

# UAV & UGV Sampler

Rapid sampler on mobile carrier in real-time



Unmanned Vehicle



Analysis by FTIR after sampling



Sampler



## Applications

- Rapid identification and quantification of pollutants at scene of chemical accident
- Rapid sampling and analysis of mobile pollution sources
- Pollutant identification and pollution source tracking
- Can be widely used on various vehicles, including unmanned vehicles

Analysis of materials after sampling



### Sampler

Loaded with various adsorbent materials such as:  
PDMS, DVB, Carboxen,  
PEG, MCM-41 or MOF...

### Mobile vehicle

Aircraft, Vehicles, Orbital Machines and Ships...



### Analysis equipment

Analyzer :  
Raman, FTIR, GCMS...





# Technical content

Estimated sampling time (sampling and analysis require <15 minutes)

Sampling time (minute)	Preparation time (minute) Note: Removed from the mobile carrier to the analysis instrument	Instrument analysis time (minute)	Total time (minute)
5 (minute) (Short or long time)	< 5 (minute)	2 (minute) (By FTIR) 5 (minute) (By GC-MS)	< 15 (minute)

**\*Traditional sampling and analysis time requires at least 12~24 hours**

## Implementation examples summary

Implementation example:

Combinations of sampler, adsorbent material and analytical instrument combinations

Shape	Shielding rate(%)	Filling material	Target chemicals	Weight of sampler + filling material (g)	Mobile vehicle	Analytical instrument
Sphere	30~35	DVB/PDMS	C <sub>3</sub> H <sub>6</sub> O, CH <sub>3</sub> OH	< 100	Rail cars and Drones	GC-MS
Sphere	30~35	Zeolit	C <sub>2</sub> H <sub>4</sub>	< 100	None (Active airflow)	FTIR
Column	25~30	Zeolit	SF <sub>6</sub>	< 25	Rail cars	FTIR

## Geometric 3D cumulative quantity sampling device

- No need pump
- Total sampling volume = cross-sectional area x movement speed
- Sampler material: mainly SS316
- The total weight of the sampler plus sampling material (Ex.Zeolit) is about 200g



This product by ITRI patented authorization  
from the ROC obtained  
Certificate number: Invention No. I848379

The sampler including sampling  
fiber and fixed module  
total weight is about 104g



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