



# MWave-5000

## Microwave Chemistry Reaction Workstation





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MWave-5000 multifunctional microwave chemistry workstation, integrating microwave synthesis, distillation, concentration, pressurized or decompressive reaction and low temperature microwave reaction together, is a multipurpose workstation for microwave chemistry researches. This product inherits technologies of former MAS microwave synthesis system and combines advanced microwave chemistry tools developed by world-leading industrial design companies. MWave-5000 has sturdy and durable mechanical structure and intelligent integrated system for data monitoring and software control. It is capable of working with external vacuum pump, low-temperature circulation cooling system and other commonly-used auxiliary equipment for chemical reactions; and therefore, it is a fully functional, convenient and modern chemical experimental instrument.

## Innovations



- It has three reaction conditions: normal pressure, under pressure, and high pressure.
- This product has pressurized reaction vessels with different reaction temperatures and pressures simultaneously. The maximum temperature is 200°C and the maximum pressure is 10MPa.
- Under pressured mode, the intelligent safety pressure relief system can prevent the reaction vessel from bursting and provide an alarm and auto pressure relief.
- The high resolution color screen with two LED displays can give the reaction parameters and curves in real time.
- It has a strong magnetic stirring system and can realize the reflux and stirring simultaneously.
- The stepped motor it equipped can control the reflux and stirring speed.
- Its low temperature reaction cryotrap system (optional) can be used for the low temperature experiment and microwave non-thermal effect theory study.





pressure and decompression.

different volumes, and it can get real-time reaction volume of pressurized vessel is 1L.

control system can realize real-time overpressure

s, can show the experimental process visually and

both closed and open vessel stirring.

condensation lifting device precisely and conveniently.

may satisfy the requirement for low temperature

udy.

## Vacuum distillation and concentration

- The liquid solvent will boil under low temperature by means of an vacuum, which can accelerate the evaporation of solvent and then get high-purity materials. However, some materials may be influenced by high temperature, thus preventing components from being decomposed, lost or denatured; and at the same time, it can speed up the heating and therefore save considerable amount of energy.

## Perfect "active" & "passive" safety protections

### Active safety protections:

- The proven platinum resistance temperature sensing system and the advanced piezoelectric crystal pressure control system can ensure the heating process proceed as per the preset procedures.
- The reliable design of control system and IR non-contacting temperature monitoring system ensure the reaction vessel working under controllable temperature and pressure, eliminating the possibility of damages caused by over temperature and pressure.
- The invincible outer vessel made of high tensile composite fibers eliminates all potential lateral blast and is much better than modified PEEK materials in the market.
- The vessel frame constructed by high strength metal draw bars can withstand the impact of vertical pressure inside the reaction vessel, thus ensuring a smooth heating process.

### Passive safety protections:

- The bifunctional constant pressure safety valve can effectively ensure the chemical reaction under constant pressure and eliminate the possibility of breakdown caused by over pressure and damages to the equipment and personnel.



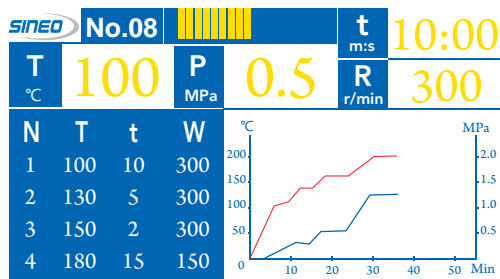
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an external vacuum pump. It may reagent and concentrate. Some preventing the thermo-sensitive same time, the microwave may energy.

## Convenient Software Control Function

- Connection with computer's Windows based software through USB port.



## Application areas

- Synthesis of nano materials, metal-organic compounds and ionic liquids, etc.
- Synthetizing drugs and chemicals, assisting the organic synthesis, and developing pharmaceutical intermediates.
- Extracting active ingredients of plants and degradating organic pollutants.



## Technical parameters

<b>Power supply:</b>	220VAC 50/60Hz
<b>Microwave frequency:</b>	2450±50Hz
<b>Maximum power:</b>	1500W
<b>Maximum microwave output power:</b>	1000W, 0-1000W auto non-pulse continuous frequency conversion control (Inverter), the minimum power per 25W can be set.
<b>Microwave chamber:</b>	32L stainless steel chamber, PP protective lining
<b>Pressure control system:</b>	Piezoelectric crystal sensing system, pressure control range: 0-5MPa, precision: ±0.01MPa
<b>Temperature control system:</b>	Platinum resistance temperature sensing system, measuring range: 0-250°C, precision: ±1°C Infrared temperature sensing system, measuring range: 0-300°C, precision: ±1°C
<b>Vessel pressure monitoring system:</b>	Closed chemical reaction vessel, pressure range: 0-5MPa, working pressure range: 0-2MPa Bifunctional constant pressure control valve, with constant pressure of 2.0MPa
<b>Exhaust system of furnace chamber:</b>	Corrosion-resistant motor, with air rate of 5.8m <sup>3</sup> /min
<b>Physical dimensions of the complete machine:</b>	500 × 480 × 600mm (width × depth × height)
<b>Net weight of the complete machine:</b>	40Kg



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## Technical parameters of glassware for reaction

<b>Volume of glass flask:</b>	50ml, 100mL, 250mL, 500mL
<b>Glass accessories:</b>	Reflux condensing pipe, balance dispenser, oil-water separator and T connector, etc.
<b>Negative pressure bearing range of glass flask:</b>	0~-0.01MPa

## Technical parameters of closed high pressure reaction vessel

<b>Reaction vessel frame:</b>	High tensile alloy material, pressure bearing range: 0-30MPa.
<b>Material of reaction outer vessel:</b>	High strength anti-bursting composite fibers
<b>Volume of reaction vessel:</b>	300mL, 500mL, 1000mL.
<b>Material of reaction inner vessel:</b>	TFM material
<b>Maximum sustainable pressure:</b>	15MPa
<b>Maximum working pressure:</b>	2MPa
<b>Maximum sustainable temperature:</b>	280°C
<b>Maximum working temperature:</b>	220°C
<b>Typical applications:</b>	Pharmaceutical synthesis, preparation of inorganic materials and extraction of active plant ingredients, etc.

## Low temperature working environment and optional accessories

Proper jacketed system for low-temperature reaction can be used according to the actual experimental requirements.

The low-temperature operation can be conducted together with the application of low-temperature cooling circulator.

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