thermal Desorption Sampler" (P/N: PY1-1060)

This sampler is used when volatile components can be adsorbed and concentrated on a sorbent. The sorbent tube is attached to the sampler which is subsequently fitted to Frontier's Multi-Shot pyrolyzer EGA/PY-3030D. The sorbent tube is heated which releases the compounds adsorbed on the sorbent surface. The addition of TD capability to the pyrolyzer dramatically extends the range of compounds and matrices amenable to analysis by the 3030D.

Features

- Volatile organic compounds adsorbed on Tenax, activated carbon or other sorbents can be concentrated and analyzed using the EGA/PY-3030D pyrolyzer.
- Trace level vapors emanating from a solid sample can be identified by concentrating the vapors on a suitable sorbent prior to analysis.
- Desorption temperature profile of the furnace can be optimized for any analyte/sorbent combination.

Micro thermal desorption sampler



Analysis of volatile gases in the head space of an aqueous solution

Volatile Organic Compounds (VOCs) in the headspace of an aqueous solution can easily be determined using a sampling train similar to that depicted in Figure 1. Helium purges the vapor phase VOCs through the sorbent. The VOCS are adsorbed. In this example, an aqueous solution containing 20 ppm of amyl alcohol and benzaldehyde is purged at 10mL/min for 10 minutes.

The thermal desorption tube is attached to the thermal desorption sampler (TDS); care must be taken to ensure that the flow through the tube is in the opposite direction as the sampling flow (i.e., the tube is back flushed when desorbed). The TDS is placed on the EGA/PY-3030D pyrolyzer. Amyl alcohol and benzaldehyde are desorbed as the sorbent bed is heated. The reproducibility of the peak area ratio (n=3) is 8.3 %RSD.

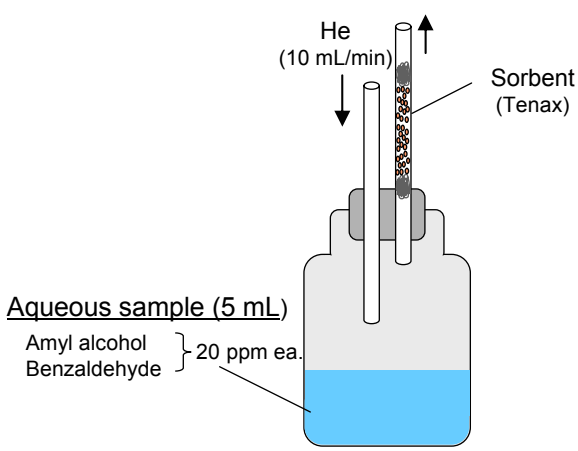


Figure 1. Trapping volatiles with sorbent

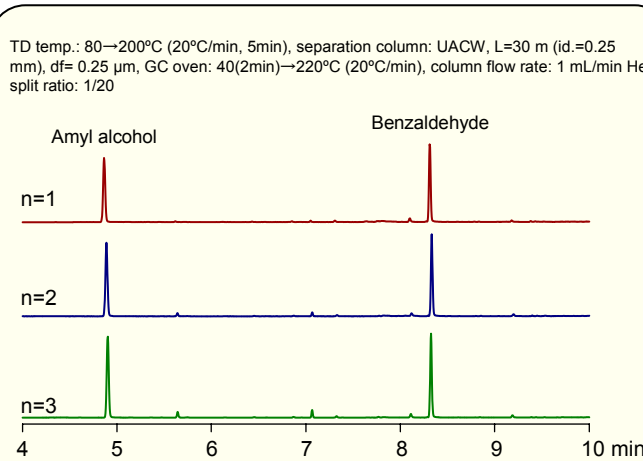
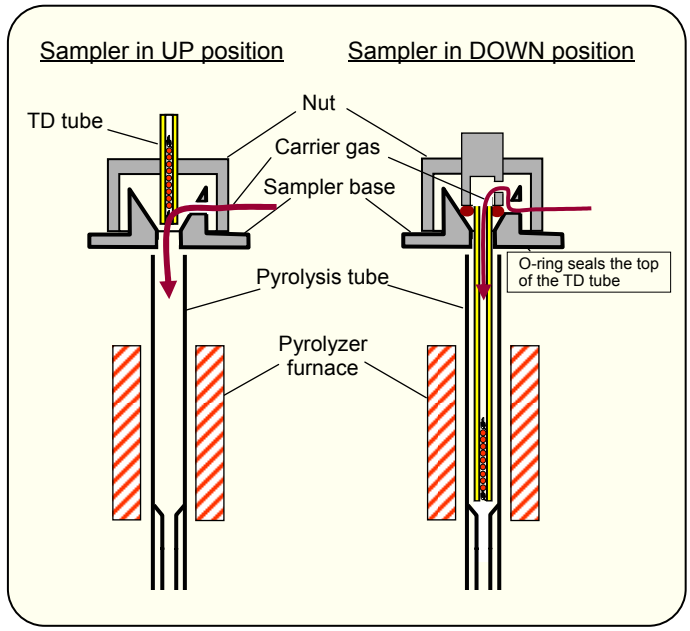


Figure 2. Repetitive analyses of volatiles trapped on Tenax

Operational procedure

1. Volatiles are trapped on the sorbent in thermal desorption tube.
2. Attach the thermal desorption tube to the thermal desorption sampler taking care that the flow is reversed from that used during the sampling period.
3. Attach the sampler to the pyrolyzer. Keep the sampler in the “up” position while the furnace temperature equilibrates at the initial temperature and the system comes to a READY state.
4. Push the sampler “down” so that the sorbent bed is in the pyrolyzer furnace. The flow path of the carrier gas is automatically switched so that the carrier gas flows through the thermal desorption tube – see the right figure .
5. The adsorbed VOCS are released as the temperature increases. This can be done instantaneously (T1= 250ºC) or at a specific rate. In this case the MicroJet Cryo-Trap is very useful for trapping the volatile compounds at the head of the column.

Auto-switching of the carrier gas flow path



Specifications

Compatible pyrolyzer	: EGA/PY-3030D
	PY-3030S
Thermal desorption tube (Pyrex)	: i.d. 2 mm, o.d. 4 mm
Sorbent tube length	: 85 mm
Length of sorbent bed (max)	: 30 mm (vol 94 µL)

Contents in package

	Qty	P/N
• Micro thermal desorption sampler	1 pc	PY1-1060
• Standard accessories		
Sampler stand	1 pc	UV1-3802
TD tube	5 pcs	PY1-5220
TD tube packed with Tenax (60-80 mesh)	3 pcs	PY1-5210
O-ring S4	5 pcs	UV1-7701

* Magic Chemisorber L100 (P/N PY1-MC02L, set of 5 pcs) is available as an option.

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