

# Ultrasonic and Megasonic Cleaners



## 1. Introduction

There are one ultrasonic bath and two megasonic baths available in NUFAB. One megasonic bath is located in the yellow room. Sample cleaning is done in the user provided beakers (containers) with appropriate cleaning solution.

The ultrasonic cleaning uses lower frequencies (40-170 kHz). The megasonic cleaning uses higher frequencies (0.925 MHz). The higher frequencies do not cause violent cavitation effects found with ultrasonic frequencies. Thus megasonic cleaning significantly reduces the likelihood of surface damage to the sample being cleaned. Samples that would be damaged by ultrasonic cleaning can be cleaned in the megasonic bath using the same solution.

Only DI water will be used as solution in the baths. Only trained and approved (qualified) Users may use these tools.

## 2. Features and Specifications

- Two megasonic baths and one ultrasonic bath available.
- Multi-frequencies available for ultrasonic bath: 40 kHz, 72 kHz, 104 kHz, 170 kHz.
- Power level adjustable: 0-100% of maximum power.
- Ultrasonic bath dimensions: 9" (length) X 9" (wide) X 9" (depth).
- Megasonic bath dimensions: 8" (length) X 3" (wide) X 7" (depth).
- Bath liquid level detection and alarm equipped.
- Bath liquid circulation available.
- Software control with touchscreen operation.

### 3. Safety and Precautions

- Never put your finger or any body part into the liquid of the ultrasonic bath and megasonic baths.
- Never directly fill the ultrasonic bath and megasonic baths with your cleaner solution.
- Never use any acid, base or any mixture of those as the cleaner solution.
- Only DI water will be used as solution in the ultrasonic bath and megasonic baths.
- All chemicals must be clearly marked with chemical name, owner's name and contact information.
- Get approval from a staff member first before bring in any new chemical.
- Only open the cap of any chemical bottle inside the hood.
- No waste goes down the drain. All waste must be handled according to the waste procedures.
- Refer to the MSDS of every chemical that is to be used before handling that chemical.
- Follow all chemical safety rules.

#### **PPE (Personal Protective Equipment):**

Wearing safety glasses or goggles all the time is required when using ultrasonic bath and megasonic baths.

### 4. Operating Procedure

#### 4.1 Ultrasonic bath

1. There is a touch screen on the forehead of the hood. After a touch to the touchscreen, a screen shown in Figure 1 should be seen. If a different screen is shown, press the "Back" button until it goes back to this screen.



Figure 1

2. Press the "Operations" button, a screen shown in Figure 2 will be seen. Press "Tank 2" for ultrasonic bath. The "Tank 2 Control" screen (Figure 3) will be seen.



Figure 2



Figure 3

3. On this screen, you can select the frequency and adjust the power level from 0-100% of the maximum power 320W. In general, a higher frequency will provide a gentler cleaning to your sample.
4. Fill the ultrasonic bath with DI water to a level for your processing purpose. ONLY fill DI water into the ultrasonic bath. Put your beaker (or container), which has been filled with your cleaner solution and sample, into the ultrasonic bath. Make sure your beaker does not float on the water. Put a lid on your beaker. And put the lid of the ultrasonic bath on if it is needed.
5. There is a timer located on the top left side of the hood (Figure 4). On the timer, the red number represents how many seconds is left. And the green number represents the time setting. To set the time, press the button labeled 1, 2, 3, or 4. Changes can be seen to the green number. To start the timer, press the Timer Enable button. Once it reaches zero, a loud sound can be heard. Press the Timer Enable button again to acknowledge it.



Figure 4

6. To start the process, press the “System Enable” button on the touch screen. When it starts, the “System Enable” button should change from “Off” to “On”. And the “Status” button should change from “Idle” to “Running”.
7. After the cleaning process. Dump the waste to your waste container if you are using a solution other than IPA and Acetone. IPA and Acetone waste can be dumped into the carboy labeled “Non-Halogenated” in the hood.
8. Rinse all beakers with DI water three times. Clean the working area.

#### 4.2 Megasonic Bath

1. There is a touch screen on the forehead of the hood. After a touch to the touchscreen, a screen shown in Figure 5 should be seen. If a different screen is shown, press the “Back” button on the screen you can see until it goes back to this screen.



Figure 5

1. Press the “Operations” button, a screen shown in Figure 6 will be seen. Press “Tank 1” for megasonic bath. The “Tank 1 Control” screen (Figure 7) will be seen.



Figure 6



Figure 7

2. On this screen, you can adjust the power level from 0 to 100% of the maximum power 250 W.
3. Fill the megasonic bath with DI water to a level for your processing purpose. ONLY fill DI water into the megasonic bath. Put your beaker (or container), which has been filled with your cleaner solution and sample, into the megasonic bath. Make sure your beaker does not float on the water. Put a lid on your beaker. And put the lid of the megasonic bath on if it is needed.
4. There is a timer located on the top left side of the hood (Figure 8). On the timer, the red number represents how many seconds is left. And the green number represents the time setting. To set the time, press the button labeled 1, 2, 3, or 4. Changes can be seen to the green number. To start the timer, press the Timer Enable button. Once it reaches zero, a loud sound can be heard. Press the Timer Enable button again to acknowledge it.



Figure 8

5. To start the process, press the “System Enable” button on the touch screen. When it starts, the “System Enable” button should change from “Off” to “On”. And the “Status” button should change from “Idle” to “Running”.
6. After the cleaning process. Dump the waste to your waste container if you are using a solution other than IPA and Acetone. IPA and Acetone waste can be dumped into the carboy labeled “Non-Halogenated” in the hood.
7. Rinse all beakers with DI water three times. Clean the working area.