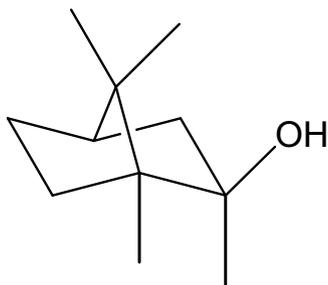


固相マイクロ抽出法によるカビ臭分析

(株)島津製作所
分析計測事業部 応用技術部

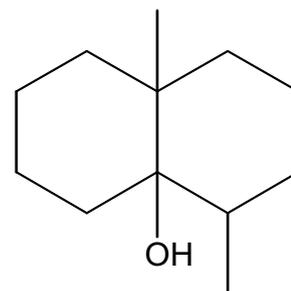
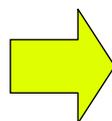
水中カビ臭分析の現状

カビ臭原因物質



2-Methylisoborneol
(2-MIB)

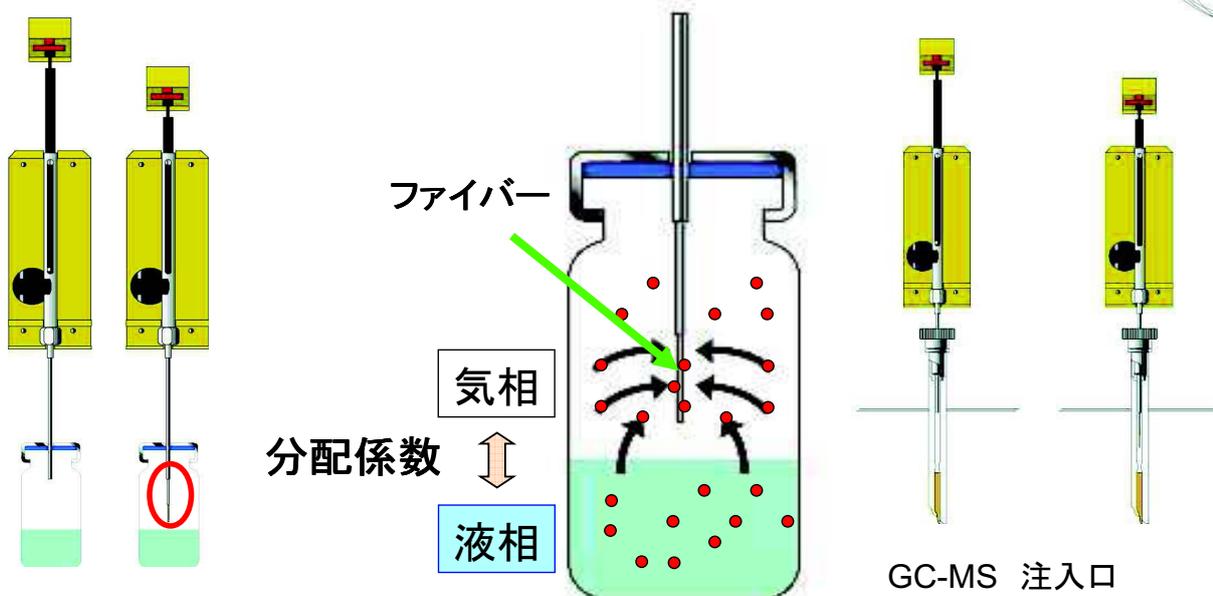
水道水水質基準
0.00001mg/L (10ng/L)



Geosmin

- ・高感度
- ・長期安定性
(システム耐久性)
- ・メンテナンス性

SPME法の原理



抽出量を左右する因子

- (1) ファイバーの種類
- (2) 抽出時間
- (3) 抽出温度

LAAN-E-MS106

カビ臭分析条件

装置 SPME auto sampler: AOC-5000 (Shimadzu Corp.)
GC/MS: GCMS-QP2010 Series (Shimadzu Corp.)

測定条件

SPME

Fiber: 50/30 μ m DVB/CAR/PDMS 2cm

Sample Amount: 10mL+NaCl3

Incubat. Temp.: 80°C

Extract. Time: 30 min

Bake Time: 10min

Pre Inc. Time: 5min

Agitation: 250rpm

Desorb. Time: 2 min

GC

Column: Rtx-5MS [0.25mm I.D*30m, df=0.25 μ m]

Injection: Splitless

Injection Temp.: 250°C

Column Temp.: 40°C(2min)-(10°C/min)-120°C -(30°C/min)-250°C(5min)

Carrier Gas: 52.3cm/sec (Constant Linear Velocity)

Sampling Time: 2.00min

MS

Interface Temp.: 250°C

Ion Source Temp.: 200°C

Monitor Ion (SIM): 2-MIB(95, 107) Geosmin(112, 125)

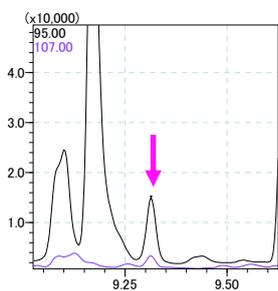
Event Time: 0.2sec

LAAN-E-MS106

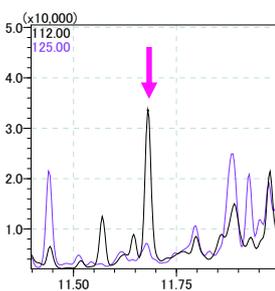
SIMクロマトグラムおよび繰り返し分析精度

1ng/L

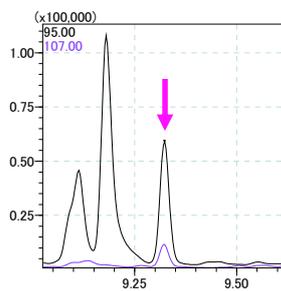
5ng/L



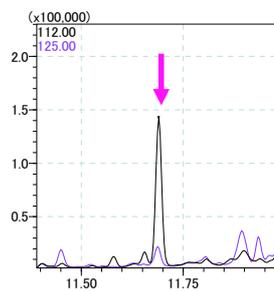
2-MIB



Geosmin



2-MIB



Geosmin

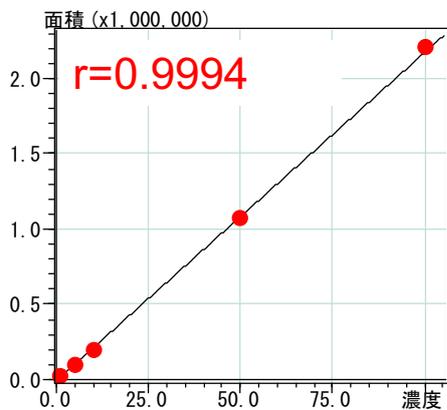
繰り返し分析精度 (1 ng/L n=5)

	分析1	分析2	分析3	分析4	分析5	CV値(%)
2-MIB	19152	20303	19678	19307	20014	2.43
Geosmin	31869	30692	31070	30180	31688	2.25

LAAN-E-MS106

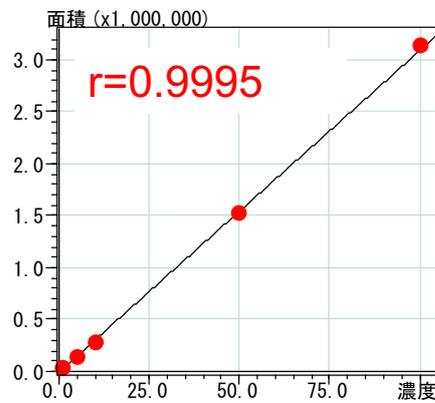
検量線

検量線(1~100ng/L)



濃度(ng/L)	面積値
1	19,152
5	93,673
10	192,850
50	1,076,439
100	2,203,378

2-MIB

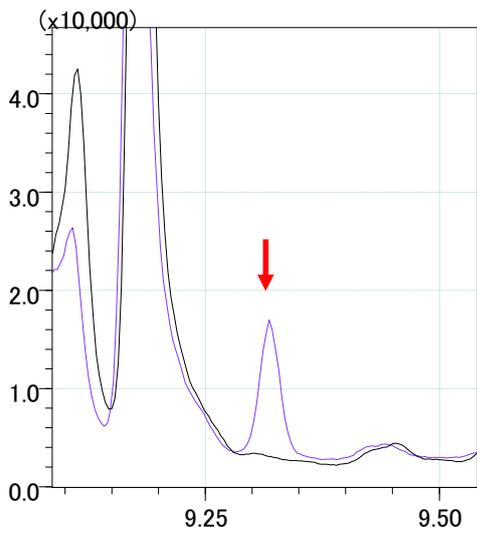


濃度(ng/L)	面積値
1	31,869
5	142,756
10	281,332
50	1,531,041
100	3,133,236

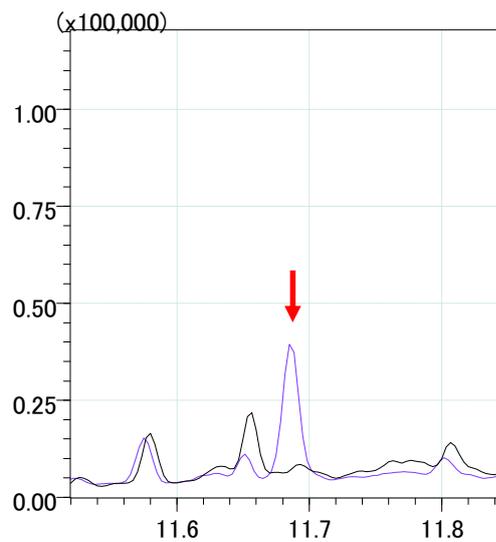
Geosmin

LAAN-E-MS106

キャリーオーバー (100 ng/L 測定後)



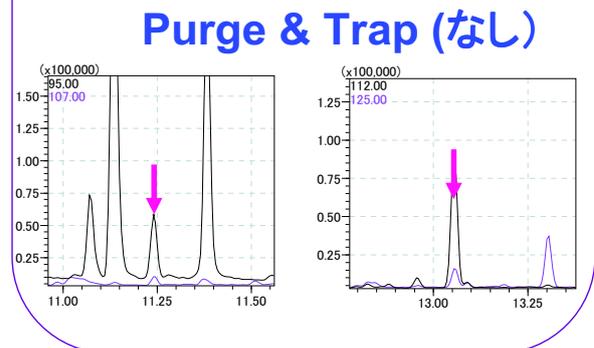
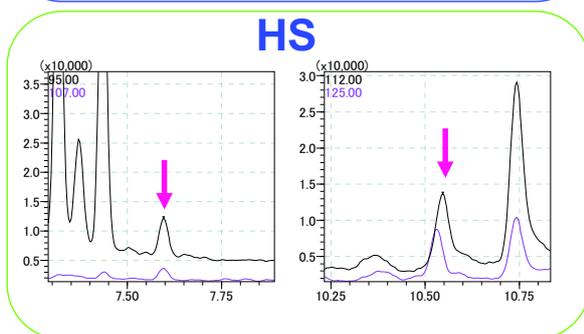
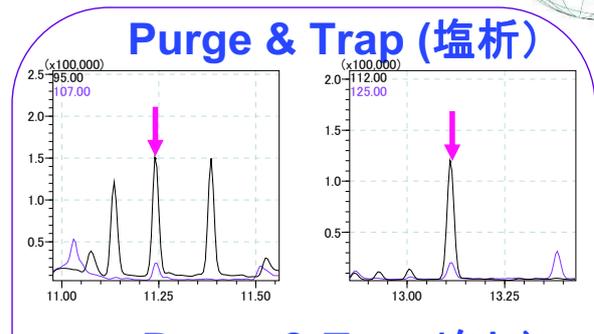
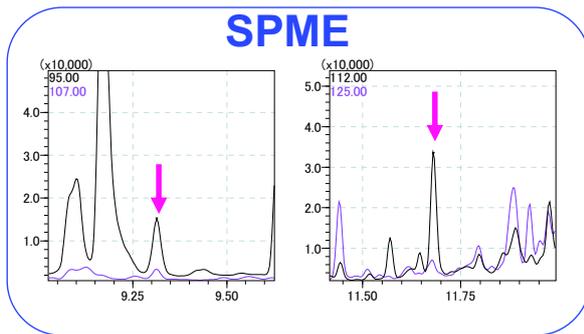
2-MIB(m/z 95)



Geosmin(m/z 112)

— 1ng/L — ブランク

別法との感度比較 (1ng/L)



2-MIB

Geosmin

2-MIB

Geosmin

P&T(塩析あり) > P&T(塩析なし) ≒ SPME > HS