

TOPLAB INDIA

Microwave Synthesizer

Accurate Synthesis

Modular Design

User Friendly



TOP-205

Mainly Applied to Pharmaceutical,
Chemistry and Biotechnology



Are You Upset with The Following Problems?





TOPLAB Microwave Synthesizer Improving Efficiency Increasing Titration accuracy

Description:

TOPLAB INDIA'S Microwave Synthesizer integrates Model: TOP-205 Microwave Synthesizer with 316 grade SS inner body and I.R. Temperature sensor. It increases efficiency of microwave synthesis remarkably by assuring better reproducibility and accuracy of reactions. Microcomputer control interface makes operation simple and easier. Graphic user interface provides you easier operating environment. High precisely automatic samples introducing system aligns accurately. It plays a scientific and practical role in experiments that require microwave-assisted catalytic reaction conditions, especially in those who require a smaller microwave power and who wish to maintain continuous microwave radiation.

Working Principle

Microwave is a kind of high-frequency electromagnetic wave which does not generate heat. Because the microwave in nature is dispersed and not focused, it cannot be used as an energy source. While using magnetron can turn electric energy to microwave.

PRODUCT FEATURES

Features :

- Single-mode microwave technology in real sense: in the synthesizer, microwave emitted by the magnetron will get into the microwave resonant cavity through a single mode to generate a stable microwave field of high density, and extremely even power and frequency in the cavity, and thus ensure heating evenness and experiment repetition.
- Precise PID control technology: to adjust itself 10 power levels. The microwave reactor obtain 10% -100% power through different on-off time (duty cycle) to accurately control and adjust the temperature in the reaction process, and enable the chemical reaction to proceed .
- Precisely temperature and pressure control: to measure temperature with an infrared sensor or insertion I.R.sensor. Under airtight condition: room temperature to 250°C. Under atmospheric pressure: room temperature to 300°C. Non-touching pressure test and control system: 0 to 2MPa.
- Quick cooling: specially-designed quick cooling apparatus of compressed air can be switched on or off as per the specific demand of the reaction program, which aims to regulate cooling rate through wind pressure adjustment.
- Atmospheric pressure or high pressure airtight reaction system: its modularized design makes it easier for switchover between the airtight system and the opening system. The maximum volume of the airtight reaction vessel as well as the atmospheric pressure reaction vessel is up to 500mL.
- Selecting the same power and working time, you can get the same reaction conditions. The experiment has satisfactory repeatability.
- Applicable to install a reflux apparatus, while ensuring no leakage of microwave's ended wave guide.

PRODUCT SPECIFICATION

- Magnetron system with rotating diffuser for homogeneous microwave distribution in the cavity.
- Magnetron protected from reflected microwave power.
- Stirrer - Magnetic Stirrer with selectable speeds (2200 RPM) adjustable during running.
- Microwave Choke System with Triple Safety Interlocks.
- Heat Resistant Electric Door.
- Capacity- 20 Liters.
- Microwave output: 0 - 750W (Adjustable Size 2450 MHz \pm 50MHz) .
Microwave Power Consumption: 1100 W
- Maximum Input current: 7.8 A
- Working temperature: 0-300°C.
- Working Pressure: 0-5MPa.
- Cavity illumination and Inert gas facility.
- Temperature Sensor; Temperature Controller.
- Facility for operator to observe the reaction condition of the vessel via transparent door glass.
- Exhaust located in the side of the cavity, separate from electronics to prevent corrosion.
- Direct temperature monitoring and control in a reference vessel.
- Contact-less temperature and direct pressure monitoring and control in a reference vessel.
- Microwave induced Organic Reaction Enhancement (MORE) has emerged as a simple, clean, fast, economic, environmental and non-traditional method for the synthesis of a large number of organic molecules as well as the Synthesis of drugs, intermediates and chemicals.
- Power Requirement (Operating Voltage) : 220V/50-60Hz.

THE BENEFITS OF MICROWAVE SYNTHESIS

Microwave enhanced chemistry represents a fundamental step forward in the capabilities of synthetic chemists. Since its introduction, it has allowed to run reactions faster than ever before and with higher yields, and to scale-up experiments reliably from milligrams to much larger quantities, without the need of reaction optimization. The total number of microwave synthesis scientific publications has grown from very few in 1995 to several thousand in 2007! Today, the use of dedicated microwave instrumentations is becoming popular in many undergraduate laboratories, providing students with an in-depth view on the new advancements of the modern synthesis.

Microwave generated by the magnetron in this device can penetrate medium via oscillation frequency of DPS 2450MHz. When the medium has a suitable dielectric constant and dielectric dissipation, it will vibrate at high frequency speed in the microwave field. Thus energy is accumulated in the medium. In terms of chemical reaction, it can produce thermal effects and non-thermal effects at the same time.

Microwave can be absorbed by polar medium and metal powder. It can penetrate the non-polar materials such as glass, ceramics, PTFE material etc. But it will be reflected on the metal surface. Typically, the output power of the magnetron is basically the same. Adjusting power can be achieved by changing the current on / off time (duty cycle) . Microcomputer control, easier and more accurate operation. The repeated chemical reaction condition can be obtained if you choose the same working state.

BEAM REFLECTOR SYSTEM

TOP-205 comes with the perfect distribution of microwaves with a special Microwave Beam Reflector device. It is design to rotate the flow of microwaves within the system, which gives uniform and all round heating. Beam reflector also makes the waves reach every corner of the system, enabling optimum process place utilization.



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