

# CEM MARS5 Microwave

Updated November 13, 2017

Instrument instructions can be found at:

<http://academic.bowdoin.edu/chemistry/resources/instructions.shtml>

If you have any problems with the instrument or would like to get trained, please contact

Celeste Morin

(x3756 / cmorin@bowdoin.edu / Druckenmiller 243)

- a. **Read instructions carefully before using instrument.** Reading the bold sentences in each category will tell you what you need to know to run the instrument.
  - i. Bullets are under the bold sentences when more detail is required.
  - ii. At the end of the instructions is a frequently asked questions/troubleshooting section.
  
- a. **Read precautions.**
  - i. Proper PPE (Personal Protective Equipment) is required—Safety goggles, neoprene gloves (near the instrument), and lab coat.
  - ii. All vessel components must be dry and free of particulate matter. Drops of liquid or particles will absorb microwave energy, causing localized heating which may char and damage vessel.

- x. Do not turn the instrument off within 15 seconds after operation with microwave power. Once the cooling fans have stopped, the microwave can be turned off.
  - xi. The exhaust fan (this is not the cooling fan) can be turned off by pressing “Home”, pressing the “P/T”, and then press “0”.
  - xii. **\*\*Please refer to the attached Maintenance Notes for the CEM Microwave for more information on preventing hazards and damage to the instruments and vessels. \*\***
- b. **Turn on instrument.**
- i. Wait until Main Menu (CEM Method Menu) is displayed before proceeding.
- c. **Enter sample information into microwave log sheet.**
- a. **The “MILK” method is pre-loaded and sufficient for standard microwave digestions.**
- b. **New methods can be created in the User Directory only.**
- c. **Select “Edit/Create Method”.**
- i. Using the right/left arrow keys on the four-way directional keypad, highlight “Edit/Create Method”.
  - ii. Press **Select** on the keypad.
- d. **Select “User Directory”.**
- i. Use the right/left arrow keys to highlight “User Directory”.
  - ii. Press **Select** on the keypad.
- e. **Select “New Method”.**
- i. Use the up/down arrow keys to highlight “New Method”.
  - ii. Press **Select** on the keypad.
- f. **Select vessel type.**
- i. Our instrument uses OMNI/XP1500.
  - ii. Press **Select** on the keypad.
- g. **Select control type.**
- i. Standard control is the one typically used.
- h. **Enter a method name.**
- i. Highlight the letter or number for the new name.
  - ii. Press **Select** on the keypad.
  - iii. Continue until you have finished the method name.
  - iv. Press **Next** key on the keypad.
- i. **Enter method information.**
- i. Highlight “Sample Description” and press the Select key. This will pull up an alphabet that will allow you to enter the name.
  - ii. Continue until all the method information is entered.
- j. **Enter method parameters.**
- i. Either enter a value for the parameter or hit the Select key to pull up the options for that parameter.
  - ii. Continue until all the parameters are set.

iii. General guidelines for selecting wattage.

1. 1-2 vessels            300 watts
2. 3-5 vessels            600 watts
3. 6 or more vessels    1200 watts

k. When you are finished, the method you created will be loaded.

**\*\*FOR PROPER FUNCTIONING OF THE TEMPERATURE PROBE, THE FOLLOWING MUST BE COMPLETED.**

1.



e. **Connect pressure probe to instrument.**

- i. Align the ESP with the connector port as shown in the picture below.



If alignment is correct, push the ESP-1500 Plus into the connector port until the polypropylene guard is fully seated against the connector port. If alignment is off, slightly move the sensor left or right until it pushes all the way into the port.

**\*\*Note\*\*-Do not rotate the sensor 360° when plugging into connector port, wires will be damaged.**

- ii. Position the pressure tubing in the guide ring mounted on the roof of the cavity. Cross the ends of the guide clip so that the tubing stays in place.