

M220™ Focused-ultrasonicator™

Designed for

- DNA shearing for Next-Gen Sequencing
- Chromatin shearing for ChIP
- Biomarkers Extraction

Saves space, time, and money

- Ultra-compact design / Integrated chiller
- Start up and ready to go in less than 2 minutes

Adaptive Focused Acoustics™ (AFA)

The M220 Focused-ultrasonicator is based on the Covaris AFA technology. Acoustic energy is transmitted at very short wavelengths (~3 mm) enabling the energy to be focused into your sample with a precise control of the hydrodynamic shearing forces. The process is isothermal, non contact, and quiet. Energy delivered is highly tunable, ranging from very gentle mixing to high-power tissue disruption, thus allowing a wide range of applications and making the M220 uniquely versatile.

Covaris AFA technology coupled with integrated temperature control eliminates operator induced variations, improves recoveries, and helps you achieve sensitive, standardized, and reproducible results.

DNA Shearing for Next-Gen Sequencing

The M220 generates tight DNA fragment distributions, tunable from 150 to 5,000 bp. DNA fragmentation is highly reproducible, isothermal and fast. Covaris focused-ultrasonicators are recommended by all the major sequencing platform providers, and used by the leading Genome Centers worldwide, such as The Broad Institute, Wellcome Trust Sanger Institute, and BGI.

Chromatin Shearing for ChIP

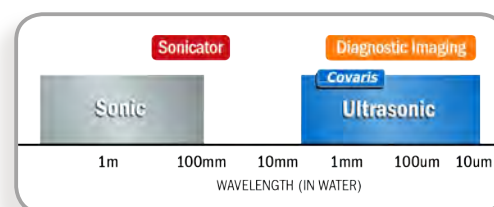
The M220 is ideally suited to provide the highest quality sheared chromatin. Isothermal and controllable shearing with AFA technology preserves precious epitopes, protects from shearing biases, and provides highly reproducible results. Used in conjunction with Covaris truChIP kits, it offers a ready-to-use solution for Chromatin shearing.

Biomarker Extraction

The t-PREP™ Biomarker Extraction systems and M220 are the perfect benchtop solution for extracting labile molecules from small (< 10 mg) tissue samples. The entire homogenization process, from point-of-collection flash freezing to biochemical extraction, is integrated into a single device, increasing throughput, and improving extraction efficiency.



Covaris Focused-ultrasonicators are a world away from bath and probe sonicators



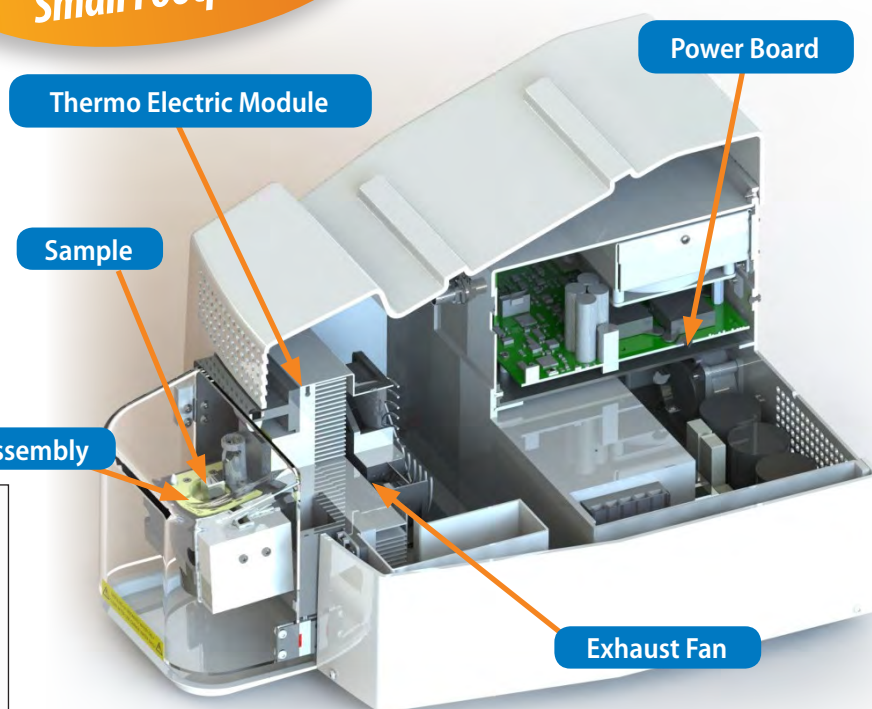
Focused-ultrasonic means that energy is delivered to the sample, and only to the sample. Typical focal zone (i.e., highest energy density) is smaller than 3mm.

With other sonicator technologies, energy is absorbed into the vessel (generating heat), the water bath (generating heat) or randomly reflected causing hot and cold zones. The result is tremendous loss of energy, heat production and poor control of the energy delivered to the sample.

Advanced Design Small Footprint

Compact

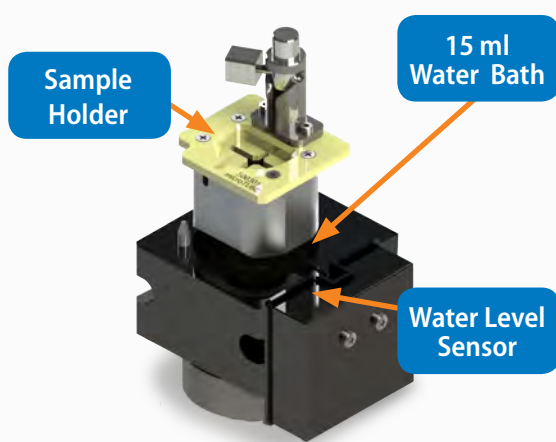
The M220 components are designed to produce a small footprint. The focused-acoustic block has been optimized to reduce its size, and the thermoelectric temperature controller is fully integrated. The notebook computer operating the SonoLab software is located on top of the instrument. As M220 operates in the ultrasonic range, very little sound is audible to the operator and so it can be comfortably used anywhere in the lab.



Focused-ultrasonicator Assembly

Each focused-ultrasonicator is calibrated by Covaris, assuring uniform performance across all instruments and allowing standardized protocols.

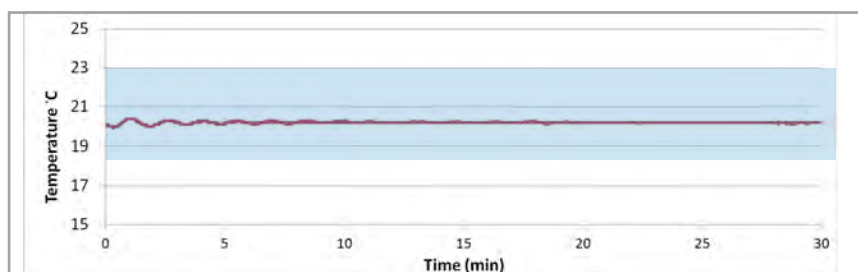
Only 15ml of AFA-grade Water is needed to couple acoustic energy to the sample. An integrated Water Level Sensor detects when water needs to be added.



Highly Accurate Temperature Control

The SonoLab software utilizes an optimized algorithm to drive the Peltier-effect thermoelectric controller which provides precise control of the temperature regardless of the acoustic treatment.

The temperature stays within $\pm 1^\circ\text{C}$ of the set-point during a typical 10 W average power treatment, thus allowing true isothermal processing of your samples.



Key Features

- Operates at 500 kHz (Ultrasonic Range)
- Integrated Temperature Control Module
- Truly Isothermal Process
- Non-contact, closed vessel
- Covaris Made
- Small Footprint
- Easy Setup

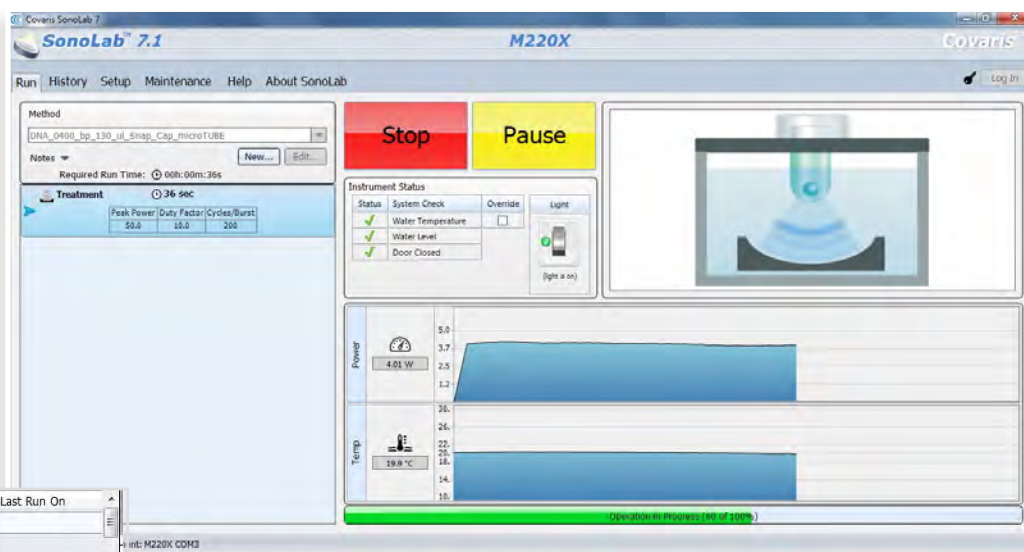
Benefits

- ✓ No discomfort to operators
- ✓ No external chiller - No ice needed
- ✓ No fragmentation bias, high sample recovery
- ✓ No cross contamination, no aerosols, no clean up
- ✓ Robust and reliable design
- ✓ Can fit in any lab
- ✓ Instrument ready to use in less than 2 minutes

Real-Time Monitoring

SonoLab software gives a real time display of the parameters relevant to your acoustic treatment such as Bath Temperature, Average Power Instrument Status, and Elapsed/ Remaining Time.

Name	Folder	Last Run On
DNA_3000_bp_200_ul_Blue_miniTUBE	M220 DNA Shearing	
DNA_1500_bp_130_ul_Snap_Cap_microTU...	M220 DNA Shearing	
DNA_2000_bp_200_ul_Clear_miniTUBE	M220 DNA Shearing	
DNA_0800_bp_130_ul_Snap_Cap_microTU...	M220 DNA Shearing	
DNA_1000_bp_130_ul_Snap_Cap_microTU...	M220 DNA Shearing	
DNA_0500_bp_130_ul_Snap_Cap_microTU...	M220 DNA Shearing	
DNA_0800_bp_050_ul_Screw_Cap_microT...	M220 DNA Shearing	
DNA_0400_bp_130_ul_Snap_Cap_microTU...	M220 DNA Shearing	
DNA_0500_bp_050_ul_Screw_Cap_microT...	M220 DNA Shearing	
DNA_0300_bp_130_ul_Snap_Cap_microTU...	M220 DNA Shearing	
DNA_0400_bp_050_ul_Screw_Cap_microT...	M220 DNA Shearing	
DNA_0200_bp_130_ul_Snap_Cap_microTU...	M220 DNA Shearing	
DNA_0300_bp_050_ul_Screw_Cap_microT...	M220 DNA Shearing	
DNA_0150_bp_130_ul_Snap_Cap_microTU...	M220 DNA Shearing	



Preloaded Protocols

SonoLab comes with preloaded protocols for common applications. It includes DNA shearing protocols for 50 and 130 µl sample and for fragment size distribution ranging from 100 to 5,000 bp as well as Chromatin shearing protocols. Updated protocols can be downloaded from the Covaris Website.

Integrated Quality Control

SonoLab comes with a History Tab. For every sample processed, Date and Time, User Name, AFA Settings, actual Power delivered, Bath Temperature, and customizable Sample Notes are recorded. Thus troubleshooting and sample tracking are easy.

Key Features

- Powerful Users Control Options
- Preloaded Protocols
- Standardized Protocols
- History Tab
- Real Time Temperature and Power Display

Benefits

- ✓ Easy user management with different power levels associated (Operator, Specialist, and Administrator)
- ✓ Click and Process!
- ✓ Easy post process quality control and troubleshooting
- ✓ True control over your process

Consumables

The sample vial is a critical component of the AFA acoustic circuit and Covaris has optimized a broad range of consumables for key applications.

Covaris microTUBE™ and miniTUBE™ are engineered to work in combination with the M220 to reproducibly deliver DNA and Chromatin fragments at your desired lengths. t-PREP system integrates the collection, cryofracture and extraction of biomarkers from small tissue samples into a single vessel.



microTUBE

DNA Shearing <1.5 kb fragments
Chromatin Shearing



miniTUBE

DNA Shearing for 2 kb, 3 kb and 5 kb fragments



t-PREP

Biomarkers extraction

Model	M220 Focused-ultrasonicator (PN 500295) Including dedicated notebook computer, Sonolab 7™ software, and integrated chiller
Accessories Kits	<p>M220 Accessory Kit for microTUBE (PN 500296) Includes: M220 microTUBE holder; microTUBE Snap-Cap (25), and microTUBE Screw-Cap (25)</p> <p>M220 Accessory Kit for miniTUBE (PN 500297) Includes: M220 miniTUBE holder; miniTUBE Clear (25), blue (25), and red (25)</p>
Treatment Power	2.5 to 75 Watts Peak Incident Power 0.1 to 20 Watts Average Incident Power
Dimensions	12"W x 17" D x 10" H (30cm x 43cm x 25cm)
Weight	Approximately 22 lbs. (10 Kg) (without computer)
Power Requirements	100-240 VAC 500 VA, 50-60Hz
Ambient Temp. Range	15 to 25°C
Regulatory Labeling	CE, ETL Mark (for Product Safety), WEEE
Safety	Complies with Low Voltage Directive 2006/95/EC. Certified to IEC/EN/ANSI/UL 61010-1:2004 and CAN/CSA C22.2 No. 61010-1:2004, 2nd Edition "Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use, Part 1: General Requirements"
EMC	Complies with Class A Industrial/Scientific/Medical (ISM) equipment under EN 61326-1:2005, EN 61000-3-2:2004 and EN 61000-3-3:1995 for EU EMC Directive 2004/108/EC. Also FCC Part 15 Class A radio emissions requirements for the USA and ICES-003 Class A for Industry Canada.
Water Bath	~15 ml of AFA-grade Water
Temperature Setpoint	Programmable +6.0°C to +40.0°C
Temperature Limits	+4.0°C to +42.0°C
Computer	Notebook computer supplied by Covaris
Operating System	Microsoft Windows 7
Application Software	Covaris SonoLab 7
Data Input	Keyboard, Touchpad
Chiller	Solid state chiller for heating and cooling (built in) 0 - 48 Watts



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