

Lab Product of EXPEC Technology



EXPEC 3500 GC-MS



SUPEC 7000 ICP-MS



EXPEC 5210 LC-MS/MS



Automated metal elements analysis



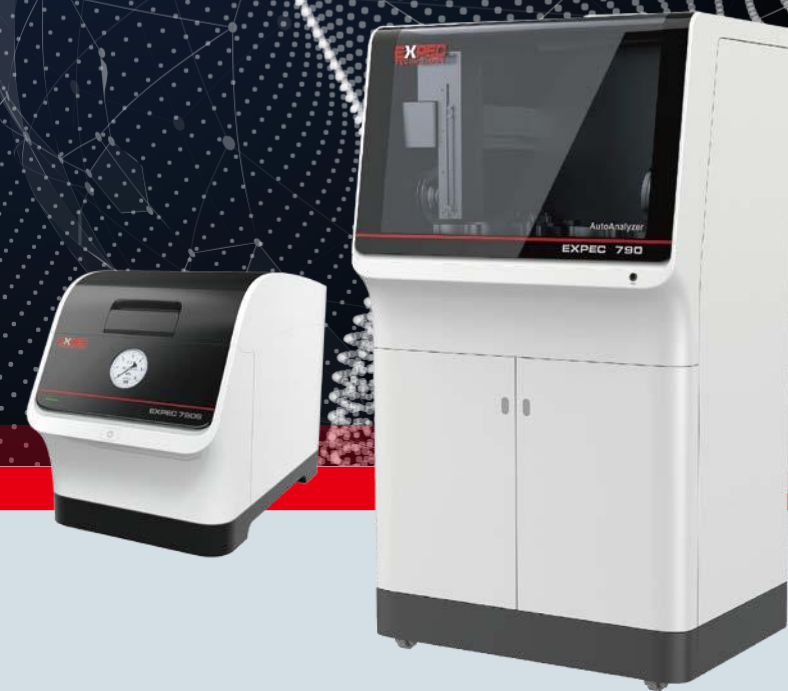
EXPEC 6500 CP-OES



EXPEC 1370/1330 NIR



UPEC 5000 Spotassium Permanganat Index



Automated Superwave Workstation EXPEC 790 series

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PV20180601V2P1

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The New generation of Automated Superwave Workstation

Superwave Workstation

Microwave digestion is widely used in the fields including biology, food, medicine, geology, metallurgy, coal, environmental monitoring. It has advantages of fast digestion speed, less reagent consumption, clean, energy saving and easy monitoring.

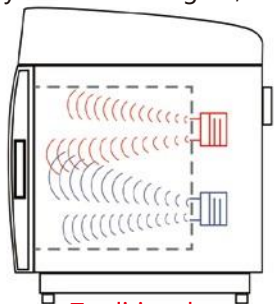
EXPEC 790 Series contain:

- The Superwave Workstation (single cavity) embraces the new generation of super microwave technology, unique microwave excitation and waveguide design, the addition of fully automated containment, high temperature and pressure, rapid water cooling and other technologies to enhance the efficiency of microwave digestion and easier of operation.
- The automated Superwave Workstation (Four cavity) based on the super microwave base for different application scenarios and added automated liquid filling, automated volume constant, automated sample transfer and other automation functions. At the same time, it supports the unique function of "one-touch" digestion-analysis instrument combination, which makes digestion and analysis more intelligent, standardized and safe.



Superwave Workstation
EXPEC 790S (Single cavity)

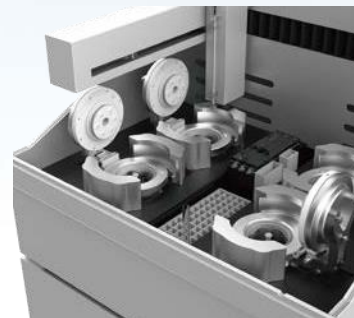
Automated Superwave Workstation
EXPEC 790F (Four cavity)



Traditional Microwave



Superwave Workstation



Automated Superwave Workstation

	Traditional Microwave	Super Microwave	Automatic Super Microwave Workstation
Single cavity	○	●	●
Pressurized cavity	○	●	●
Automatic sealing	○	●	●
Rapid water-cooling	○	●	●
Automatic liquid filling	○	○	●
Automatic volume fixing	○	○	●
Automatic transfer	○	○	●
Analyzer coupling	○	○	●

Funtions Not Available Available

Excellence Assistant of chemical Analysis

► Efficient Coupling Technology

— Patented technology

Direct coupling of microwave excitation and waveguide design which has been granted to improve microwave efficiency.

The microwave impedance is completely matched, and the microwave transmission efficiency is improved to the best

Barrel type symmetrical sample holder ensures the consistency of sample digestion.

► Temperature control technology

Ultra high digestion capacity; The temperature is up to 300 °C; Pressure up to 200Bar.

Direct temperature measurement, accurate temperature measurement and fast feedback.

PID self-tuning temperature control, real-time regulation, accurate control.

Program controlled step temperature control, flexible configuration of digestion method

► Pressurized Digestion Cavity

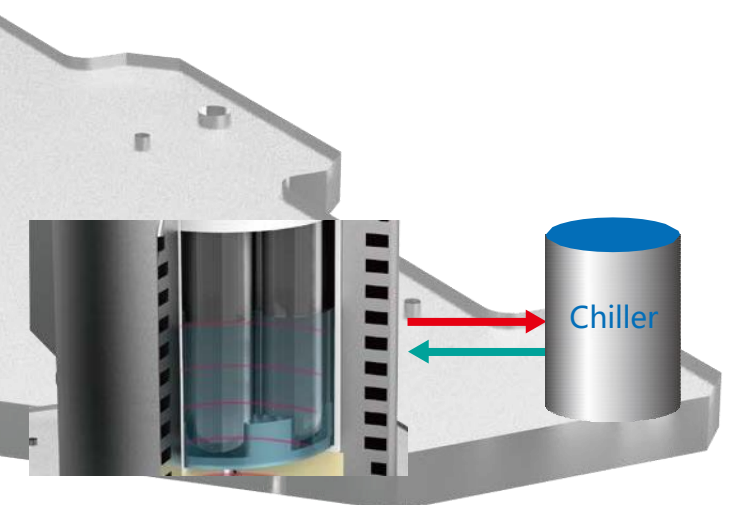
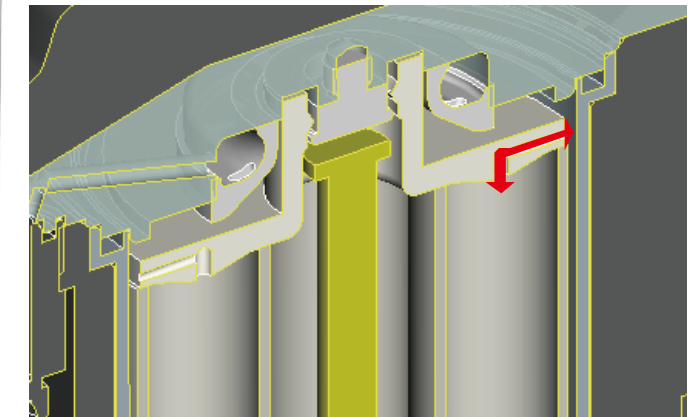
In the heating process, the bumping of sample can be effectively suppressed without cross-contaminate.

Pressure balance inside and outside the tube. The tube would not deform, which make the product last longer.

► Rapid cooling technology of cavity

In the process control, independent circulating water machine can quickly cool the chamber after the digestion.

Precision spiral water-cooling process, which can expand the contact area during cooling and minimize the cooling time.



Automated Superwave Workstation

Microwave digestion is endowed with new application scenarios

▶ Automated Digestion

Digestion methods can be loaded or created directly, and can be unattended during running.

Four digestion tanks can use different methods independently to improve digestion efficiency.

▶ Automated Reagents Filling

The injection pump is precisely controlled to ensure accuracy of filling.

The reagents are added through independent channels of the peristaltic pump set. The contact material is PTFE, which is resistant to strong acids (HNO₃, HCl, HF, HClO₄, etc.)



▶ Automatic Filtration

Automatic replenishment and filter detection are available, and we guarantee that no shedding occurs.

- Each sample is automatically replaced with a new filter to ensure no cross-contamination.



▶ Automated Transfer/Coupling

Autosampler mode: The sample is automatically transferred to the sample tray of the autosampler after constant and mixing. (Different sample tray are available)

Analytical instrument coupling mode: After fixing the volume, the machine will automatically blow to homogenize the mixture. The machine can support analytical instruments ICP-OES/MS coupling for automated analysis.



Autosampler Mode

Analytical Instrument Coupling mode



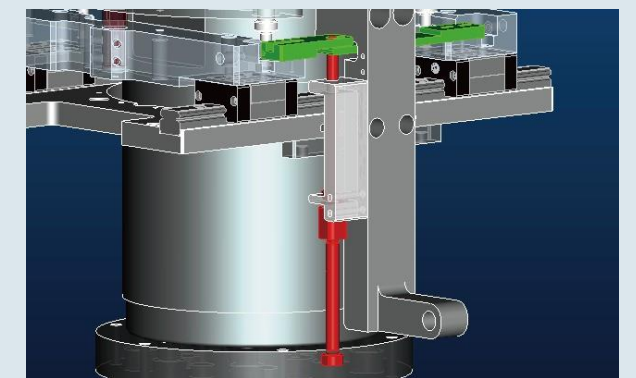
▶ Highest safety performance

The pressure-bearing parts of the tank are designed with duplex steel to ensure pressure resistance and reliability

This machine can automated cooling, release the pressure and open the lid to keep the operator away from the high pressure cavity.

The design of the device conforms to GB/T 26814 *Microwave Disintegration Device and the standard design specification for pressure vessels*

High-pressure piping with Teflon is adopted inside and external positive pressure atmosphere process to prevent acid corrosion



▶ Multi-specification available

Equipped with different sizes of rack including 6, 8, 18, 24 holes

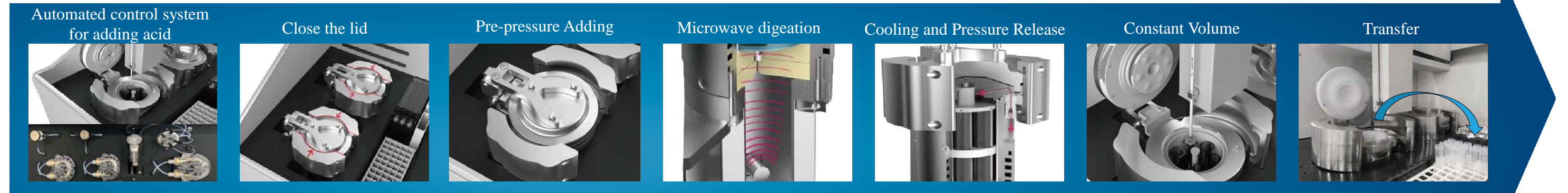
Different sizes of 6 to 50ml digestion tubes are available

Equipped with quartz, TFM material sample tube

Rack can quick loading and unloading



▶ Intelligent automation controls



▶ Smart Graphical Software



One-touch digestion operation

Single tank can be controlled independently

Temperature and pressure of each tank are displayed in real time separately

Samples are transferred after digestion and volume constant.

Mapping of sample positions becomes pictorial, which is easy to operate.

Convenient methods of parameter setting for the digestion

- Digestion methods can be imported easily.

▶ Typical Application

The fully automated microwave workstation is suitable for the digestion of the cosmetic, pharmaceutical, environmental, food, geological and mining and petrochemical samples. The pre-pressure and high-temperature heating functions fully meet the special requirements for complex samples. The functions help promote adequate digestion of samples which are hard to be digested such as plastics and fibers. Four digestion chambers can be used independently for different methods at the same time, making it more flexible to apply.



Soil Sample

(Take soil sample GSS-27 as an example.)

Take 0.10g sample, and add 6mL of nitric acid, 1.5mL of hydrochloric acid, 1mL of hydrofluoric acid in. Then set parameters including pre-pressure, temperature rising rate, as 4MPa, 30 °C/ min. Raise the temperature as high as 220 °C, the pressure 12MPa. Let it cool down to 40 °C and open the lid. The elemental recoveries measured by ICP-MS are between 87-113%

Cosmetic Sample

(Take the GBW (E) 090966 as an example)

Take 0.10g of sample, and add 5mL nitric acid, 1.5mL hydrogen peroxide in. Then set parameters including pre-pressure as 4MPa and the temperature increase rate as 20°C/min. Raise the temperature to as high as 200°C, pressure as 10MPa. Let it cool down to 40°C, open the lid after digestion. The elemental recoveries measured by ICP-MS are between 91-108%.

Pharmaceuticals Sample

(Take Huangqi sample GBW10028 (GSB-19) as an example)

Take 0.50g sample, and add 5mL of nitric acid and 1.5mL of hydrogen peroxide in. Then set parameters including pre-pressure with 4MPa, the temperature rising rate with 20°C/min. Raise the temperature as high as 190 °C, the pressure 10MPa. After the temperature cools down to 40 °C. The elemental recoveries measured by ICP-MS are between 84-116% by ICP-MS.

Geological and Mining Sample

(Take chromite sample GCr1-4 as example)

Take 0.10g sample, and add 4.5mL nitric acid, 1.5mL hydrogen peroxide and 1mL hydrofluoric acid. Then set parameters pre-pressure, temperature rising rate as 4MPa, 25°C/min respectively. Raise the temperature as high as 200°C, the pressure 12MPa. After the temperature cools down to 40 °C, open the lid for digestion. The elemental recoveries measured by ICP-MS are between 83-117%.