

Dynamic Flow Chemisorption and Reactivity Analyzer



A powerful new tool has been added to Quantachrome's lineup of flow chemisorption analyzers. The [ChemStar™](#) is a fully automated instrument for the analysis of catalysts and other chemisorption applications. Its intuitive software interface allows the user to program and run a variety of temperature-programmed analyses as well as flow BET surface area determination and pulse titration experiments. Standard capabilities include:

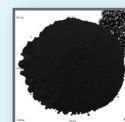
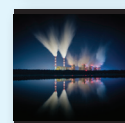
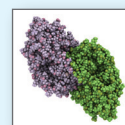
- ▶ Temperature Programmed Desorption (TPD)
- ▶ Temperature Programmed Reduction (TPR)
- ▶ Temperature Programmed Oxidation (TPO)
- ▶ Temperature Programmed Reaction (TPRx)
- ▶ Catalyst Treatment
- ▶ Flow BET Surface Area
- ▶ Pulse Titration
- ▶ Pulse Calibration

Experimental conditions are fully programmable and up to 99 consecutive treatments and/or analyses can be strung together for completely unattended operation.

Specifications

World-class performance is ensured by designing to very stringent instrument specifications, thus providing the highest quality data.

- **Typical Sample Size:**
0.1 to 1.0 grams
- **Standard Temperature Range:**
Ambient to 1200°C
- **Optional Temperature Range:**
-100°C to 1200°C
- **Temperature Ramp Rate:**
1°C/min to 30°C/min
- **Standard Operating Pressure (TPx units):**
Atmospheric
- **Alternative Pressure Range (HP units):**
Up to 100 bar
- **Gas Inputs (on standard TPx units):**
4 carrier, 4 treatment, 2 blend
- **Gas Flow Rates:**
5 to 50 sccm
- **Sample Cell Types:**
Quartz U-Tubes, BubbleTubes, Monolith Tubes
- **Primary Detectors:**
4-filament TCD with choice of material (W, Au/W)
- **Flow Path Materials:**
316 stainless steel, 1/16" tubing
- **Seals:**
Viton®, Buna-N, or Premium Seals
- **Dimensions:**
Width: 56 cm (22"),
Height: 60 cm (23.5")
Depth: 61 cm (24")
- **Weight:** 55 kg (120 lbs)
- **Power Requirements:**
100–120 or 220–240 VAC,
single phase, 50/60 Hz



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Features and Benefits

- Stable Baseline and Quality Data:**
 Ensured by 3 standard (and 1 optional) high-precision electronic mass flow controllers with 0.08% thermal drift in the 0-50 cm³/min range.
- Reduced Peak Spreading:**
 Dead volume is minimized through the use of 1/16" stainless steel tubing.
- Easy Loading and Unloading of Samples:**
 By the use of a clamshell furnace with flexible mounting arrangement and sample cells covering a range of geometries for powders, pellets and cores.
- Wide Temperature Range:**
 Ambient to 1200°C at programmable rates of 1°C/min to 30°C/min is standard. Optional subambient accessory extends the lower limit to -100°C.
- Condensation and Adsorbate Retention Eliminated:**
 By controlling the temperature of all tubing and valves downstream of the sample up to the detector.
- Precise Measurements:**
 Through the use of a highly linear Thermal Conductivity Detector (TCD), along with interchangeable loops, automated loop and manual pulse injection options.
- Wide Dynamic Range:**
 Through software controlled detector resolution.
- Maximum Chemical Compatibility and Sensitivity:**
 With choices of sealing materials and TCD filaments to suit the individual needs of each lab.
- No Need For Pre-Mixed Gases:**
 A built-in gas blender with in-line static gas mixer provides custom-blended gases with exceptional homogeneity. This gas blender also allows for fully automated multi-point BET surface area analysis.
- Built-In Vapor Saturator:**
 With controlled temperature for precise feed of condensable adsorptives.
- Unattended Operation:**
 All functions of the experiment are fully automated and controlled by a PC, which also collects and stores the acquired data.
- Short Analysis Times and High Throughput:**
 Enhanced by forced air cooling of the furnace.
- Ultimate Safety:**
 Ventilated cabinet, support for gas sensors, interlocking doors, and front-mounted emergency kill switch are all available for optimal safety.
- Flexible User Interface:**
 Windows® based software provides a flexible interface for setting up experiments, controlling instrument functions, and displaying data.
- Direct Link to Optional Mass Spectrometer and Additional Gas Detectors:**
 For live displays of changes in gas composition data analysis.
- Ready To Use:**
 The system is supplied complete and ready for operation.

