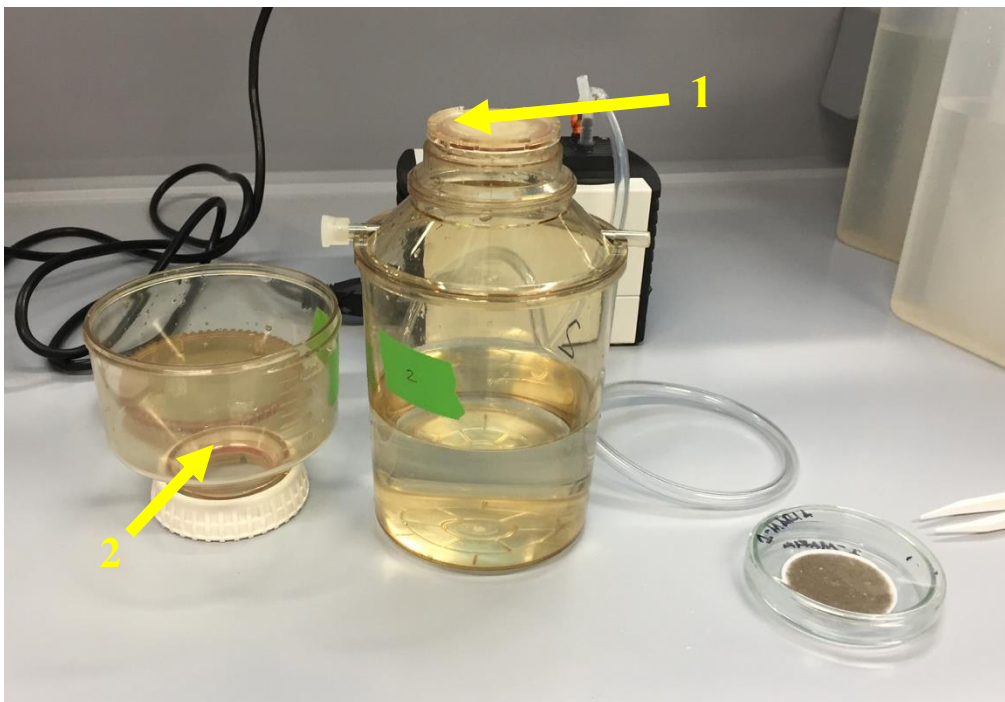


Extraction of metals from suspended matter in water

1. Filtration

Material

- Filtration unit
- Vacuum pump
- MF-Milipore 0.45 μm 47mm hydrophilic filters
- Petri box for storage of the loaded filters
- Plastic tweezer



Procedure

- Mount the filtration unit and make sure there's no vacuum leaks and that the rubber tubes are correctly in place
- Weight the dry filter and then the glass petri-dish. Write the values in your laboratory notebook.
- Use a plastic tweezer to carefully place the filter at the top of the unit (1) and screw the upper part (2) back up.
- Shake the sample to re-suspend it and pour 100 to 500mL into a graduated cylinder to measure precisely the volume to be filtered. The volume depends on the environment (lake, river), and the turbidity of the water. It is necessary to have enough material to have a good measurement.
- Turn on the vacuum pump and wait until filtration is complete. Rinse the funnel with MiliQ water to remove all sediment. Turn off the pump and unscrew the upper part of the unit.

- Carefully remove the filter with a plastic tweezer and put it in a glass petri-dish. Let it dry in an oven for a couple hours at 40-45 degrees
- Weight the total mass and subtract the mass of the glass petri-dish and the filter to get the amount of solid filtered

2. Digestion of loaded filters

Safety/ Protective equipment



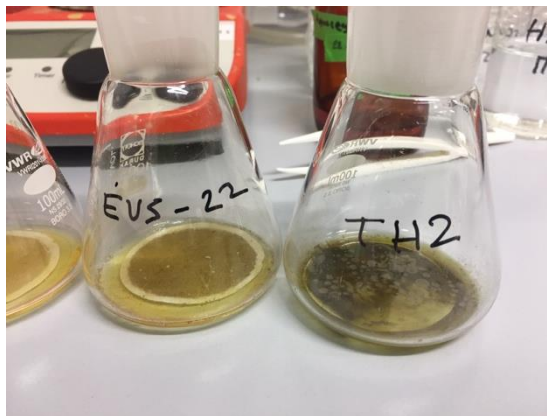
Material and reactants

- | | |
|---|---------------------------------|
| - Ventilated hood | - HNO ₃ 2M |
| - Ultrasonic bath | - 15 mL Falcon tubes |
| - Erlenmeyer with large opening | - Syringe filters (PES 0.22 μm) |
| - Aqua regia [HNO ₃ + 3 HCl] | - Plastic tweezer |
| - MQ-water | |

Procedure

All steps below must be operated under a ventilated hood

- Put the dried filter into the Erlenmeyer



- Add 1 mL MQ-water and 5 mL Aqua regia
- Leave for 1 hour and then gently heat (80 degrees) for 30 minutes
- Carefully remove the filter with the help of the plastic tweezer and rinse it onto the Erlenmeyer with MQ-water
- Heat until it's completely dry (100-120 degrees)
- Once cooled off, weight the Erlenmeyer
- Add 1 mL HNO₃ 2M and 7 mL MQ-water and sonicate briefly
- Weight again to confirm the amount of liquid added
- Filter into 15mL Falcon tube and proceed to ICP-OES analysis, dilute if necessary.