

**GERSTEL**

MAKING LABS WORK



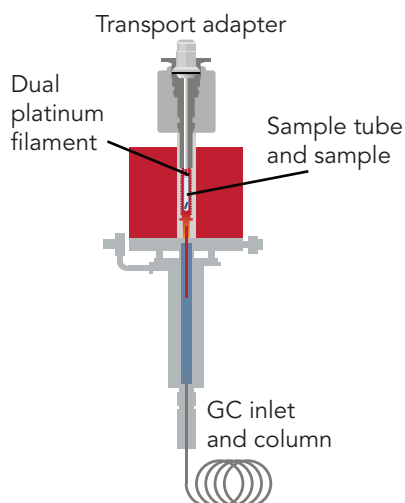
## PYRO

Highly flexible and efficient automated pyrolysis  
of solids and liquids up to 1000 °C

Solve your critical analytical challenges with  
unmatched capability and flexibility

# GERSTEL PYRO

## Dual Filament Pyrolyzer



### Flexible and precise resistance heating

- Four-conductor dual platinum filament-based pyrolyzer provides uniform heating throughout sample zone
- Ensures accurate monitoring of the filament resistance and increased temperature precision
- Samples can be heated from ambient to 350 °C for thermal extraction of additives and organic contaminants
- Pyrolysis is performed at user-defined temperatures from 350 °C to 1000 °C.
- Pulsed heating or programmed heating rate from 0.02 - 100 °C/s in steps of 0.01 °C/s

### Short, valve-less flow path

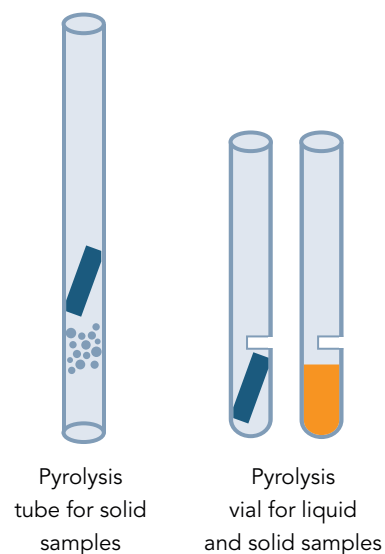
- Liner-in-liner design avoids transfer lines or valves
- Improved recovery of high boiling and active compounds
- Negligible memory effects with low sample-to-sample carry-over
- Less maintenance for maximum uptime
- Reliable and accurate results over a wide boiling range

### Temperature calibration

- User performed temperature calibration in the sample position
- Accurate and reproducible performance, from instrument to instrument and laboratory to laboratory

### Dedicated sample holders and tools for liquids and solids

- Easy sample introduction and preparation saves time and improves productivity
- Diverse set of pyrolysis tubes, vials and tools to accommodate the preparation of a wide range of sample types and optimal sample introduction



Pyrolysis tube for solid samples

Pyrolysis vial for liquid and solid samples

### Efficient automation

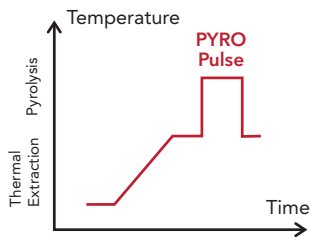
- Up to 240 samples can be analyzed in a single batch using the GERSTEL MultiPurpose Sampler (MPS)
- Higher sample throughput, freeing up analysts to perform advanced tasks that cannot be automated
- Simple and efficient method development



# GERSTEL PYRO

## The Most Advanced Pyrolyzer

### Full Range of Techniques

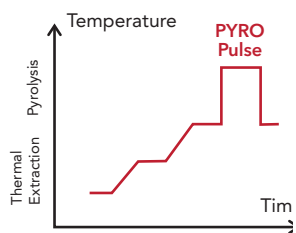
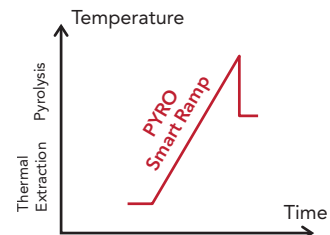


#### Pulsed Pyrolysis

- Classical process whereby a heat pulse is applied to the sample, rapidly heating it to the defined pyrolysis temperature
- Best for simple mixtures since a single pyrolysis temperature is not optimal for all compounds in complex samples

#### Smart-Ramped Pyrolysis (SRP)

- By applying a rapid, controlled temperature ramp, the sample components are successively pyrolyzed in one run
- Every sample component is pyrolyzed at optimal temperature
- Compared with pulsed pyrolysis, SRP produces uncluttered pyrograms without secondary reaction products in a single run
- Reliable and efficient determination of unknowns and mixtures without the need for pyrolysis temperature optimization

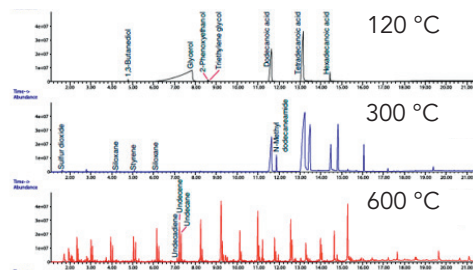


#### Solvent Venting & Pulsed Pyrolysis

- Sample is purged, cleaned and thermally extracted prior to pyrolysis, providing a clean pyrogram without interfering contaminants that are unrelated to the polymer structure
- Accurate introduction of liquid aliquots of polymers in solution followed by solvent venting and pyrolysis

#### Thermal fractionation and fractionated Pyrolysis

- Application of multiple thermal extraction and pyrolysis temperatures to one sample with separate GC-MS runs for each
- Clear differentiation between adsorbed volatiles and pyrolysates
- Simpler, more accurate data interpretation based on one or multiple clean pyrograms

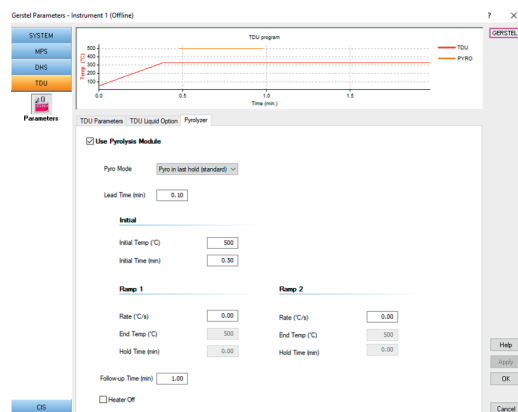


Thermal fractionation of a facial scrub with separate determination of adsorbed volatiles and additives from the polymer. The subsequent pyrolysis step generates a clean pyrogram.

# System Control and Data Analysis

## MAESTRO–Sample Prep by Mouse-Click

- Maximize sample throughput and lab productivity
- Simple system operation with one method, one sequence table, and one interface
- Validity checks at method and sequence table creation catch errors before the run starts
- Intuitive design and graphics enable proficiency in minutes
- Versatile platform to customize sample preparation and edit active sequences
- Guidance for successful and simplified method development and optimization



## Advanced Data Processing with GERSTEL ChromIdent PYRO Edition Software



- Pyrolysis data deconvolution and interpretation with ChromIdent enables efficient determination of polymers and additives in complex samples
- ChromIdent PYRO database provided with the software includes pyrograms of polymers, co-polymers, biopolymers and mixtures obtained by pulsed and smart-ramped pyrolysis
- Even in complex samples, polymers are identified reliably and accurately using specific markers as well as similarity indices based on a peak list query

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