

CH 461/461H Week 5 Preparation of Oysters

Oysters are a challenging sample for analysis. They have high mineral content and are considered a good source of Cu, as is liver and crab. The typical Cu content of oysters is 1 to 3 mg per oz (1 oz = 28.35 g).

In this experiment, the oysters will be dry ashed in a muffle furnace. The first day you will just weigh the oysters and place them in a beaker and put this in a designated spot in the muffle furnace in the main lab. The next lab period you dissolve the ash that remains after heating to prepare a solution for chemical analysis by AAS and ICPAES.

Record serving size and %DV of all metals listed on container. Take a couple of oysters out of the can and pat the oil/and liquid off with some Kimwipes. Weigh the oysters to 0.1 mg and transfer to a small beaker. The total mass should be between 3 and 6 g. If the mass is not in this range, add or remove an oyster. Somewhat chop up the oysters in the beaker (don't lose any mass). The instructor will help you put your team's beaker in a designated spot in the muffle furnace. Over the weekend the muffle furnace will be ramped up to 500 °C and the oysters roasted for at least 24 hr at to produce a white ash. At first the temperature is set to 100 °C and then increased to 500 °C so avoid excessive organic smoke at the start that could cause losses.

The next lab period, add a few milliliters of 50% (v/v) nitric acid (i.e., 50% concentrated HNO_3 , 50% water). Gently heat and swirl for 5 min. Do not use boiling chips. Neutralize up to between pH 2 and 7 with some NH_4OH . Filter (Whatman Qualitative "1" filter paper, 5.5 cm) the solution directly into a 50-mL volumetric flask. Wash the beaker with 2% (v/v) nitric acid and transfer to the flask through the filter paper BUT DON'T exceed 50 mL of washings. Bring up to the 50 mL volume with 2% (v/v) nitric acid. The concentrated oyster solution will be analyzed by AAS. In addition, quantitatively prepare a 1 to 10 dilution of this concentrated oyster solution using 2% (v/v) nitric acid for use in the ICP experiment.