S220/S220x/S220R Focused-ultrasonicator

High-value Samples Demand Controlled Preparation Prior to Committing to High Cost Analysis

The Covaris S220, S220x (high-power), and S220R (robotic-capable) high-performance Focused-ultrasonicators represent the continuing evolution of the S-series. S220 instruments deliver industry leading sample processing capability directly to the benchtop. The S-series is a workstation-based instrument capable of extremely rapid and complete homogenization, tissue disruption, and sample extraction. As part of the Covaris family of instruments, S220 Focused-ultrasonicators provide single-tube sample preparation with scalable acoustic energy, capable of processing a wide range of sample types and volumes. All instrument versions can be operated in stand-alone mode or can be easily integrated as part of an automated laboratory system. In any configuration, the S220 instruments provide world-class Adaptive Focused Acoustics® (AFA®) sample preparation technology to our customers.

Feature	Benefit
Isothermal processing	No heat damage, higher recovery
Non-contact, in closed vessel	No cross contamination, no clean-up, and no aerosol
Precisely controlled and adjustable energy delivery	Standardized processes, highly reproducible
Automation ready	Integrates into customers' sample processing workflow
Broad sample volume range	One instrument for multiple applications

Supported Applications:

- Tissue disruption and homogenization
- Extraction of metabolic and proteomic profiling
- DNA fragmentation
- RNA extraction
- Nanoparticle formation - micronization
- Chromatin fragmentation
- Cell, spore, and organelle lysis
- Compound dissolution & formulation
- ADME/Tox extractions

Adaptive Focused Acoustics (AFA)

Our highly efficient and reproducible up-front sample preparation, utilizing the proprietary Covaris Adaptive Focused Acoustic (AFA) technology, eliminates operator induced variation, improves recoveries, increases efficiency, and provides standardized results.

The AFA process works by transmitting focused acoustic energy wave packets from a dish-shaped transducer to the sample. The acoustic energy waves converge on the target sample in a small-localized area. When operated at low intensity levels, the computer controlled focused waves create a gentle mixing environment, suitable for accelerating any diffusion-dependent applications, such as compound dissolution, mass action binding events, and enzyme digestion. When operated at higher intensity levels, the instrument can create a tunable shock wave environment with subsequent shear jet forces which has been demonstrated to be ideal for tissue disruption and DNA fragmentation applications.

Sample Preparation using the S-series

The S-series effectively enables a broad range of sample preparation applications from mixing and dissolution through disruption and extraction.

- ***Non-contact Mixing***: Reaction volumes can be mixed and pellets can be resuspended in milliseconds. Because AFA is a non-contact process using closed vessels, sample integrity is maintained throughout the operation, with no risk of contamination or evaporation. The S-series may also be used to rapidly thaw frozen samples (e.g., thaw and mix DMSO in seconds).
- ***Dissolution***: Effective compound screening requires complete dissolution of sample. Without thorough sample dissolution, the downstream screening process can be compromised and can potentially miss the molecule of interest. The Covaris S-series with AFA, is an effective tool for completely dissolving difficult solutes (such as those lyophilized in DMSO) in small volumes.
- ***Disruption***: Provides highly focused and tunable acoustic energy for tissue disruption applications. The ability to control and focus energy is key for effective tissue disruption, and the S-series provides a level of performance unmatched by other available sample processing technologies.
- ***Extraction***: Once a cell or tissue matrix is disrupted, it is often very difficult to effectively and reproducibly extract desired target molecules. With AFA technology, both the time and temperature are tightly controlled during the extraction process. Sample temperature is maintained isothermal throughout the reflux process. As a result, recoveries are improved and samples are processed more rapidly.

Product Specifications

Models	S220, S220x, and S220R
Treatment Power	100 Watts Average Power (S220)
Treatment System	Bench-top; high intensity acoustic transducer, temperature monitoring device, circulation pump, water bath with safety enclosure
Dimensions	20 cm (width), 53 cm (depth), and 33 cm (height)
Weight	Approximately 26 lbs (12 Kg)
AFA-energetics® Delivery Mode	Indexing
Power Requirements	100 to 240 VAC 500 VA, 50 to 60Hz
Regulatory Labeling	CE, ETL Mark (for Product Safety), WEEE
Operating System	Microsoft Windows 7 or 10 with SonoLab 7
Operating Environment	Ambient temperature: 19 to 25 °C (66 to 77° F) Relative humidity: 30% to 70%
Water Bath and Temperature Alarms	Distilled or deionized water only Can be set at +5.0° C to +40.0° C
Chiller	Chiller re-circulating system - not included but may be purchased from Covaris. Connect with the 3/8 inch I.D. hoses and quick connect fittings supplied.
Sample Volumes (dependent on protocol)	NGS from 15 to 500 µL
Recommended Batch Size	Single tube processing
Covaris-qualified Consumables	• microTUBE • milliTUBE • miniTUBE • Large volume consumables • Flow cells

Ordering Information

Part Number	Product Name	Description
500217	S220 Focused-ultrasonicator	The S220 Focused-ultrasonicator is a versatile, high power system engineered for pre-analytical sample processing using Covaris' patented Adaptive Focused Acoustics® (AFA®). Utilizing a spherical acoustic transducer, specifically designed acoustical cuvettes and advanced electronics, AFA delivers controlled energy precisely and accurately to sample volumes from 15 µl to 18 ml.

The S220 Focused-ultrasonicator is available in higher power (S220x) and robotic-capable (S220R) configurations. For additional instrument information visit www.covaris.com and for pricing and additional product details please email customerservice@covaris.com.

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