

Microwave Ultrasonic Ultraviolet Synthesis and Extraction System

Introduction:

Microwave chemistry is an emerging and cutting-edge interdisciplinary discipline that has found extensive practical applications. The rate of organic reactions under microwave irradiation can be several to several thousand times faster than that of traditional heating methods, and it boasts the merits of convenient operation, high yield, and ease of product purification. It employs a PLC color touchscreen, offering straightforward and convenient operation. Information such as reaction temperature, microwave power, and reaction time can be displayed in real time. The chemical reaction process is visually transparent, and reaction parameters can be adjusted at any moment.



Application:

Organic synthetic chemistry, inorganic chemical synthesis, pharmaceutical chemistry, food science, quarantine and epidemic prevention, military chemistry, molecular biology, analytical chemistry, petrochemical industry, materials science, biomedicine, food, solvent extraction and solvent-free extraction of natural products and minerals, concentration, and drying, as well as other physical processes.

Features:

* High-precision Temperature Measurement Approach

Either the insertion-type contact thermocouple for temperature measurement or the advanced infrared temperature sensor for infrared temperature sensing is utilized. The control accuracy stands at $\pm 1^{\circ}\text{C}$, and the display accuracy is $\pm 1^{\circ}\text{C}$. It can monitor and control the reaction temperature in real time and communicate with the PLC to precisely control the reaction process as per the preset procedures.

* Stirring Mode

Magnetic stirring mode; the stirring speed is independently and continuously adjustable.

* Multiple Interlock Protections

Automatic power-off protection is initiated when there is abnormal temperature, sensor failure, or the furnace door is opened. The industrial-grade robust furnace cavity is coated with multiple layers of chemical-resistant coatings. It is not only strong and impact-resistant but also takes into account the efficient professional microwave-focused heating and has an exceptionally long service life. The pull-down buffered and safe explosion-proof furnace door possesses a locking self-check function and interlock protection to prevent microwave leakage and can also withstand unexpected explosions. The microwave leakage of the entire machine is significantly lower than the national standard.

* Diversified Configurable Reaction Conditions

Reaction vessels can be configured based on experimental requirements, with a volume ranging from 20 to 1000 ml. Beakers, flasks, and three-necked flasks are all applicable. Gas inlets can be created and devices such as condensation reflux, dropping, fluid replenishment, and water separation can be installed to fulfill the requirements of chemical reactions under complex conditions.

Technical Parameters:

Model	BMS-U16E
Microwave System	Microwave Frequency: 2450 MHz (Industrial-Grade Microwave) Microwave Power: 1000 W (High-Frequency Closed-Loop Feedback PID) Microwave Ratio: Non-pulsed microwave linear output, with a control accuracy of $\pm 1\text{ W}$ Adjustment Mode: Non-pulsed and continuously adjustable Microwave Simulation: 3D Stereoscopic Simulation of the Microwave Field Microwave Self-Tuning: Capable of automatically adjusting the process proportion Patented direct-coupled microwave excitation and waveguide design for enhancing microwave efficiency Microwave Impedance Adaptive Matching to Improve Microwave Transmission Efficiency
Microwave Oven Cavity	316L industrial-grade stainless steel, integrally formed, without any welding marks, and with 6 layers of PFA anti-corrosion coating
Temperature Control System	Temperature range: $0\sim 300^{\circ}\text{C}$ Temperature control accuracy: $\pm 1^{\circ}\text{C}$ Temperature measurement method: Contact temperature measurement with PT100 thermocouple
Ultrasonic System	Ultrasonic Power/Frequency: 50W/40KHz Ultrasonic Frequency: 25KHz. The ultrasonic probe can either be inserted into or remain outside the sample, and exert its effect on the sample through the cavitation effect or air transmission.
Ultraviolet Module	Can be matched with LED ultraviolet light source. Power: $0\sim 100\text{W}$, Adjustable Main wavelength: 365nm
Stirring System	Stirring Mode: Magnetic Stirring Stirring Speed: $0\sim 5\text{V}$, infinitely and continuously adjustable
Air-Cooling System	Once the synthesis is completed, it automatically initiates turbine air-cooling. In conjunction with a high-power centrifugal fan, a vigorous wind convection is established within the cavity, enabling rapid cooling.
Original Wavefront Distribution System	Ainikesi*1
Matched Molded Feed Waveguide	Ainikesi*1
Precise Temperature Processing System	Ainikesi*1
Coupled Inner Chamber	Austenitic Inner Chamber
Control System	Ainikesi-pro System Display Method: Touchscreen and Embedded Human-Machine Interaction System
Functional Configuration	Coud-based automatic storage, real-time displays of power, current and temperature with control, real-time curves, USB cloud data export. Equipped with a 485 converter, enables CP connection. Offers 60 sets of process storage, each with 5 sections. Includes old-new process replacement mode and multiple working modes like manual, automatic and constant temperature. Automatically stops in case of instrument failure.
Protection Functions	Over-temperature alarm, over-current alarm, component self-check, automatic power-off protection in case of abnormal temperature or abnormal sensor.
Standard Accessories	1000ml high-borosilicate glass three-neck flask, Flask base, Condensation reflux apparatus
Power Supply	AC220V 50/60Hz(Standard);110V, 50/60Hz(Optional)
Consumption	2100W
Package Size(W*D*H)	700*500*700mm
Gross Weight	50kg