

## ADVANCES IN THERMAL DESORPTION FOR GC/GCMS

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Analytical thermal desorption (TD) is a powerful and rapidly-evolving inlet technology for GC/GCMS allowing quantitative detection of trace organic volatiles and semi-volatiles in real-world samples. Applications include time weighted average air monitoring (ambient, indoor, workplace, factory-fenceline), personal exposure (inhalation and biological monitoring), stack gas analysis, continuous on-line air/gas monitoring, counter-terrorism, chemical defence and materials emissions testing. TD is also extensively used for direct thermal extraction of materials – polymers, drugs, dried food, packaging, paint, tobacco, etc..

Key international standard methods/protocols for thermal desorption with GC(MS) include: US EPA TO-17 ('air toxics'), ASTM D6196-03 & EN ISO 16017 (both for ambient, indoor & workplace air plus materials emissions) EN ISO 16000 (materials emissions), the VDA series (car trim), NIOSH 2549 (workplace) and 'ozone precursors' (continuous on-line monitoring of hydrocarbons in ambient air.)

This paper describes the latest developments in cryogen-free, method-compliant thermal desorption technology. Key innovations include:

- **SecureTD-Q** – Quantitative sample re-collection for repeat analysis and method/data validation (manual or automated\*)
- Proprietary low-volume, inert heated valving\* for extending the application range (C2 – C40)
- Implementation of state-of-the-art Agilent **electronic pneumatic control** of carrier gas through the entire TD-GCMS system allowing Retention Time Locking (RTL) and automated spectral deconvolution (DRS) to help identification of compounds in complex matrices.

Details of these and other TD innovations will be presented with relevant application examples.

*[Note: \* Technology patented by Markes International Ltd. ]*