# Highly sensitive analysis of odorous component in gas

The online concentration system combined with GC can transfer odorous volatiles (number of C in Alkane > 2) desorbed from a sample into the GC column, and consequently can lower detection limit. The application to estimating odorous components desorbed from sulfuric compounds is presented.

Analytical tech. of gas

Heating ～1100℃

Sample (Gas generation source) → Gas

Combustion ～950℃
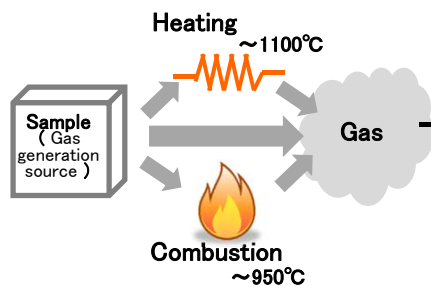
Sampling method	Analytical method	Target components
Sampling bag (non concentration)	GC, GC/MS, FT-IR	H_2, N_2, O_2, CO, CO_2, NOx, SOx, Organic components (C1～8)
Online concentration –GC/MS		Organic components (C 2～13)
Adsorbent (Offline concentration)	GC/MS	Organic components (C4～30)
Solution (concentration)	GC/MS, HPLC, Ion Chromatography	Organic components (C10～) Acid or basic gas (NOx, SOx, etc.) Aldehyde, Ketone(Derivatization)

Detection sensitivity is 20 times higher (with n-Butane)

Application

Sulfuric compounds

Online concentration-GC/MS analysis of gases desorbed from sulfuric compounds
Condition of desorption ・・Heating temp. : R.T～200℃
Atmosphere : Air, N_2, etc.

Table Qualitative result of peak No.1～4

Peak No.	Components	Odors*
1	Sulfur Dioxide（SO_2）	The irritating odor such as the egg which became addled.
2	Aldehyde	The irritating odor that was burnt and sweet-sour
3	Thiol	The skunk's intense acrid odor
4	Amine	The odor such as ammonia

*Reference : SDS, Handbook of Offensive Odor Control Law (in Japanese), etc.

A（Weak odors）

B（Strong odors）
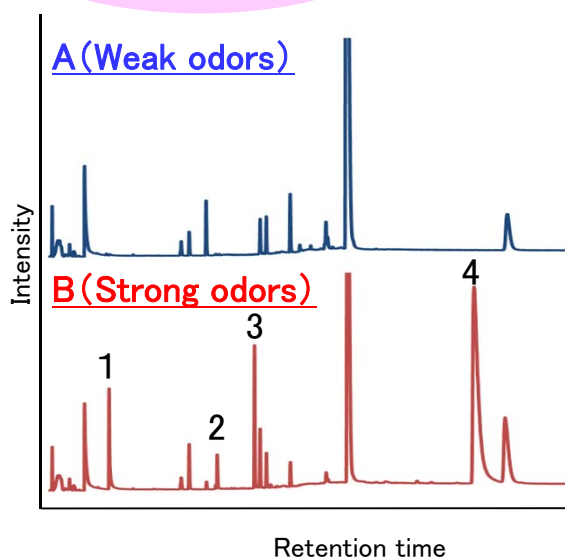
Intensity

Retention time
Fig. GC/MS–Total ion chromatogram

SO_2, aldehyde, thiol, amine, etc. are estimated as the source of odors from Sample B.

Other applications

Fluoric compounds → Nitrile, aldehyde, etc. which contained fluorine are estimated as the source of odors from the sample

Plastic products → Unsaturated hydrocarbon（C5）, aldehyde, thiazole, etc. are estimated as the source of odors from the sample