Standard Operating Procedures: Preparing Bulk Samples for Radiocarbon Dating

Lab Name: Rosenheim Lab

Lab Location: Marine Science Laboratories, CMS, USF Room #: 227A

Principal Investigator: Brad E. Rosenheim

Time Frame: 2 half days – can't be completed in a single day because samples must be combusted

1. Process	1. While wearing gloves, weigh out enough sediment to produce at least 24 µmol of CO_2 and put sediment into a prepped quartz tube - See tube prep protocol 2. Place 1-cm of quartz wool over the sediment to prevent the sediment from entering the vacuum line when the tube is evacuated 3. Attach a 1/2 - 1/4" fritted ultratorr to the inlet on the vacuum line and attach the quartz tube 4. Evacuate the tube of atmospheric pressure - Evacuation can take anywhere from 30 minutes to 6+ hours - Check for leaks before flame sealing. Close the valve to the vacuum line and look for an increase in pressure. See leak testing information page. 5. Once evacuated, flame seal the quartz tube and remove it from the line 6. Combust the tube at 900°C for four hours - See furnace protocol 7. After the tube has cooled, attach the tube cracker to the inlet using a fritted ultratorr and crack open the tube 8. Move the CO_2 to the next trap using liquid nitrogen 9. Move the sample down the vacuum line, alternating liquid nitrogen and liquid nitrogen/isopropanol slush to purify the sample of water vapor

	10. Once the CO_2 reaches the Inficon, let the gas warm up to room temperature and record a pressure reading 11. Get an additional pressure reading with slush 12. Move the CO_2 back down the vacuum line, alternating liquid nitrogen and liquid nitrogen/isopropanol slush 13. Transfer the gas into an empty, pre-combusted pyrex tube using liquid nitrogen and flame seal - See furnace protocol
2. Hazardous Chemical **Class of Hazardous Chemical**	N/A
3. Personal Protective Equipment	Closed toed shoes, flame sealing glasses, hair pulled back
4. Engineering/Ventilation Controls	N/A
5. Special Handling Procedures **Storage Requirements**	N/A
6. Spill Containment **Accident Procedures**	N/A
7. Waste disposal	Broken tubes are disposed of in the cardboard glass disposal bin under the furnace
8. Special Precautions **Animal Use**	N/A
9. Required Approvals	N/A
10. Decontamination	Pre-combustion of quartz and glassware
11. Designated Areas	N/A