

MonoTrap is a high purity silica gel having the large surface area provided by the three dimensional silica monolith's network of through pores and meso-pore. It is a newly-developed, state-of-the-art sorptive media which offers unmatched adsorption and desorption efficiency. It is suitable for liquid, air and solid samples. In this note a MonoTrap was fixed both in a normal and electronic cigarette filter in order to collect the main volatile compounds in cigarette smoke and which are inhaled by the mouth. Many compounds such as hydrocarbons, ketone, pyridines, furans and many others were detected and differences were found depending whether the cigarette is a normal or an electronic one.

## Pre-treatment

### Cigarette

#### Cigarette



Normal cigarette

Electronic cigarette



MonoTrap RGPS

Make a cut in the cigarette filter and put the MonoTrap inside.

MonoTrap RGPS



Electronic cigarette



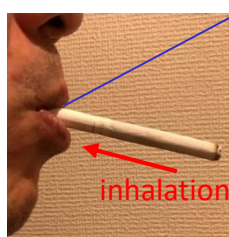
Normal cigarette

MonoTrap RGPS

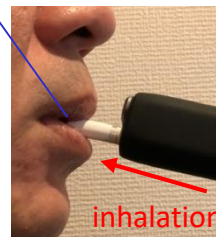
### Trapping

The smoke compounds get trapped inside the MonoTrap when smoking one cigarette.

The MonoTrap is fixed inside the filter.



Normal cigarette



Electronic cigarette

### TD/GC/MS

The thermal desorption of the trapped compounds was carried out by HandyTD and then detected by GC/MS.



From normal cigarette



From electronic cigarette



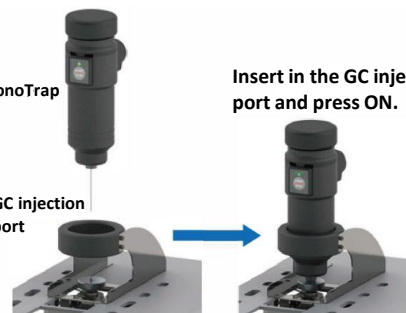
O-ring



MonoTrap

GC injection port

Insert in the GC injection port and press ON.



MonoTrap conditions after the sampling.

GC Conditions

**System** : HandyTD TD265-GC/MS  
**Column** : InertCap Pure-WAX  
           0.25 mm I.D. X 60 m, df = 0.5 μm  
**Col.Cat. No.** : 1010-68164  
**Col.Temp.** : 40 °C (5 min) - 5 °C/min – 250 °C  
**Carrier Gas** : He, 1mL/min  
**GC Inlet** : 250 °C, Split 5:1  
**Detection** : MS Scan (*m/z* 20-450)



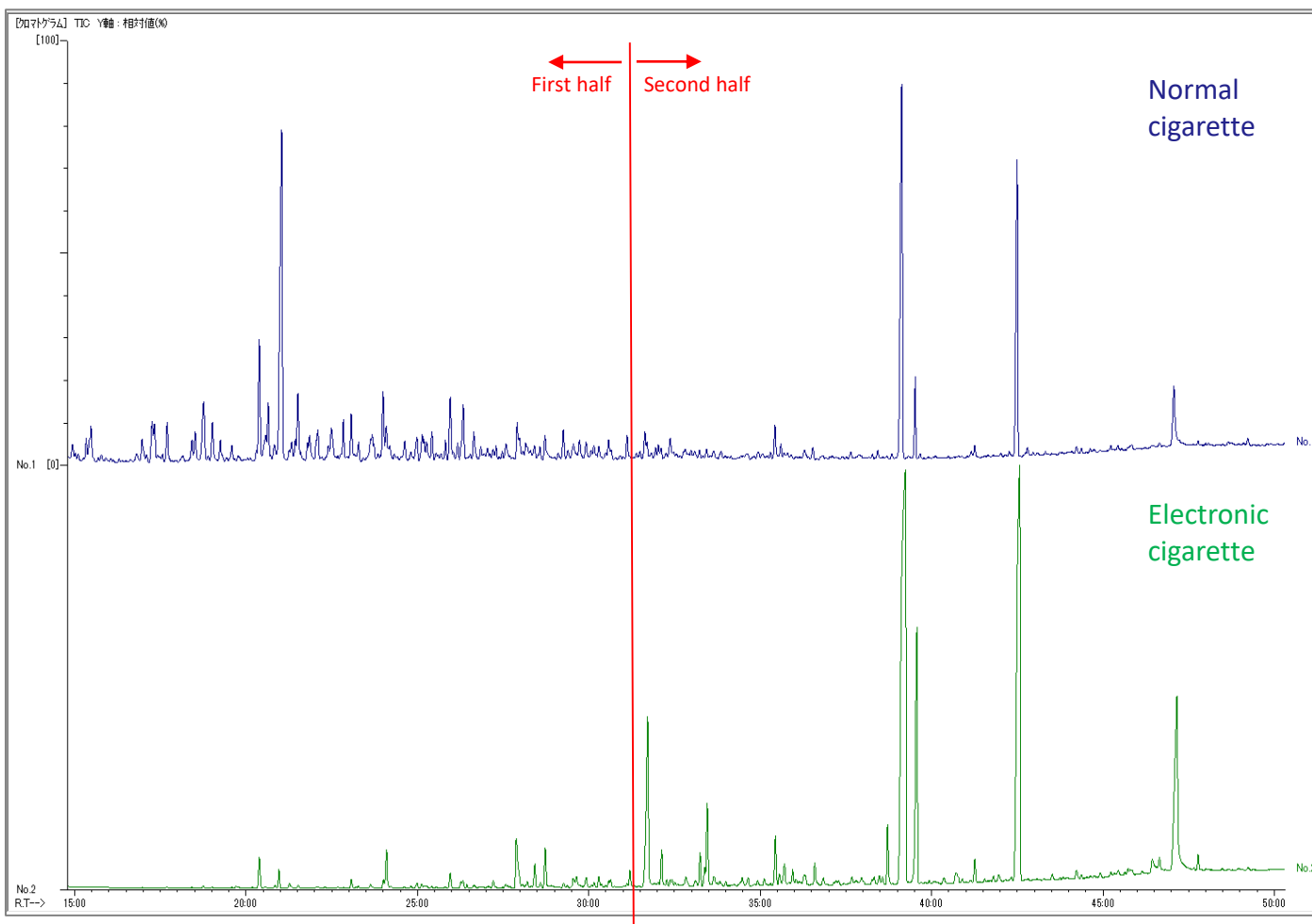
**InertCap Pure-Wax**

InertCap Pure-Wax is a high polar column bonded with polyethylene glycol. Based on newly developed inner treatment technology, it achieves the highest inertness among the columns available on the market.

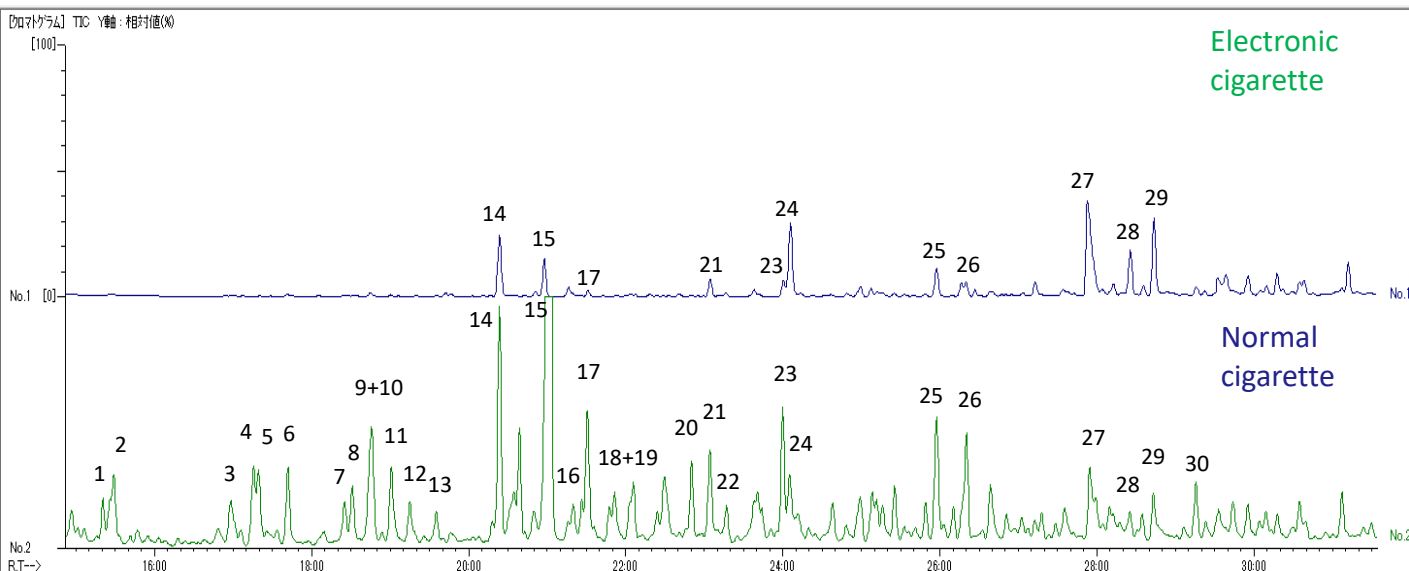
**HandyTD Conditions**

**Desorb Temp.** : Room temperature - 45 °C/sec – 250 °C (5min)  
**Desorb Press.** : 140 kPa

Chromatogram comparison

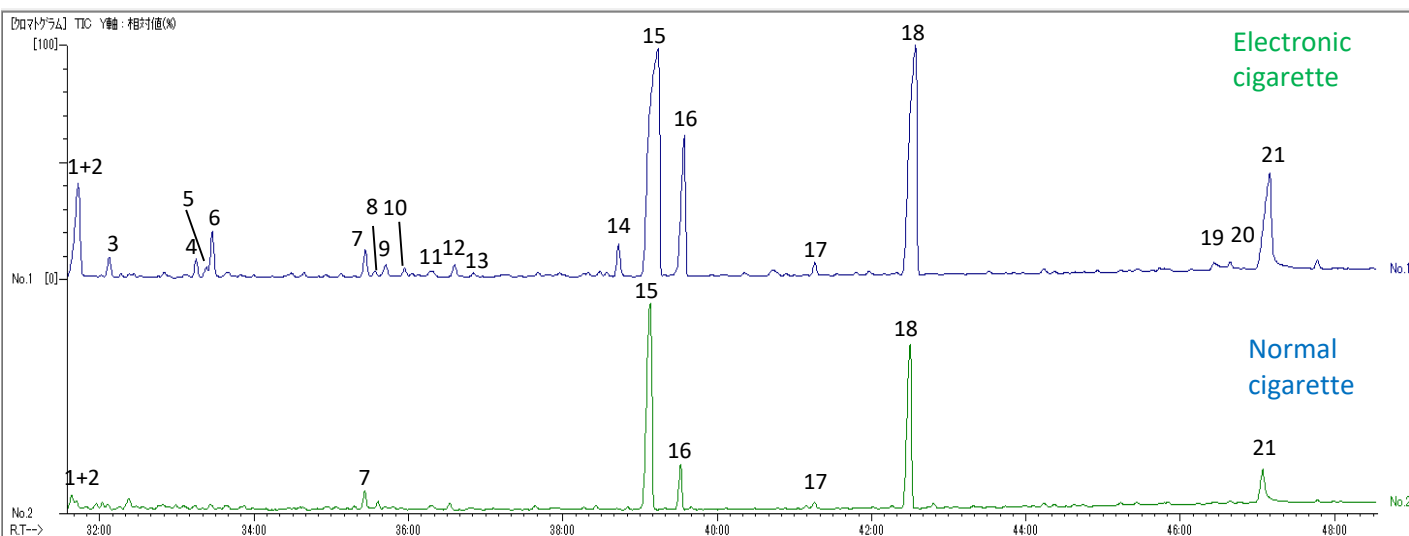


Chromatogram comparison  
(First half enlarged picture)\*



- |                                   |                               |                               |
|-----------------------------------|-------------------------------|-------------------------------|
| 1. 1-Decene                       | 11. Xylene                    | 21. Methylpyrazine            |
| 2. Toluene                        | 12. Myrcene                   | 22. Cymene                    |
| 3. Trimethyl-1,5-heptadiene       | 13. Myrcene                   | 23. Picoline/3-Methylpyridine |
| 4. 2,5,5-Trimethyl-2,6-heptadien  | 14. Pyridine                  | 24. Acetol                    |
| 5. Limonene                       | 15. Limonene                  | 25. Cyclopentenone            |
| 6. 3,3,5-Trimethyl-1,5-heptadiene | 16. Propylbenzene             | 26. 2-Methyl-2-cyclopentenone |
| 7. 3-Penten-2-one                 | 17. Picoline/2-Methylpyridine | 27. Acetic acid               |
| 8. Ethylbenzene                   | 18. Cumene                    | 28. Acetol acetate            |
| 9. Menthene/Carvomenthene         | 19. Cumene                    | 29. Furfural                  |
| 10. Xylene                        | 20. Styrene                   | 30. 4-Vinylpyridine           |

Chromatogram comparison  
(Second half enlarged picture)\*



- |                             |  |   |
|-----------------------------|--|---|
| 1. Propylene Glycol         | 8. Citral/Geraniol                               | 15. Nicotine                                      |
| 2. 2-Methyl-5-formylfuran   | 9. 3-Methyl-3-vinylcyclopentanone                | 16. 3,7,11,15-Tetramethyl-2-hexadecen-1-ol        |
| 3. 2-Cyclopentene-1,4-dione | 10. Acetic acid, geraniol ester/Geraniol acetate | 17. Phenol  |
| 4. Menthol                  | 11. Cyclohexanone+Furanone                       | 18. Triacetin                                     |
| 5. Butyrolactone            | 12. Methylpentanoic acid                         | 19. Acetin  |
| 6. Furfuralcohol            | 13. Acetyloluene                                 | 20. Dihydroxy-6-methyl-2,3-dihydro-4H-pyran-4-one |
| 7. Solanone                 | 14. Benzyl Alcohol                               | 21. Glycerin                                      |

\* No qualitative analysis has been performed with any standards.  
The data has been processed by using MS library.

Related products

HandyTD TD265

With the Handy TD it is possible to perform thermal desorption of the trapped compounds and inject them into the GC injection port.

- Compact design, easy to carry, space-saving.
- From sampling to injection: the whole working flow has become easier than ever due to the combination of MonoTrap and Handy TD.



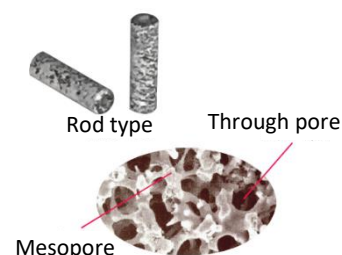
Description	Qty.	Cat.No.
Handy TD TD265	1pc	2702-30001

MonoTrap

MonoTrap is a newly-developed, state-of-the-art sorptive media. Due to its three dimensional silica monolith's network of through pores and mesopores, it offers unmatched adsorption and desorption efficiency

- It is already conditioned and it can be used immediately after taking it out from the packing bag.
- High absorption.
- Designed for the sampling of liquid, gas and solid samples.
- Wide lineup available.

Description	Recommended Operating Temperature	Appearance	Shape	Size	Active Carbon	Graphite Carbon	ODS Function	PDMS	Qty.	Cat.No.
MonoTrap RGPS TD*	250 °C		Rod	Diameter : 2.9 mm Length : 10 mm	●			●	30 ea	1050-74202
MonoTrap RSC18 TD*	200 °C		Rod	Diameter : 2.9 mm Length : 10 mm				●	30 ea	1050-73201
MonoTrap RGC18 TD*	200 °C		Rod	Diameter : 2.9 mm Length : 10 mm		●	●		30 ea	1050-74201



- Remarks
- Every Type has a 1 mm hole on the center.
  - MonoTrap for thermal desorption is packed individually in an ampoule.

GL Sciences disclaims any and all responsibility for any injury or damage which may be caused by this data directly or indirectly. We reserve the right to amend this information or data at any time and without any prior announcement.

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