



GERSTEL

Maximize Your GC Performance and Productivity





GERSTEL®

GERSTEL GC and GC/MS solutions

GERSTEL GC and GC/MS solutions are designed to optimize performance, enhance productivity and extend capabilities. Our automated sample handling and sample introduction systems are controlled from the integrated GERSTEL MAESTRO software, enabling analysts to:

- Simplify and minimize sample preparation.
- Dramatically increase sample throughput and analytical productivity.
- Achieve ultra-low detection levels in complex matrices using standard GC instruments.
- Adapt to new analytical techniques and challenges.

GERSTEL solutions enable our customers to achieve results they otherwise could not obtain. As a Premier Solution Partner of Agilent Technologies, GERSTEL integrates its modular building blocks with Agilent instrumentation under integrated software control from the Agilent ChemStation software. GERSTEL provides complete system solutions that improve productivity for standard applications and help you meet special analytical challenges.



GERSTEL TWISTER® Stir Bar Sorptive Extraction (SBSE)

Efficient solvent-free extraction for trace analysis

From flavors to off-odors, from pesticides to PCBs, the patented GERSTEL Twister efficiently extracts organic compounds from aqueous solutions, slurries and other matrices, without the use of solvents. The GERSTEL Twister / SBSE has proven to be a simple, effective and rapid extraction technique that enables trace analysis for a wide range of sample types.

TWISTER ADVANTAGES:

- Elegantly simple - no solvents!
- High capacity: low detection limits, high dynamic range
- Linear over a wide concentration range
- Highly reproducible
- Rugged, reusable
- Adaptable for field sampling
- Automated Twister desorption and analysis using the GERSTEL MPS 2 and TDU



GERSTEL Multi Purpose Sampler MPS 2



GC autosampler and sample preparation robot

GERSTEL offers unique technologies and enhancements in hardware, software and applications that are only available with the GERSTEL MPS 2.

Techniques supported by the MPS:

- Solid Phase Extraction (SPE)
- Disposable Pipette Extraction (DPX)
- Dynamic Headspace (DHS)
- Twister desorption and analysis of up to 196 stir bars
- Headspace / liquid / large volume injection
- SPME with in-fiber derivatization
- SPME Multi-Fiber System with automated fiber exchange
- Sample preparation such as: Standard addition, Derivatization, Dilution, Extraction, Mixing and Thermostating.
- Automated Liner EXchange (ALEX) for "dirty" matrices

- ATEX, liquid injection into μ -vials for thermal extraction
- Weighing Option, Sonication and Centrifugation
- Custom trays for a variety of vials, including 100mL headspace vials
- Dual-rail MPS PrepStation enables combined sample preparation and sample introduction

Simplified method development and highest productivity with MAESTRO software

- Functions are selected from a menu, no macro programming needed
- PrepAhead function enhances sample throughput
- Fully integrated with the Agilent ChemStation: One method and one sequence table control the complete system including GC/MS.

GERSTEL

Versatile ultra-trace analysis system for a wide range of sample types

The TDS 3 Thermal Desorption System enables GC sample introduction for solid, liquid and gaseous samples that cannot be injected directly to the GC instrument.



- Gas-phase samples can be collected from the atmosphere or from the headspace over liquid or solid samples and analytes concentrated on adsorbent tubes. The TDS 3 thermally desorbs VOCs and SVOCs from adsorbent tubes with high recovery for trace and ultra-trace analysis.
- Direct thermal extraction (dynamic headspace) of volatiles and semi-volatiles from solid or liquid materials. Simplified trace and ultra-trace analysis of samples such as polymers, waxes, oils, powders, papers, pharmaceutical formulations, foodstuffs and cosmetics – without prior sample preparation.
- For aqueous solutions or slurries, the GERSTEL Twister combined with the TDS 3 enables highly efficient trace and ultra-trace GC or GC/MS analysis.

TDS 3 ADVANTAGES:

- Ultra-low detection levels
- Highly inert, short sample path
- Valve-free design for leak-free operation
- Efficient desorption of high molecular weight compounds up to C₄₀₊
- Easy to maintain and highly flexible
- Autosampler available for fully automated analysis
- Available accessories include automated gas sampler, tube/Twister conditioner, thermal extractor for bulky samples, tube spiking apparatus, pyrolysis module and more

GERSTEL Thermal Desorption Unit TDU

Simple and flexible high throughput system for Thermal Desorption and Thermal Extraction

- Thermal Desorption of: Twisters, Adsorbent Tubes, Liquids in μ -vials, and solids.
- Efficient recovery of analytes through liner-in-liner design, no transfer line.
- Automated thermal desorption and analysis of up to 196 samples using the MPS 2
- Simple and economical manual operation
- Fast change to liquid sample introduction
- Used for Automated Dynamic Headspace (DHS) in combination with MPS and DHS



GERSTEL Cooled Injection System CIS 4



Universal PTV (programmable temperature vaporization) GC inlet for optimum performance, the most widely sold PTV-Inlet in the world.

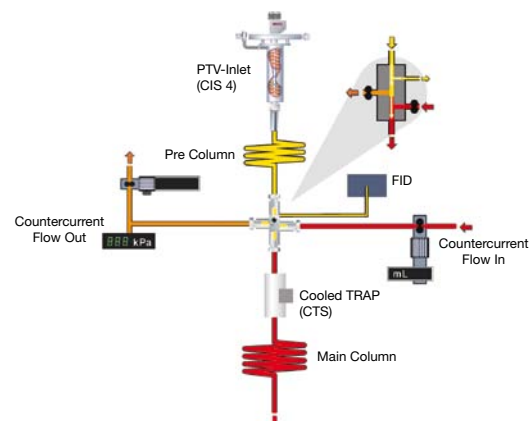
- Highly efficient cryotrap for TDS 3 and TDU thermal desorbers
- Optimized sample enrichment for lowest detection levels using large-volume injection in split, solvent vent and splitless modes
- Eliminates thermal discrimination
- Reduces decomposition of thermally labile compounds

GERSTEL Multidimensional Column Switching MCS



Automated 2D heartcutting – a powerful and economical tool for resolving and analyzing complex sample matrices

- Easy to use, software controlled, valve-less heartcutting with electronic pressure control.
- Cryotrap modules available for sample enrichment
- New 2D GC capabilities using compact Low Thermal Mass (LTM) column modules.



Simultaneous sensory detection and analytical information to determine odors in foods, packaging and other complex samples



- Simultaneous sensory detection of odors by the human nose and analytical detection by any GC detector, including MSD, FID and FPD.
- Voice recognition software allows the sensory analyst to describe fragrances in real-time; voice descriptors are recorded and converted to editable text files.
- Chromatogram, olfactogram, voice comment annotation and olfactory event times are saved in a single file and can be printed out as a single report.

Automated collection of pure compounds obtained from capillary GC separation



- Collection of trace compounds for further analysis by NMR, IR or other analytical techniques.
- Unattended collection of up to six user-defined fractions of a sample as it is separated by the GC.
- Accurate fraction selection allows collection from hundreds of GC-runs

GERSTEL MAESTRO Software

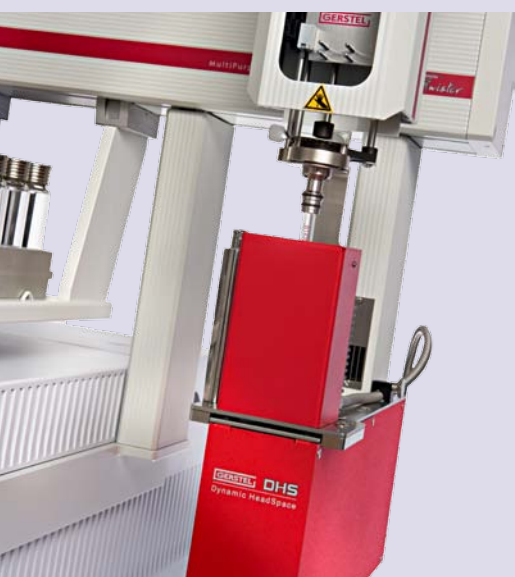
Integrated software solution for all GERSTEL modules. Fully automated sample preparation and analysis.

- integrated software for all GERSTEL modules
- Fully integrated with the Agilent ChemStation for simple error-free operation
- One Method and one sequence list operates the entire system including GC/MS
- PrepBuilder functions for automated sample Prep by mouse-click
- Fully menu-driven, no macro-programming needed
- PrepAhead function for highly productive, overlapping Analysis and Sample Prep
- Just-in-time sample, ensuring optimal precision and reproducible results



Dynamic Headspace DHS

Dynamic Headspace combines the sensitivity and low detection limits of Purge and Trap with the ease of handling, high productivity and ruggedness of Headspace analysis.



Low detection limits

- Exhaustive headspace purge
- Efficient analyte trapping on adsorbent

Reliable results without carry-over

- Inert, valve-free flow path
- A new trap can be selected for each sample
- Headspace purge technique, no sample foaming

High productivity and high throughput

- Up to 98 samples in one sequence
- GERSTEL PrepAhead functionality

Highly Flexible

- User defined extraction time, flow and temperature
- Adsorbent trap can be heated or cooled for better efficiency

Multiple water management options

- Subambient extraction temperature can be selected to limit evaporation
- Trap temperature and adsorbent type can be varied to reduce water trapping
- Selectable automated dry purge

Convenient, user friendly operation

- Easy sample handling using standard headspace vials
- No solvents required
- Control of complete System including GC/MS through one method and one Sequence table.

GERSTEL

GLOBAL ANALYTICAL SOLUTIONS

 Agilent Technologies
 Premier Solution Partner


GERSTEL GmbH & Co. KG • Eberhard-Gerstel-Platz 1 • D-45473 Mülheim an der Ruhr ☎ +49 (208) 7 65 03-0 • E-Mail: gerstel@gerstel.com
 GERSTEL Inc. • 701 Digital Drive, Suite J • Linthicum, MD 21090 • USA ☎ +1 (410) 247 5885 • E-Mail: sales@gerstel.com
 GERSTEL AG • Wassergrabe 27 • CH-6210 Sursee ☎ +41 (41) 9 21 97 23 • E-Mail: gerstel@ch.gerstel.com
 GERSTEL K.K. • 2-13-18 Nakane, Meguro-ku 152-0031 • Tokyo ☎ +81 3 57 31 53 21 • E-Mail: info@gerstel.co.jp

Information, descriptions and specifications in this publication are subject to change without notice. GERSTEL®, GRAPHPACK® and TWISTER® are registered trademarks of GERSTEL® GmbH & Co. KG. Printed in Germany. © Copyright by GERSTEL® GmbH & Co. KG