PerkinElmer
For the Better

HUMAN HEALTH | ENVIRONMENTAL HEALTH

空气质量分析

Presenter Name/Title

Date goes here

气体分析

户外

1

- 有害气体污染物（HAPs)
- 恶臭气体分析
- 臭氧前提物分析
- 绿色家园气体分析

室内

2

- 室内空气质量
- 电子电气行业VOC & 甲醛
- 汽车行业VOC & 甲醛
- 玩具和皮革行业VOC

环境

1

- 有害气体污染物
- 恶臭气体分析

工业

2

- 电子电气行业VOC
- 汽车行业VOC
- 玩具和皮革行业VOC
- 绿色家园气体分析

离线分析

1

- 有害气体污染物（HAPs)
- 恶臭气体分析

在线分析

2

- HAPs检测系统
- 臭氧前提物
- 恶臭气体分析系统

气体分析

有害气体污染物（HAPs）

- **挥发性有机化合物(VOC)，包括苯系物和卤代烃**
- 多环芳烃

恶臭气体

- **挥发性有机化合物(VOC)，**
- **含硫化合物**
- 醛
- 胺
- 氨

空气质量

- **TVOC**
- 甲醛

臭氧前提物

- **C2-C12的57种化合物**

HAPs、VOC、含硫化合物、胺、醛酮、氨水、臭氧前提物

PerkinElmer空气质量解决方案（一）

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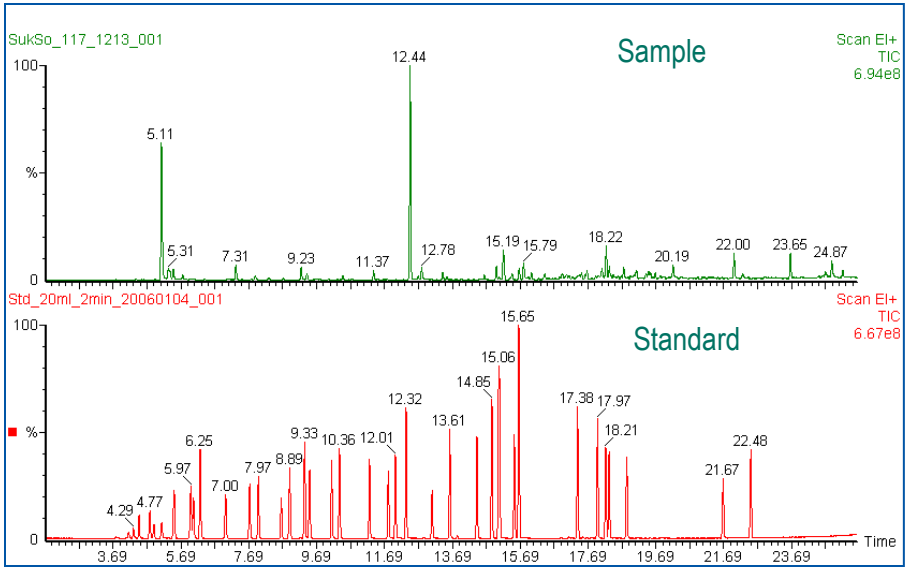
Air Pollution Management Items

General Air Pollution Management Items			SO2, CO, NOx, PM-10, O3, the direction & speed of wind, temperature, humidity
Special Air Pollution Management Items	Hazardous Air	VOCs (13 compounds)	benzene, toluene, ethylbenzene, o-xylene, m,pxylene, styrene, chloroform, ethylchloroform, trichloroethylene, tetrachloroethylene, 1,1- dichloroethane, carbontetrachloride, 1,3-butadiene
		PAHs	benzo(a)anthracene, chrysene, benzo(b)flouranthene, benzo(k)flouranthene, dibenzo(a,h)anthracene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene,
	Photochemical		NOx, NOy, PM-10, PM-2.5, O3, CO, VOCs(ethane … 56 compounds), the direction & speed of wind, temperature, humidity, carbonyl compound

PerkinElmer空气质量解决方案（1.1）

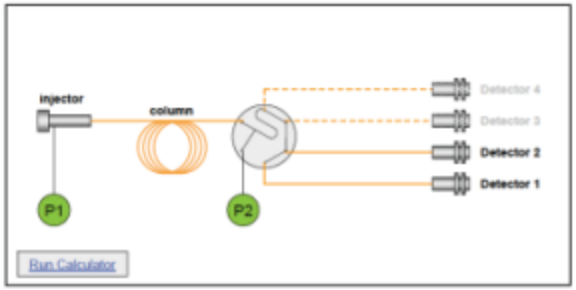
- 空气中挥发性有机化合物（VOC）
- 采样罐或者采样管方法
- 所有国家的方法都是基于TO-14，15以及17

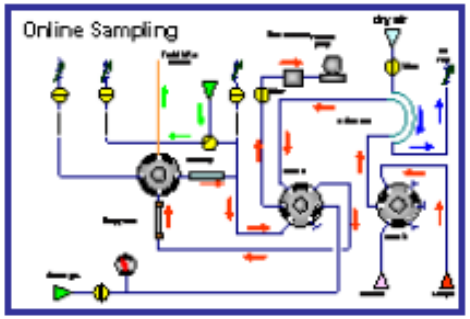


VOC测定:
苯，甲苯，乙苯，邻-二甲苯，间对-二甲苯，苯乙烯；
氯仿，三氯乙烷，三氯乙烯，四氯乙烯，1,1-二氯乙烷，四氯化碳，1,3-丁二烯

Swafer——提供更多、更方便的解决方案

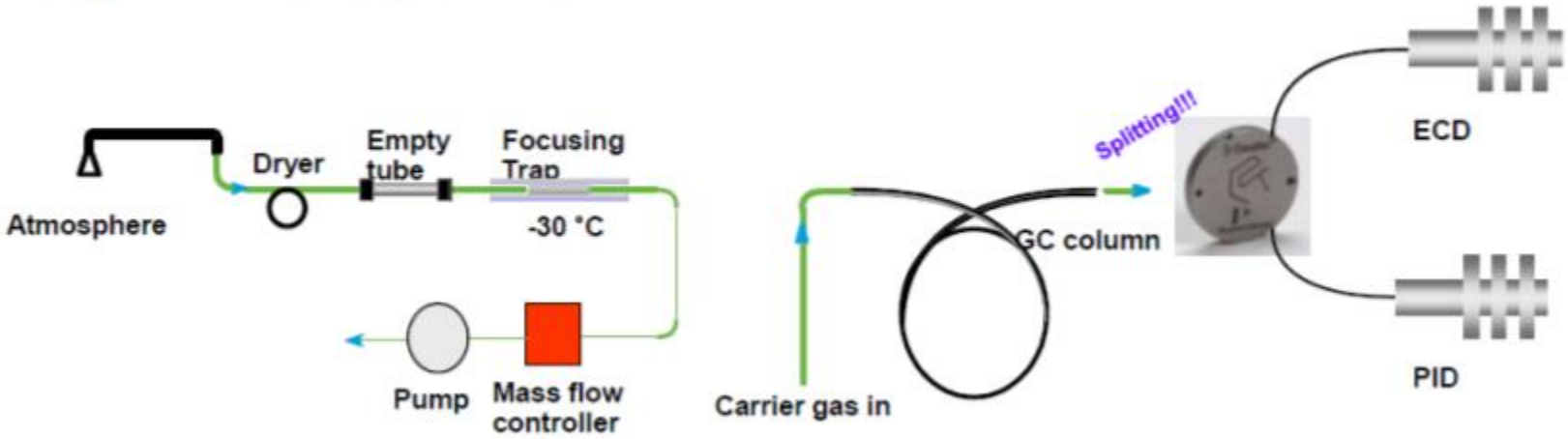
- ❑在线监测,远程控制，无需人工操作。
- ❑无需液氮
- ❑一次进样,苯系物和含卤有机物同时分析
- ❑PID检测器，可测定低至10ppb的苯浓度
- ❑ECD检测器测定含卤有机物



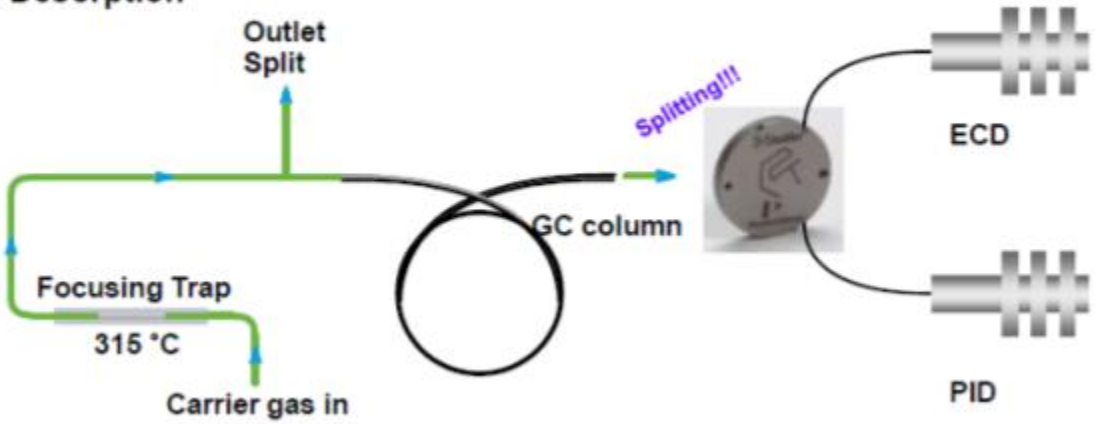


On-line Air Sampling

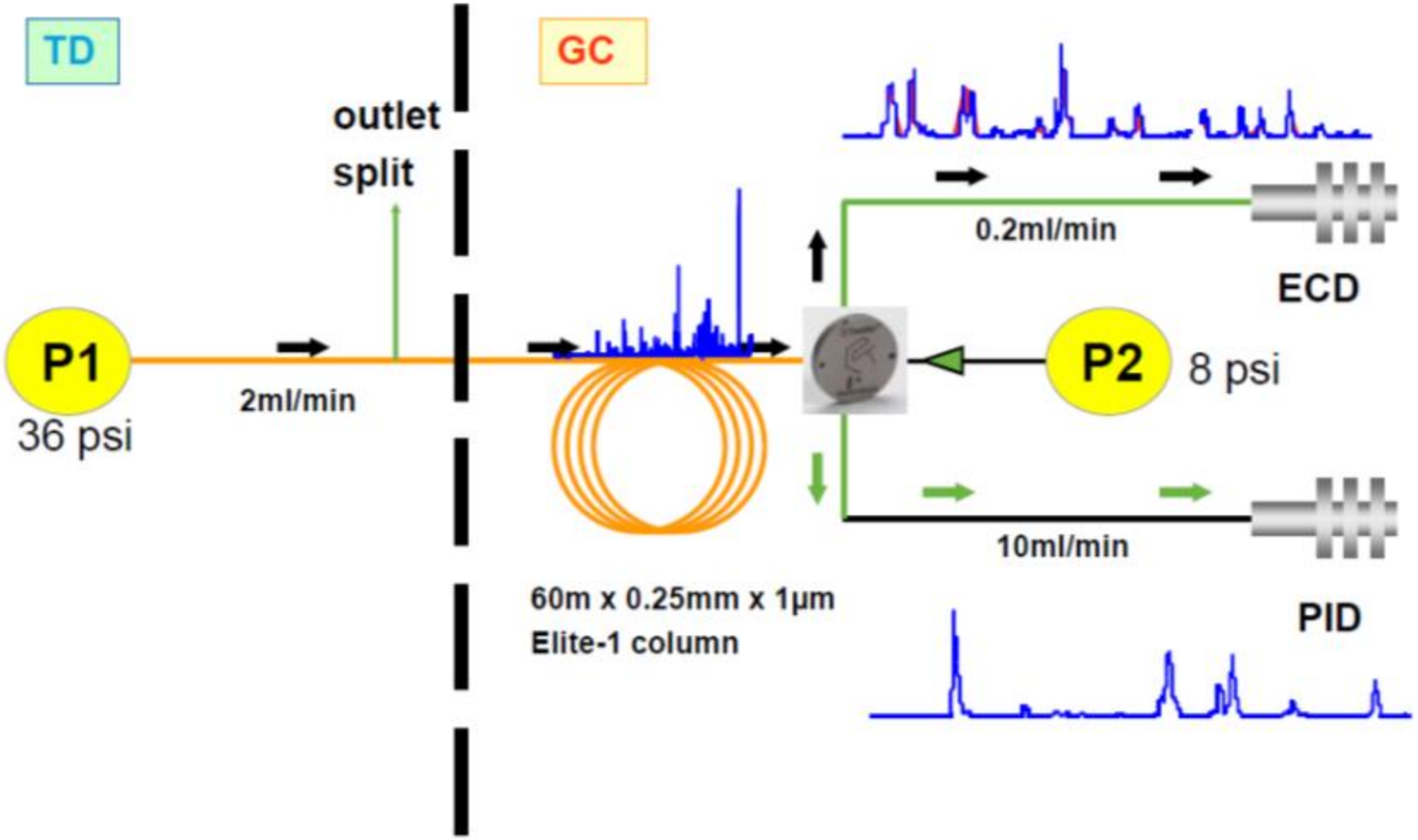
Stage 1: **Air Sample Collection**



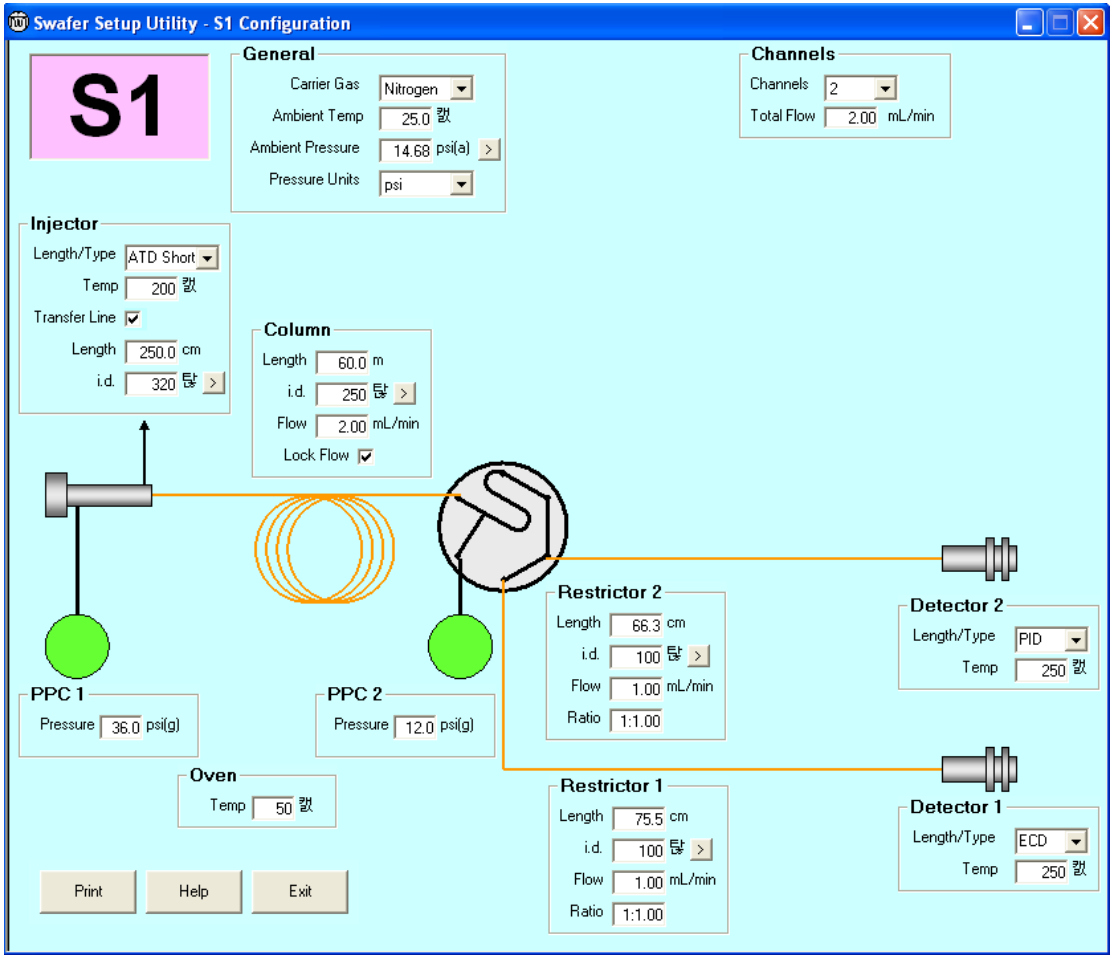
Stage 2: **Trap Desorption**



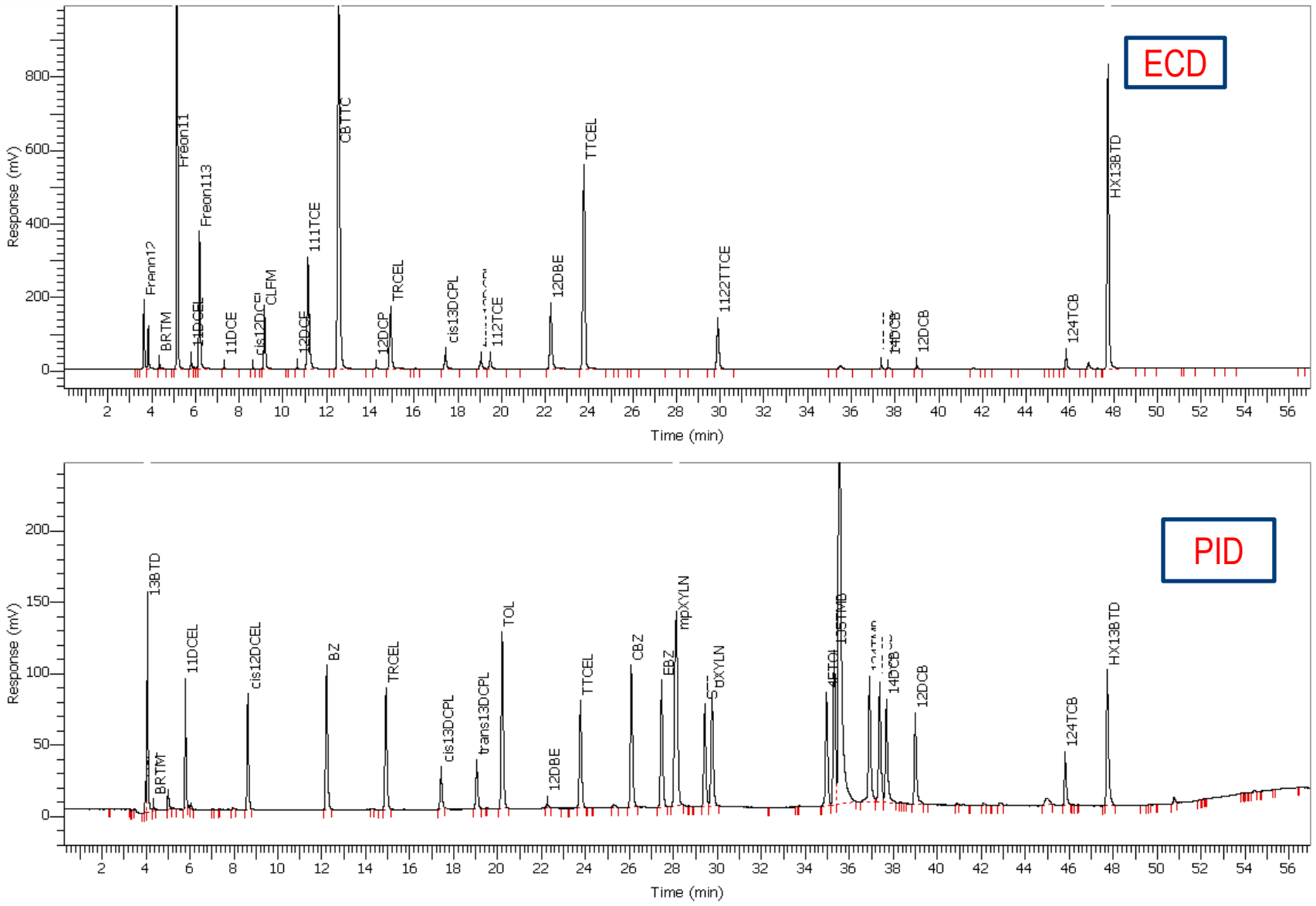
Peaks Seen from Both Detector



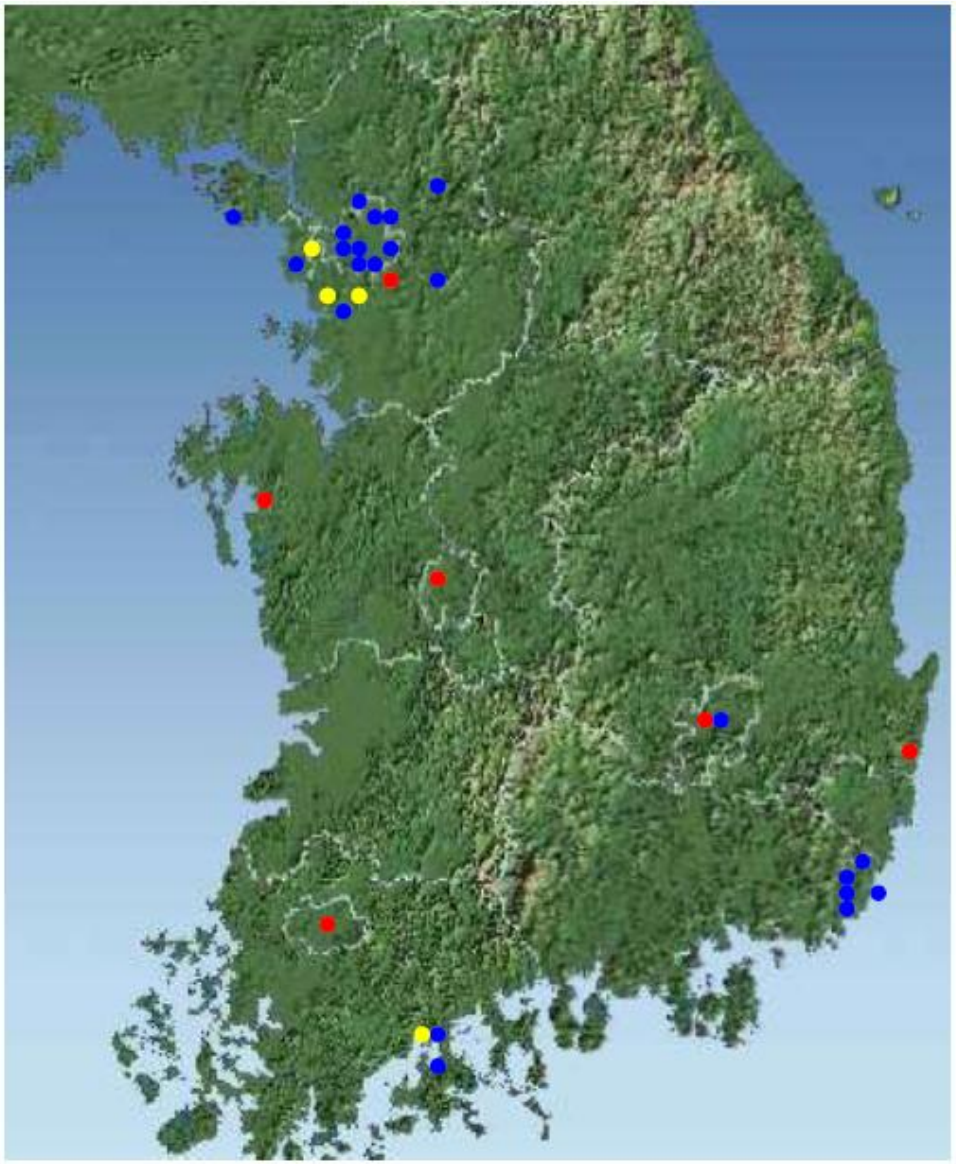
S1 application condition by software



Sample volume 1L, 10ppb, cold trap: -30°C, Relative humidity(74%)



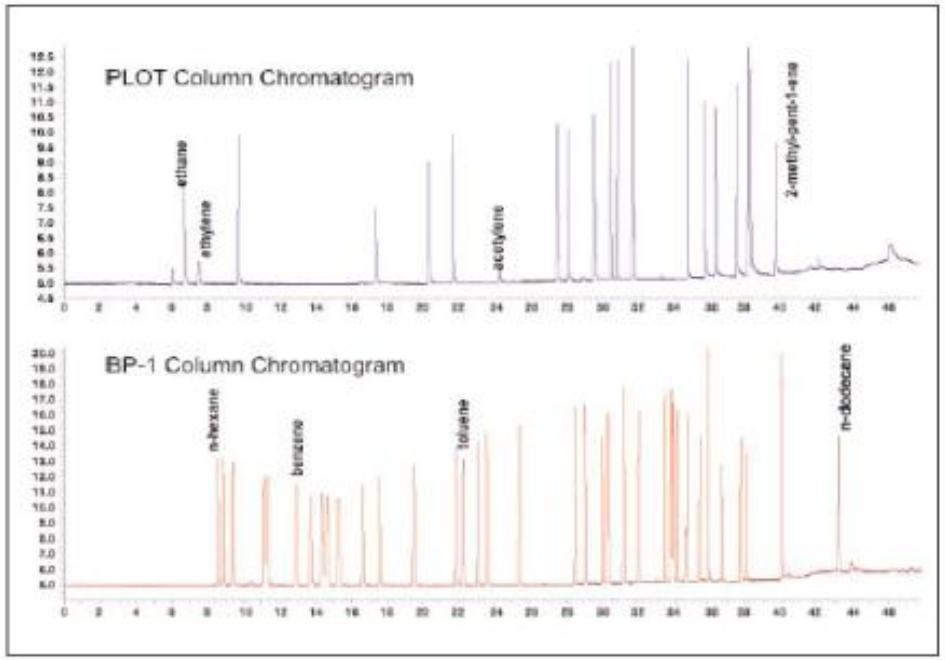
Special Air Pollution Monitoring Point in Korea

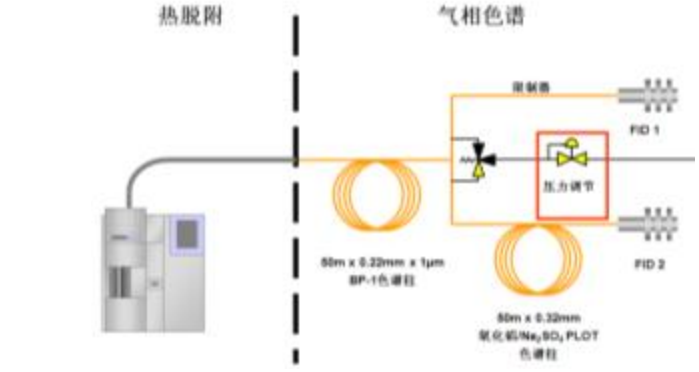


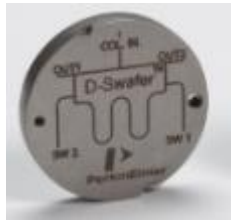
- Hazardous Air Pollutions Monitoring Point (6 sites)
- Photochemical Monitoring Point (28 sites)
- Odor Monitoring Point (4 sites)

PerkinElmer空气质量解决方案（1.2）

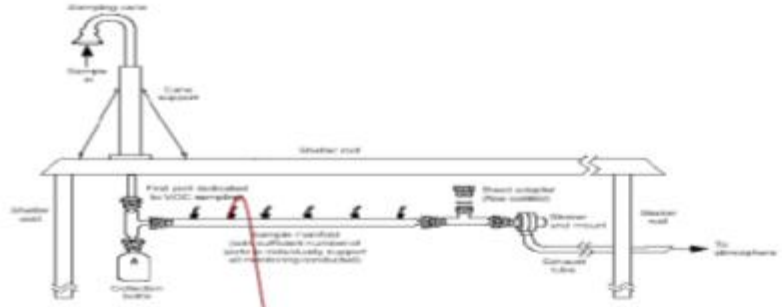
- ❑臭氧前提物需要监测57种化合物
- ❑可测定C2-C12化合物浓度低至100ppt
- ❑无需人工操作，无需液氮制冷
- ❑全电子流量控制
- ❑Nyfion干燥除水
- ❑广泛的用户基础，占全球最大的市场。包括美国，韩国，台湾，新加坡







臭氧前提物分析——Swafer提供完美的解决方案



Gas generator

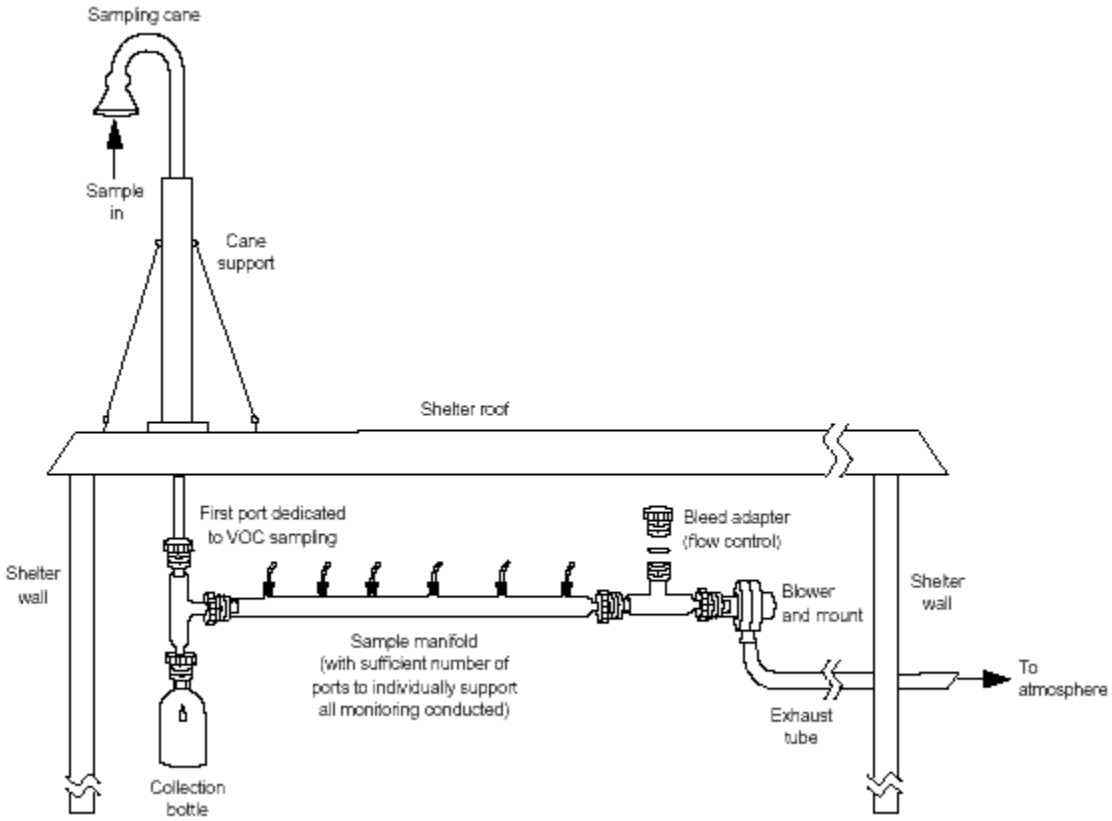
domnickhunter.com

PerkinElmer

Sung Lim TMS

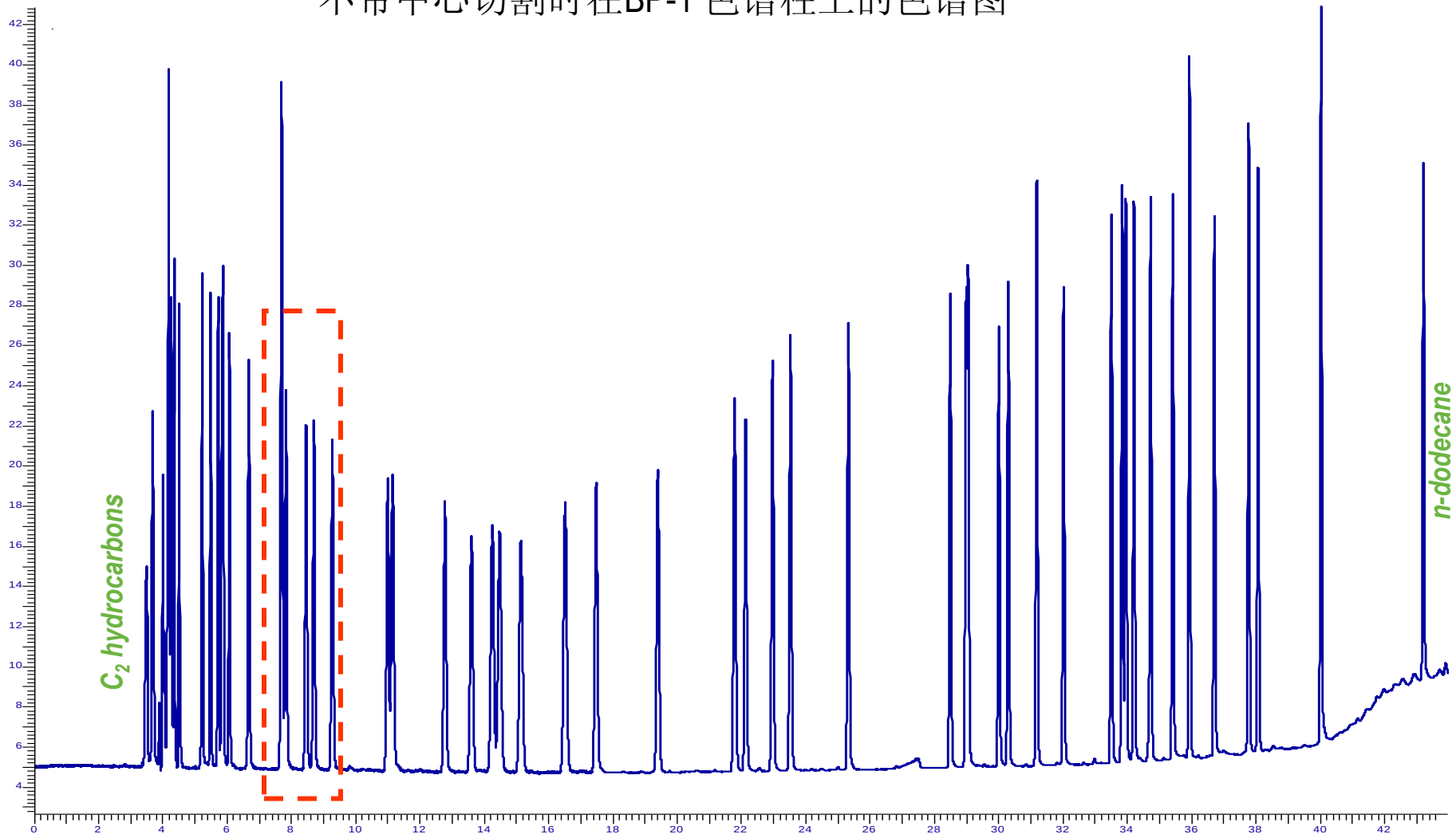
DATA transfer

Hando UPS

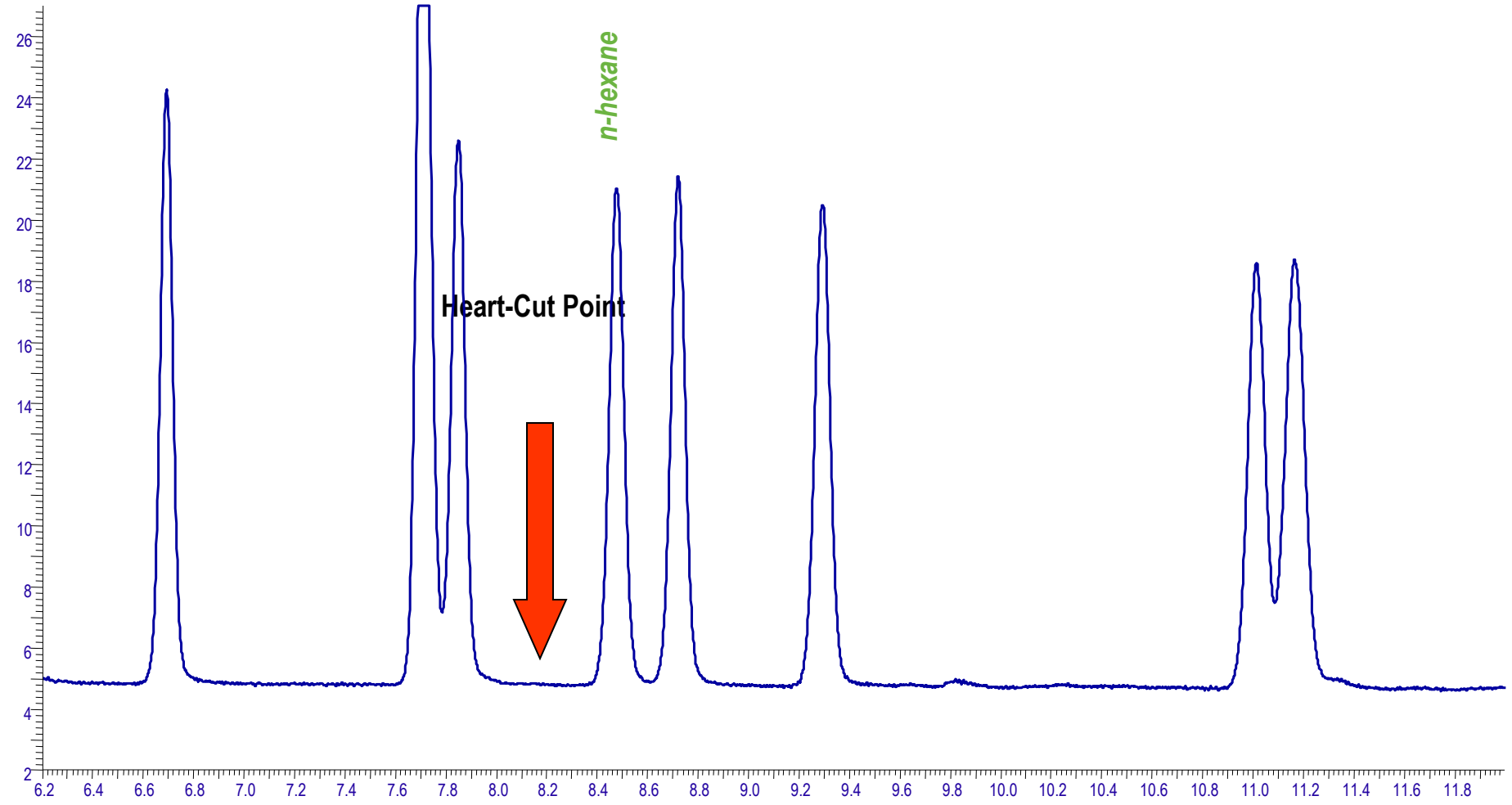

Sampling cane
Sample in
Cane support
Shelter roof
First port dedicated to VOC sampling
Bleed adapter (flow control)
Shelter wall
Blower and mount
Shelter wall
Sample manifold (with sufficient number of ports to individually support all monitoring conducted)
To atmosphere
Exhaust tube
Collection bottle

确认正己烷的峰位置

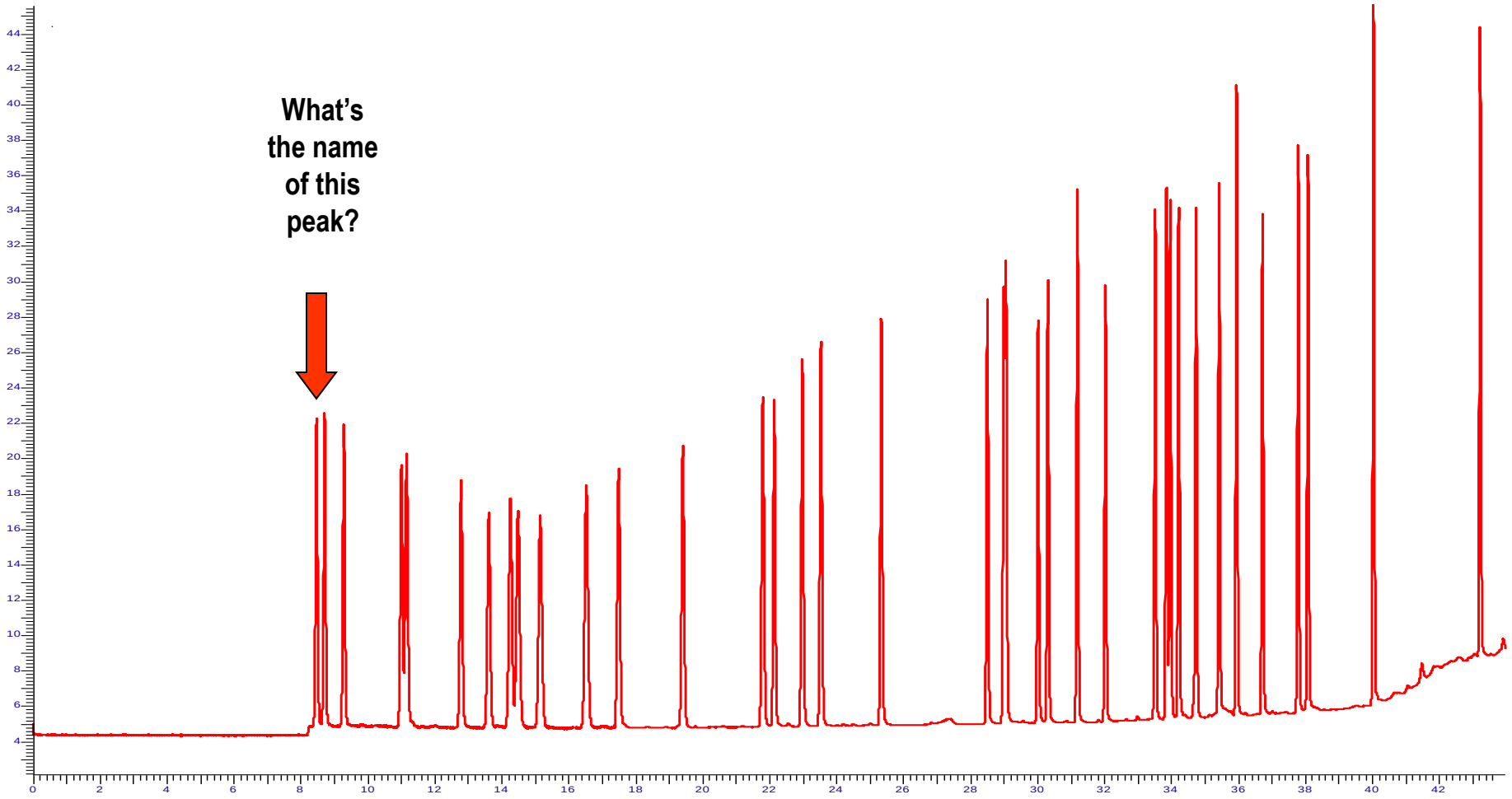
不带中心切割时在BP-1 色谱柱上的色谱图



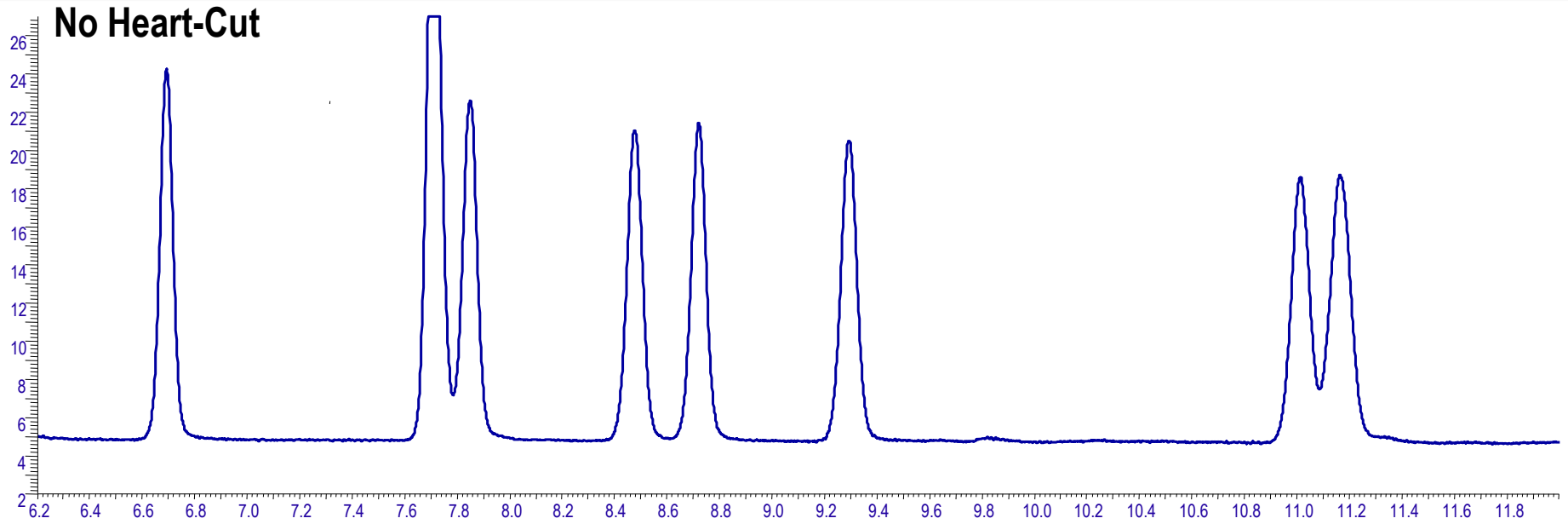
确认正己烷的峰位置

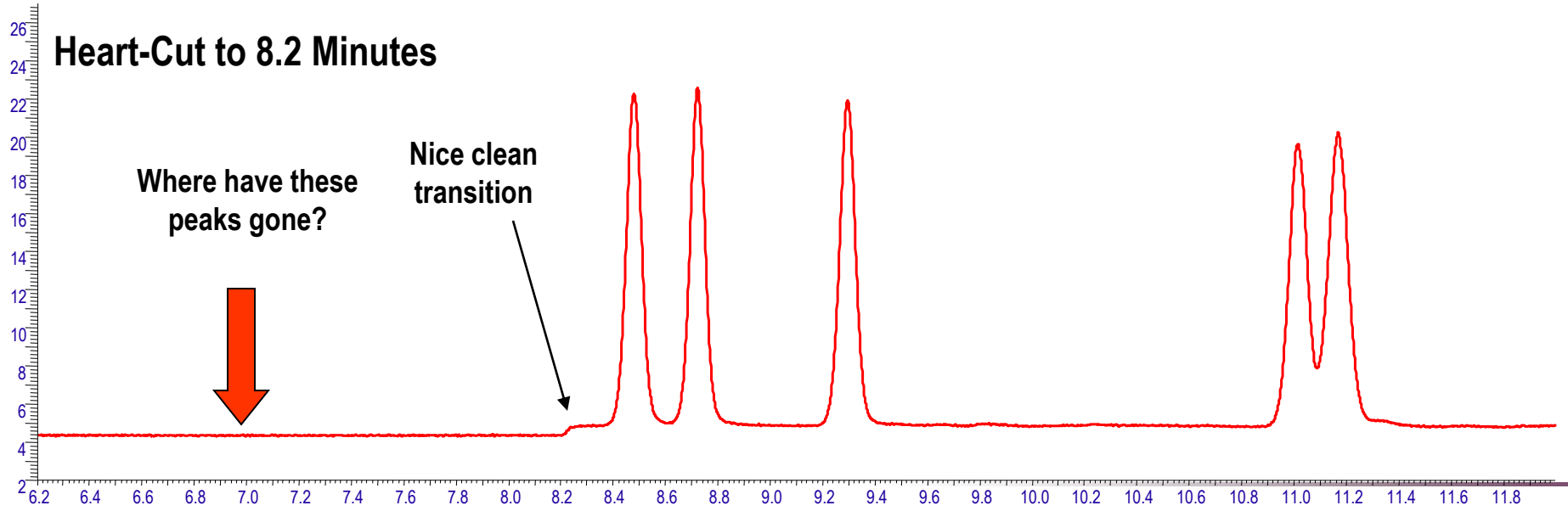

n-hexane
Heart-Cut Point
26
24
22
20
18
16
14
12
10
8
6
4
2
6.2
6.4
6.6
6.8
7.0
7.2
7.4
7.6
7.8
8.0
8.2
8.4
8.6
8.8
9.0
9.2
9.4
9.6
9.8
10.0
10.2
10.4
10.6
10.8
11.0
11.2
11.4
11.6
11.8

在8.2分钟中心切割时在BP-1 色谱柱上的色谱图

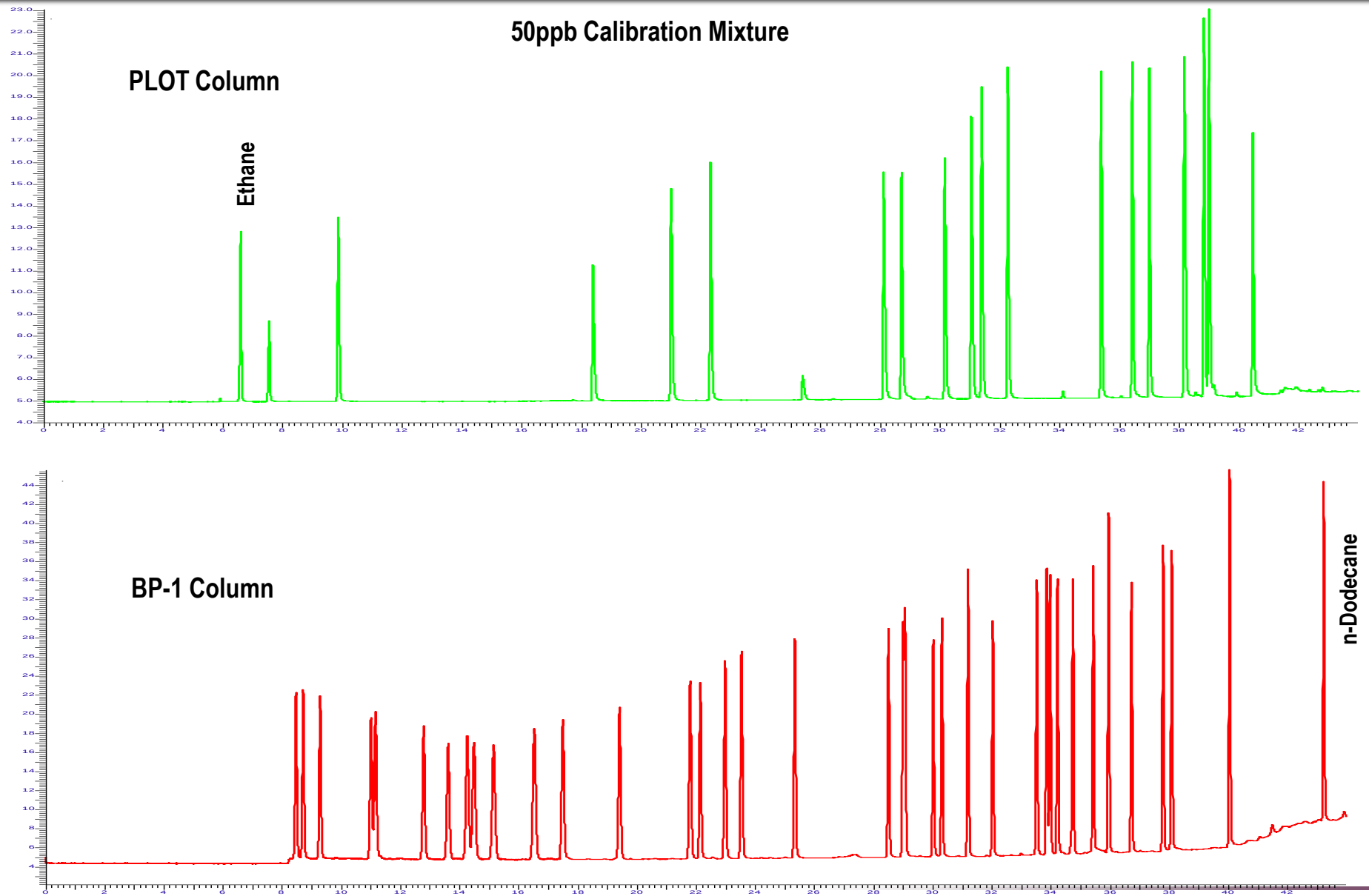


中心切割不会改变峰保留时间



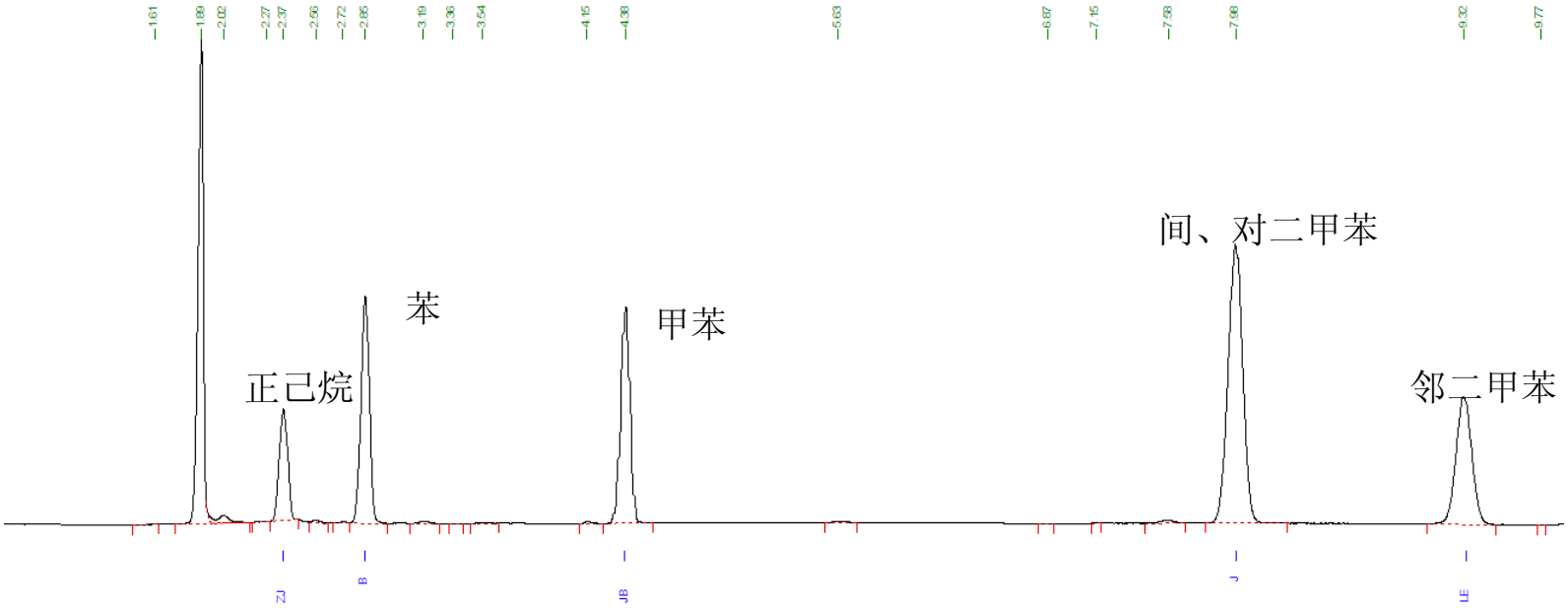


C_2 到 C_{12}组分在两根色谱柱上的色谱图



PerkinElmer空气质量解决方案（1.3）

- 空气中VOC,国家标准GB/T18883-2002
- Tenax TA管采样
- TD+GC-FID
- Elite-5：30m*0.25mm*0.25um

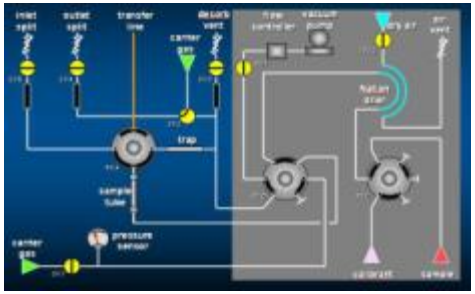


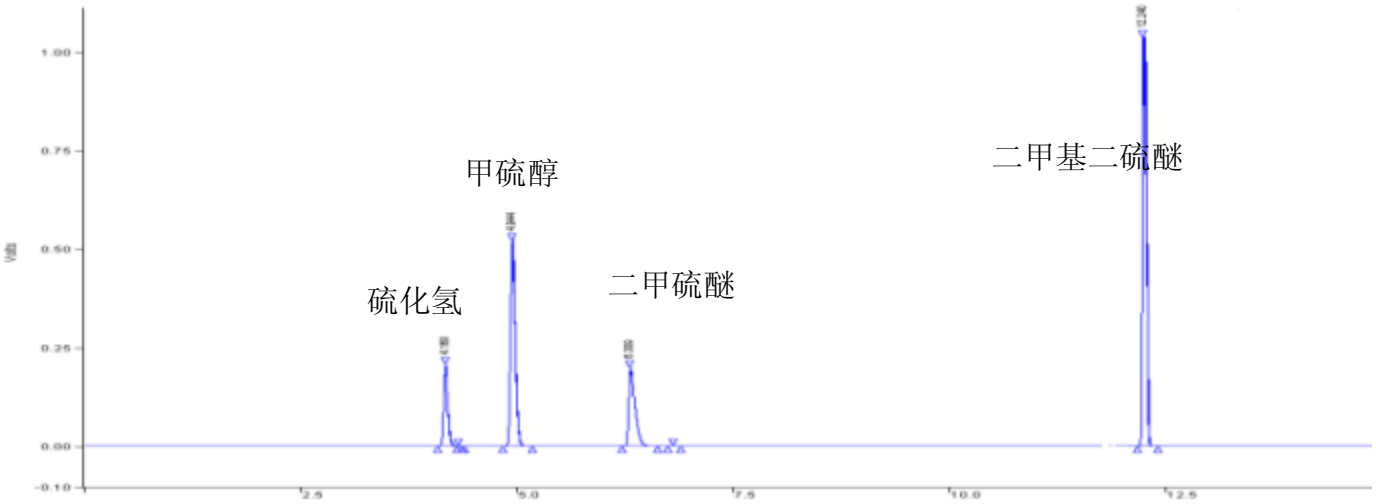
PerkinElmer恶臭气体分析解决方案（二）

Category			分析系统
Organic solvent	Isobutanol Ethyl acetate Methylisobutylketone Toluene Stylene Xylene	异丁醇 乙酸乙酯 甲基异丁酮 甲苯 苯乙烯 二甲苯	**TD/GC-MS (TD/GC/FID)**
Sulfur compounds	Hydrogen Sulfide Methylmercaptan Dimethyl sulfide Dimethyl disulfide	硫化氢 甲硫醇 二甲硫醚 二甲基二硫醚	**TD/GC-FPD(PFPD)**
Aldyhyde	Acetaldehyde Propionic aldehyde Normal butylaldehyde Iso butylaldehyde Normal valericaldehyde Iso valeric aldehyde	乙醛 丙醛 正丁醛 异丁醛 正戊醛 异戊醛	**HPLC**
Short chain Fatty acid	Propionic acid Normal Butyric acid Normal Valeric acid Iso Valeric acid	丙酸 丁酸 戊酸 异戊酸	**GC-FID**
Amine compounds	Trimethylamine	三甲胺	**HSS/GC-FID,**
Ammonia	Ammonia	氨气	**UV -vis**

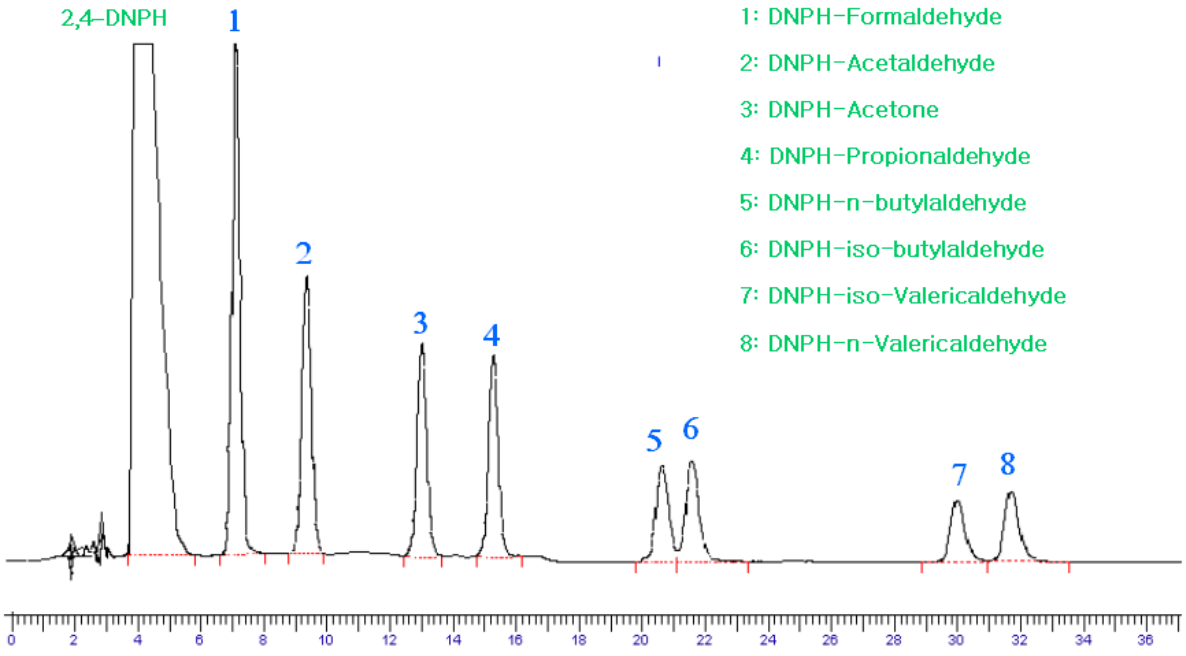
PerkinElmer空气质量解决方案（2.1）

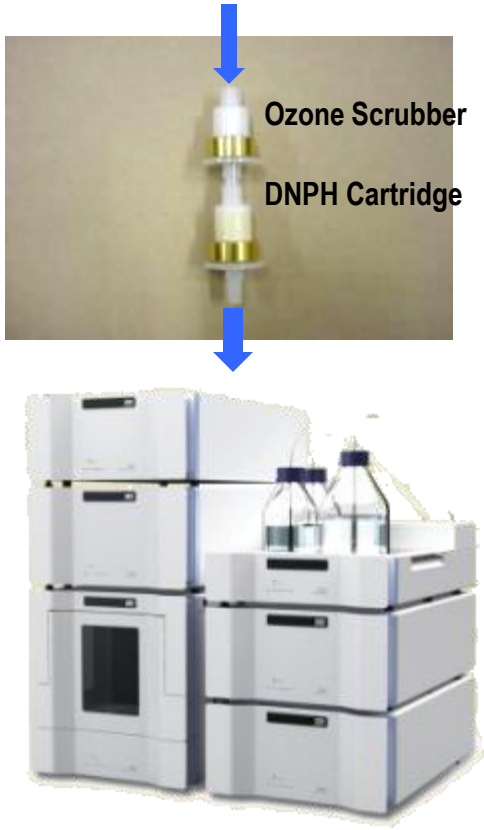
- 在线分析系统
- 聚四氟乙烯采样
- FPD检测器
- 全惰性管路





- ❑乙醛，丙醛，正丁醛，异丁醛，正戊醛，异戊醛
- ❑HPLC分析
- ❑ 使用二硝基苯肼（DNPH）管，采样到的醛类化合物直接和DNPH衍生化，乙腈洗脱





- （GB14676）标准方法简介：采用涂着草酸的玻璃微珠作为吸附剂，装填在采样管中，用于采集恶臭污染源 排气和厂界环境空气中的三甲胺。通过向采样管中注入饱和氢氧化钾溶液和氮气，使采集的三甲胺游离成气态并进入经真空处理的100mL解吸瓶中，取瓶内气体1~2mL直接注入气相色谱仪，根据三甲胺的峰面积进行定量分析。

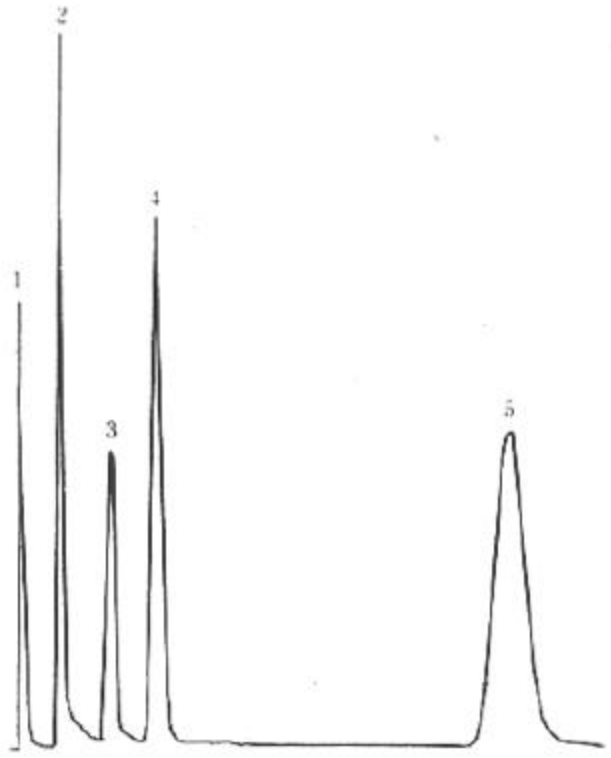


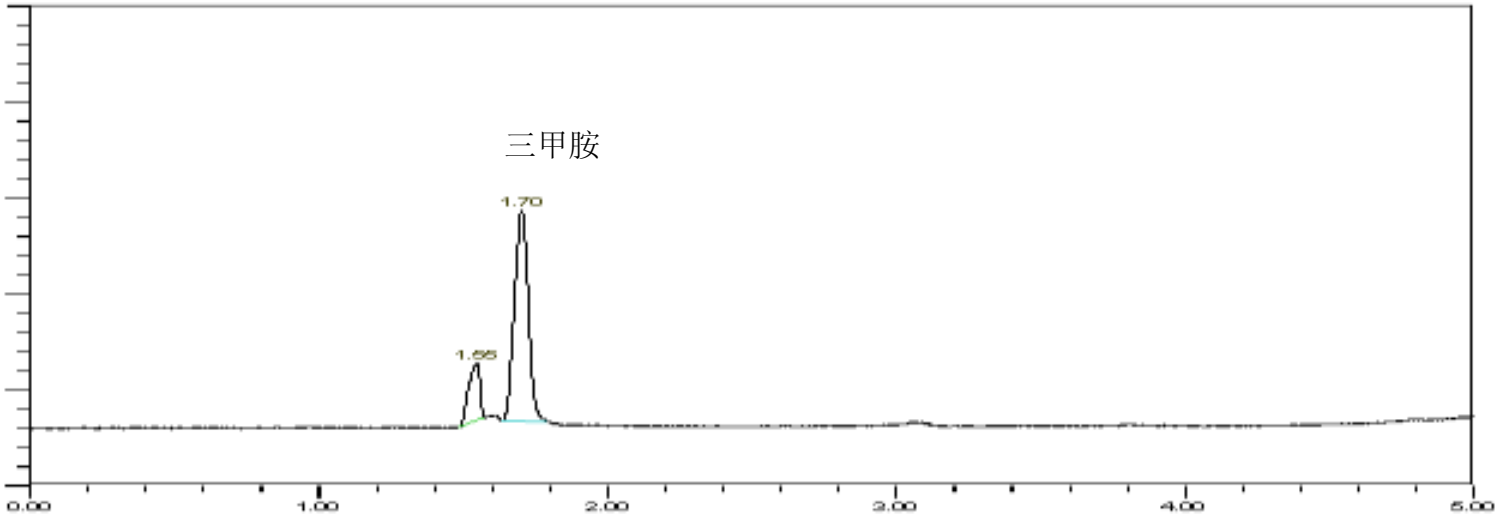
图 3　标准色谱图

1—氨；2—甲胺；3—二甲胺；4—三甲胺；5—乙胺

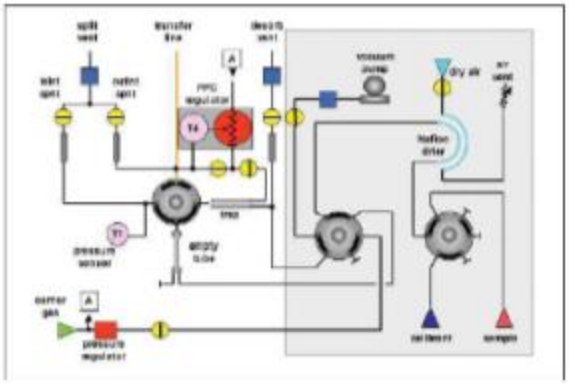
PerkinElmer空气质量解决方案（2.3）

- 吸收液采样(100mM H2SO4)
- 取一定量至顶空瓶中，并加入碱溶液
- 顶空+气相（FID）

✓ 压力平衡时间进样模式
✓ 重叠加热功能
✓ 触摸屏



on lineVOC analyser



On-Line Sampling

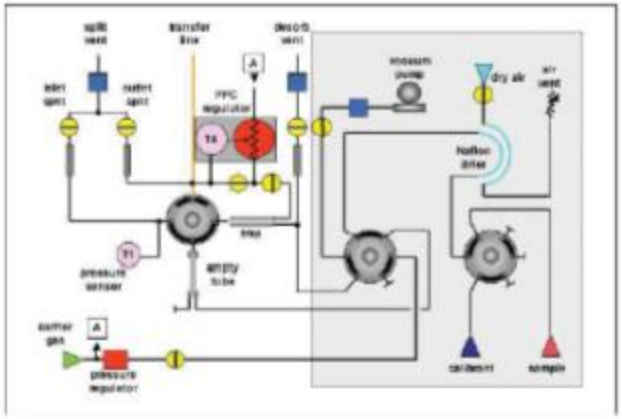
TD-GC(FID)

Zero Nitrogen gas Generator

Zero Air gas Generator

Hydrogen gas Generator

On-line Sulfur analyzer



On-Line Sampling

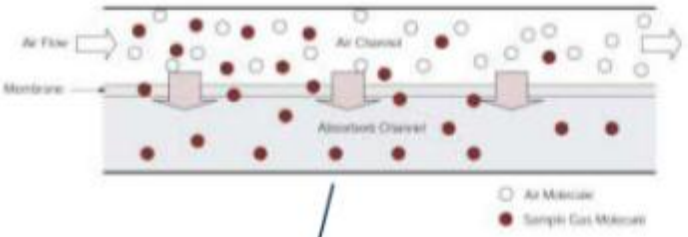
TD-GC(FPD or PFPD)

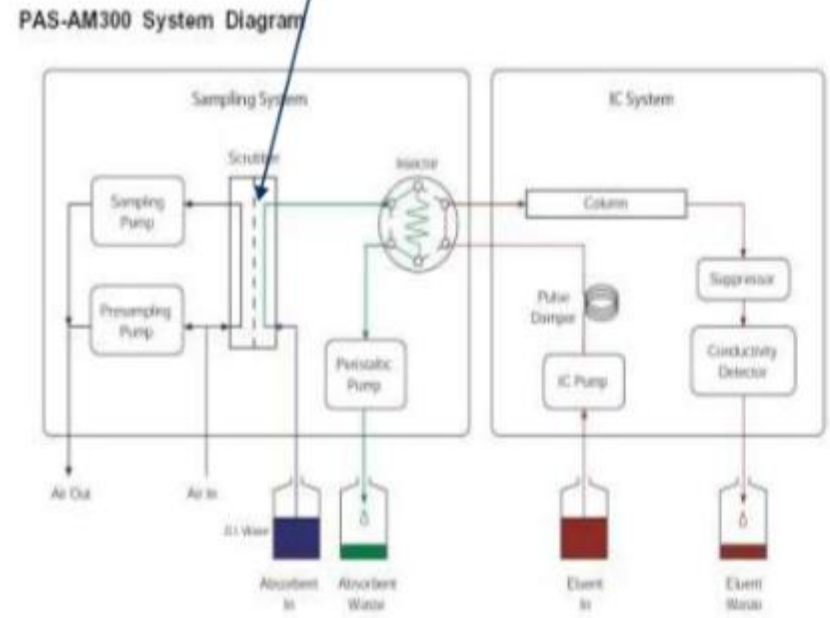
Zero Nitrogen gas Generator

Zero Air gas Generator

Hydrogen gas Generator

On-line Amine and Ammonia analyzer



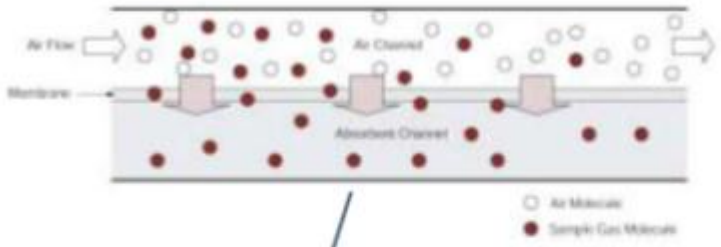


On-Line Sampling

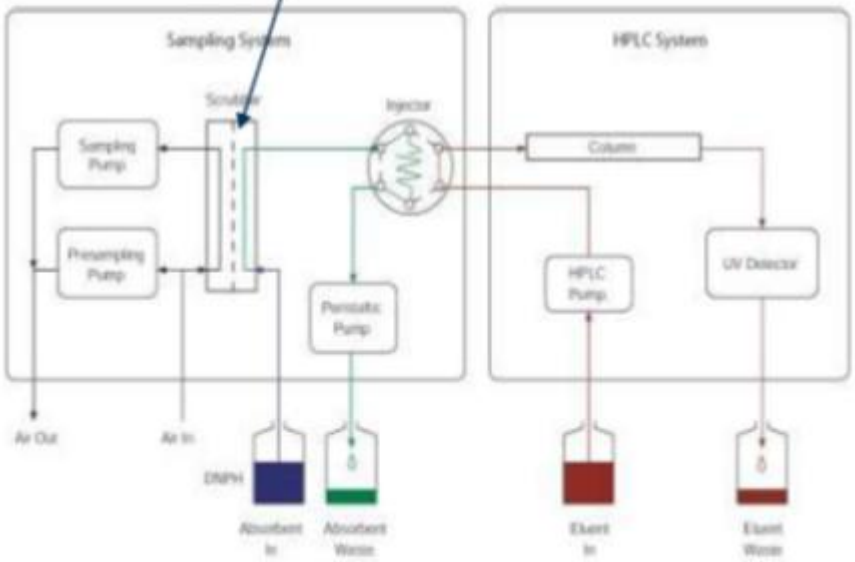
PAS-AM300

Non PerkinElmer Items

On-line Aldehyde analyzer



PAS-KE300 System Diagram

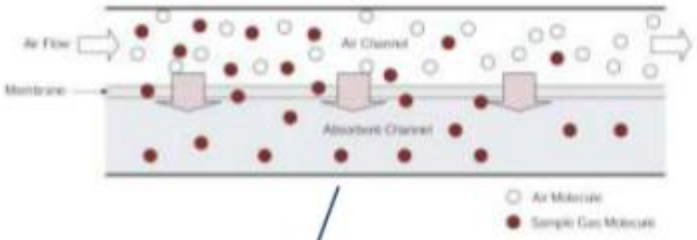


On-Line Sampling

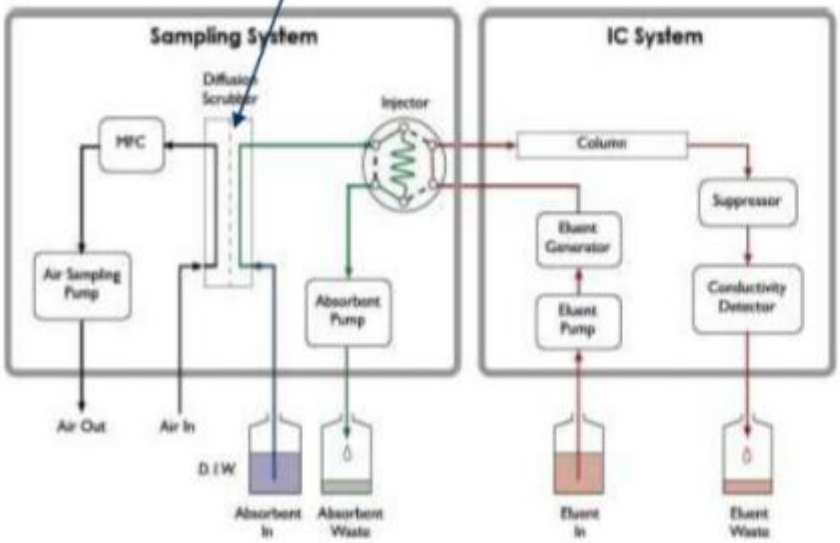
PAS-KE300

Non PerkinElmer Items

On-line Fatty acid analyzer



PAS-OA300 System Diagram



On-Line Sampling

PAS-OA300

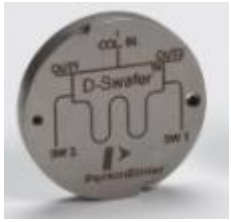
Non PerkinElmer Items


PAS-OA 300
PAS-AM 300
PAS-KE 300
TD
QC
UPS 20KW
4,000
2,000
4,500
1,500
DONGJIN I.E.D CO.,LTD
3D-PLAN

PerkinElmer可提供气体分析整体解决方案

挥发性有机物

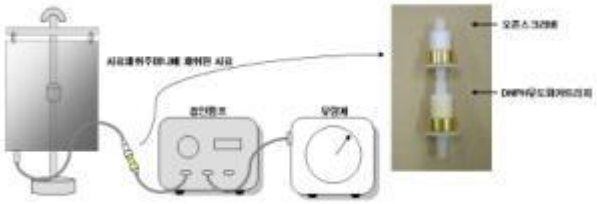
含硫化合物



臭氧前提物

胺 (TMS)

氨



醛类化合物