

Ultrasonic biochemical reaction system

The early application of ultrasonic dispersers should be to pulverize the cell wall with ultrasound to release its contents. Low-intensity ultrasound can promote the biochemical reaction process. For example, irradiating the liquid nutrient base with ultrasound can increase the growth rate of algae cells, thereby increasing the amount of protein produced by these cells by 1-5 times.

Ultrasonic nanomaterial dispersing machines are widely used by chemical manufacturers for the dispersion and homogenization of nanoparticle materials, as well as the dispersion of inks, graphene, emulsification of dyes, emulsification of coating liquids, emulsification of foods such as milk additives, etc. Uniform, delicate, full and thorough. Especially in the paint pigment production industry, it can better improve the quality of emulsion products, improve the grade of products, and help enterprises to reach a higher level.

The ultrasonic disperser is composed of three parts: an ultrasonic vibration component, an ultrasonic dedicated driving power source, and a reaction kettle. The ultrasonic vibration component mainly includes an ultrasonic transducer, an ultrasonic horn, and a tool head (emission head) for generating ultrasonic vibration and emitting the vibration energy into the liquid. The transducer converts the input electrical energy into mechanical energy.

Its manifestation is that the ultrasonic transducer moves back and forth in the longitudinal direction, and the amplitude is generally several micrometers. Such amplitude power density is insufficient and cannot be directly used. The horn is designed to amplify the amplitude, isolate the reaction solution and the transducer, and also serves to fix the entire ultrasonic vibration system. The tool head is connected to the horn, and the horn transmits ultrasonic energy vibration to the tool head, and the ultrasonic energy is emitted from the tool head into the chemical reaction liquid.

2 Product application range

Ultrasonic dispersion has a wide range of applications in many areas: food, cosmetics, pharmaceuticals, chemicals, coatings, graphene, and more. The application of ultrasonic waves in food dispersion can be roughly divided into three types: liquid-liquid dispersion (emulsion), solid-liquid dispersion (suspension), and gas-liquid dispersion.

Solid-liquid dispersion (suspension): such as dispersion of a powder emulsion.

Gas-liquid dispersion: For example, the production of carbonated beverage water can be improved by CO₂ absorption to improve stability.

Liquid-liquid dispersion (emulsion): if the ghee is emulsified, it is made into high-grade lactose; when the sauce is produced, the raw material is dispersed.

Ultrasonic dispersion can also be used for the preparation of nanomaterials; for food sample detection and analysis, such as the extraction and enrichment of trace hope in milk samples by ultrasonic dispersion liquid phase microextraction. It can also be used for the dispersion of graphene in the preparation of graphene.

3 the ultrasonic disperser Composition - function:

1. Ultrasonic generation source: convert 50-60Hz mains into high-power high-frequency power supply to the transducer.
2. Ultrasonic energy converter: converts high frequency electrical energy into mechanical vibration energy.
3. Ultrasonic horn: The transducer and the tool head are connected and fixed, and the amplitude of the transducer is amplified and transmitted to the tool head.
4. Ultrasonic radiation rod: It transmits mechanical energy and pressure to the work, and also has the function of amplitude amplification.
5. Connecting bolts: Connect the above components tightly.

4 Technical Parmeters

Model	Resonance frequency (KHz)	Power (W)	Working way	Amplitude	Processing capacity	Horn material	Horn size
GPSD-20500-	20±1.0	500	Continuous/ interval working	15-50um adjustable	20-5000ML/time	Tantanium	Ø15*130mm
GPSD-201000	20±1.0	1000	Continuous/ interval working	15-45um adjustable	50L	Tantanium	Ø45*430mm
GPSD-202000-	20±1.0	2000	Continuous/ interval working	15-45um adjustable	80L	Tantanium	Ø45*430mm
GPSD-202000	20±1.0	3000w	Continuous/ interval working	15-55um adjustable	120L	Tantanium	Ø50*460mm
Can be customized according to customer application requirements							
Application :	Emulsification, stirring, homogenization, pulverization, extraction, dispersion, chemical acceleration, aging, purification, algae removal						

5 Photos for references



