

# BSD-660 Fully Automatic High-throughput Specific Surface Area and Micropore Analyzer



- ◆ Redefine 'Full Automation' : Auto-switching between degassing and testing;
- ◆ High Throughput: a total of 12 in-situ analysis stations;
- ◆ Zero Helium Pollution: vacuum heating degassing and adsorption test run in the same position, no need to remove sample cell.



## Main Function

- ◆ High-throughput and Fast Specific Surface Area Analysis;
- ◆ Pore Volume and Meso-, Micro-, Ultra Micro-pore Size Distribution Analysis;
- ◆ Gas Adsorption Isotherm (E.g. N<sub>2</sub>, O<sub>2</sub>, Ar, CO, CO<sub>2</sub>);
- ◆ Combustible Gas Adsorption Isotherm (E.g. H<sub>2</sub>, CH<sub>4</sub>, C<sub>2</sub>H<sub>6</sub>).

## Technical Parameter

- ◆ Test Range: > 0.0005m<sup>2</sup>/g for specific surface area; 0.35nm - 500nm for pore size;
- ◆ High Accuracy: < 0.5% RSD (BET value of standard Sample as reference);
- ◆ Pressure Transducer: Transducers are equipped for each analytic station, P0 station and calibrated volume respectively, which work independently with precision at 0.15%;
- ◆ Vacuum System: 10<sup>-2</sup> Pa with mechanical pump; 10<sup>-8</sup> Pa with molecular pump.

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Series	BSD-660S/M								BSD-660MC/V	
Description	AB stations can work with different gas and temperature independently. S means meso pore analysis, M means micro pore analysis								Corrosive gas, Vapor Options	
Model	A3S	A6S	A6S B6S	A3M	A3M B3M	A6S B3M	A6S B6M	A6M B6M	A3MC	A3MV
Analysis Ports	3 (Meso)	6 (Meso)	6 (Meso) +6 (Meso)	3 (Micro)	3 (Micro) +3 (Micro)	6 (Meso) +3 (Micro)	6 (Meso) +6 (Micro)	6 (Micro) +6 (Micro)	3 Ports-Anti Corrosion	3 Ports - Vapor
Transducer Qt.	5	8	16	8	16	16	22	28	8	8
Two stage Rotary Pump	1	1	1/2 optional	1	1/2 optional	1/2 optional	1/2 optional	1/2 optional	1	1
Turbo Molecular Pump	\	\	\	1	1	1	1	1	1	1
Vacuum degree	Two stage rotary pump can reach ultimate vacuum $7 \times 10^{-2}$ Pa; Turbo molecular pump can reach ultimate vacuum $10^{-8}$ Pa;									
Main Function	Specific Surface Area, pore size and distribution, isotherm of various non-corrosive gas;								Corrosive Gas	Vapor
Pressure Transducers	Pressure segment test with 0-1000torr, 0-10torr, 0-0.1torr (optional), micro pore segment P/P <sub>0</sub> can reach $1 \times 10^{-8}$ , spotting more than 50; Real time P <sub>0</sub> Measurement, P/P <sub>0</sub> accuracy reaching 0.998 around critical point;									

Specification		
	Mesopore (S) Station	Micropore (M) Station
Analysis Ports	3 or 6	3 or 6
Analysis Range	$1.0 \times 10^{-5}$ to 1.0 P/P <sub>0</sub>	$1.0 \times 10^{-8}$ to 1.0 P/P <sub>0</sub>
Vacuum Pump	1x Oil pump	1x Oil+ 1x Molecular pump
Independent P <sub>0</sub> tube	1	1
Surface Area	0.01 m <sup>2</sup> /g and above	0.01 m <sup>2</sup> /g and above
Pore Size	2nm -500nm	0.35nm-500nm
Pore Volume	0.001cc/g and above	0.001cc/g and above

Test Gas		
Gas Inlets	1 standard	5 standard, 10 optional
Adsorbate gas	N <sub>2</sub> , Ar, Kr, CO <sub>2</sub> , .....and other non corrosive gas	
Vapor Sorption Option	/	Optional MV
Corrosive gas Option	/	Optional MC

Degas		
In Situ	3 or 6 In Situ ports	3 or 6 In Situ ports
Heating	Ambient to 400C	Ambient to 400C
Pumping	$1.0 \times 10^{-5}$ to 1.0 P/P <sub>0</sub>	$1.0 \times 10^{-8}$ to 1.0 P/P <sub>0</sub>
None In Situ	12 available with AD12	12 available with AD12

Test Temperature		
Cryogen Dewar	Volume 3L, Test Hours > 90hrs	
Free Space Control	Servo motor control temperature zone with evaporation rate calculation	
Water bath	Thermostatic water bath -10°C to 80°C	

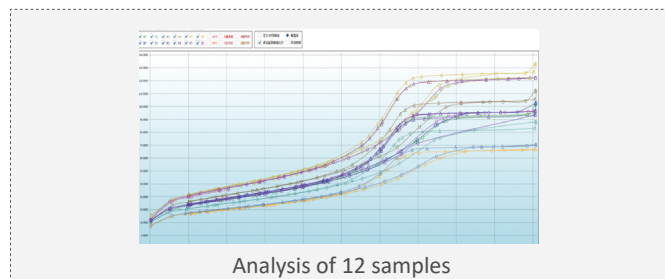
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## Technical Advantages

### ◆ High-throughput

3/6/9/12 analytic ports simultaneous analysis;



### ◆ Fully Automatic Analysis

Auto-switching between furnace and Dewar cup improve research test workflow;

Patent : Fully automatic physical adsorption analyzer with autoswitching position of heating furnace and thermostatic bath cup

Patent No.: ZL202020232044.8

### ◆ Zero Helium Pollution

In-situ vacuum heating degassing with molecular pump; Automatic switching to adsorption test; No need to remove sample cell;

### ◆ Programme Control Pressure and Temperature to Prevent Sample (Fine Powder Materials) from Elutriation

PCH will adjust the heating rate by the pressure change that originate from porous material desorption during the degassing .

Patent: Physical adsorption analyzer with programmable pressure control and anti-flying degassing system

Patent No.: ZL202020230457.2

### ◆ Thermostatic Gas Pipeline System

Internal gas pipeline system keep thermostatic at 40°C ; accuracy  $\pm 0.1^{\circ}\text{C}$  ;

### ◆ Seal-at-once Sample Tube Technology

Seal 6 tubes -at-once in one analytic station, no need to seal respectively;

Patent: A physical adsorption analyzer with a dense multi-sample tube co-sealed tube jacket

Patent No.: ZL201921078195.6

### ◆ Multiple Inlets for Adsorbate Gas

optional with 8 independent intake channels; It can support the adsorption of  $\text{CO}_2$ ,  $\text{O}_2$ , Ar, CO,  $\text{H}_2$ ,  $\text{CH}_4$ ,  $\text{C}_2\text{H}_6$  alkynes and other gases;

### ◆ Upward moving door

User friendly design and save the space in lab;

### ◆ Electric Turbine Liquid Nitrogen Pump

Move freely and safely add liquid nitrogen;

Patent: An electric liquid nitrogen pump with impeller structure (non-pneumatic)

Patent No.: ZL201720864873.6

### ◆ Telecommunication with Balance

Automatic input of weighing result from balance;

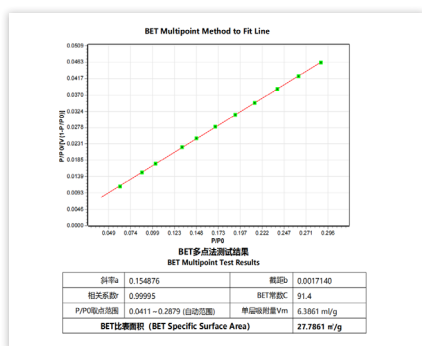
### ◆ High Efficiency

Auto-run based on program setting, efficiency improved;

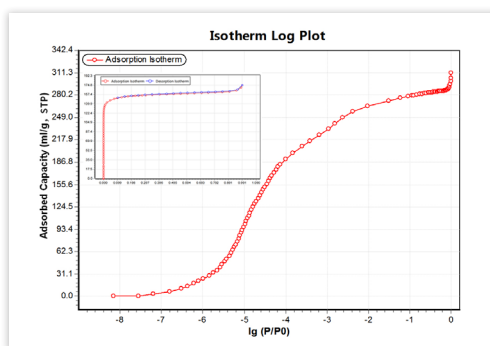
### ◆ High Stability

Intelligent software, safe and durable hardware.

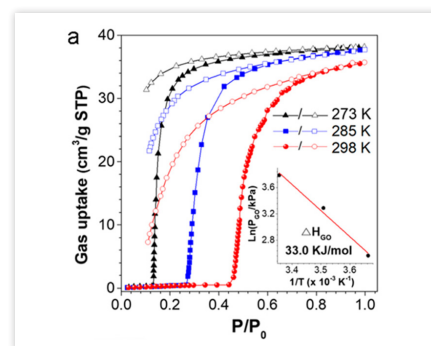
## Test Reports



Test Report (BET Multi-point Method)



Isotherm ( P/P0<E-9)



Gas Adsorption Isotherm Graph

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