

AutoChem 2950

High Pressure Chemical Adsorption Analyzer

Features

Flexible analysis protocol permits complex sequencing and experimental design.

In situ experiments with virtually unlimited steps

Capable of TPD, TPR, TPO, BET and pulse chemisorption

Three mass flow controllers and an electronically controlled pressure regulator provide precise gas control

Twelve gas inlets. Four each, preparation, carrier, and loop gasses



The AutoChem 2950HP provides a means of preparing and analyzing catalytic samples at pressures up to 70 bar (1000 psia). Equipped with all the features of the AutoChem 2920, this instrument delivers exceptional high-pressure data for fuel cell, hydrostorage, and other research applications. This micro-reactor, combined with a mass spectrometer, can be used to determine product yields and catalytic activity under commercially viable conditions. The use of a micro-reactor such as the AutoChem 2950HP in the development stage of a project can reduce or eliminate the need for a costly pilot plant later. The AutoChem 2950HP uses a stainless steel sample tube, capable of withstanding temperatures and pressures well above the system's limits.

Applications:

- Fuel cell applications that require reforming hydrocarbon feeds to hydrogen. The fuel reformers are expected to operate above 75 psia
- Hydrogen storage applications that use mixed metal hydrides that change stoichiometry (hydrogen capacity) as temperature changes. Since hydrogen capacity (storage) increases as hydrogen pressure increases, the high pressure AutoChem allows users to vary hydrogen pressure to determine storage capacity as a function of pressure and temperature.
- Simple chemical reactions where the product mix changes as a function of pressure. Typical commercial processes operate at 500 psia. The high-pressure AutoChem performs characterization and functions as a micro-reactor at these process temperatures and pressures. This allows users to collect reaction data at commercial conditions and reduce the typical risks and inaccuracies of using ambient pressure reaction data to design high-pressure reaction vessels.

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The Science and Technology of Small Particles™

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US Sales: 770.662.3636, International Sales: 770.662.3660
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Specifications

Control Temperature System

Range:
-70 to 1100 °C with CryoCooler
Ambient to 1100 °C (without CryoCooler)

Selection:
Digitally set, 1 °C increments

Ramp Rates:
Up to 50 °C per minute within -70 to 500 °C
Up to 30 °C per minute from 500 to 750 °C
Up to 10 °C per minute from 750 to 1100 °C

Gases

Loop (Analysis): H₂, CO, O₂, N₂O, NH₃
Carrier: He, Ar, and other gases
Preparation: H₂, O₂, He, Ar, and others

Gas Flow Rate

Three Mass Flow Controllers (MFCs)
Manual Control: 10 to 100 cm³/min*
Automatic Analysis: 10 to 75 cm³/min
Pressure Specifications Ambient to 1000 psia
accurate to 0.5% of full scale

* Rate for Hydrogen; other gases have different range.

Gas Delivery

Inlet Ports: 4 each for preparation gas, carrier gas
and loop (analysis) gas
Temperature Control: Internal gas lines and valves
heated up to 150 °C

Physical

Height: 62 cm (24.5 in.)
Width: 66 cm (26.0 in.)
Depth: 58 cm (22.75 in.)
Weight: 60 kg (130 lbs)

Sample Tube

Type: Metal FlowThru sample tubes, for use
up to 700 °C
Sample Size: 0.3 inches diameter (7.5 mm) by
1.5 inches (40 mm)
Pressure: Up to 1000 psi
Type: Fused quartz flow-through, for use up
to 1100 °C
Sample Size: powders and pellets up to
9mm in diameter
Pressure: Ambient pressure only

Electrical

Voltage: 85 to 265 VAC
Frequency: 50/60 Hz
Power: 1100 VA, operating, max.

Environment

Temperature: 15 to 35 °C operating
0 to 50 °C non-operating
Humidity: 20 to 80% relative, non-condensing

Module Minimum Requirements

Processor: Pentium 333 MHz or equivalent
Operating System: Windows 2000 or
XP Professional
Memory: 128 megabytes of RAM
Hard Disk Space: 1 gigabyte
Graphics Card: 800 x 600 super VGA
One CD ROM drive

Options

CryoCooler

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