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Water Extractable Organic Matter (WEOM)

In 2 collections

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ABSTRACT

The method covers the extraction of water extractable organic matter for soil organic matter characterization using FT-ICR-MS, LCMS, and TOC/TN.

MATERIALS

- Genese Scientific Centrifuge Tubes 50 mL (9 per sample)
- Genese Scientific Centrifuge Tubes 15 mL (3 per sample)
- Air dried soil
- Ultrapure DI water
- 30 mL Pipet and auto-pipettor
- 1000 µL and 2 µL pipets
- Shaker (800 rpm)
- Centrifuge
- Sample Labels for each analysis
- 0.45 um PES Whatan Syringe Filters
- Syringe

Extraction

1 Weigh out 6 g of air-dried soil in triplicate into a labeled 50 mL falcon tube

2 Add 30 mL of Ultrapure DI (maintaining a 2 g to 10 mL ratio) using large pipette

3 Place samples onto orbital shaker for 2 rpm, 02:00:00

4 Once completed centrifuge samples at 6000 rpm, 00:08:00 8m

4.1 If samples are still cloudy, centrifuge a second time

5 Transfer the supernatant to two centrifuge tubes and do not discard the soil pellet

5.1 5 mL in a 15 mL centrifuge tube for FT-ICR-MS

5.2 ~20 mL in a 50 mL centrifuge tube for TOC/TN and LC-MS

6 Acidify the FT-ICR-MS subsample using 2 µL of concentrated phosphoric acid (37%)

7 Freeze the TOC/TN and LC-MS sample on the side at -20 °C until filtration

8 Freeze FT-ICR-MS samples on their side in the -80 °C until SPE

8.1 SPE Protocol:Gilson Automated SPE Protocol

Sample Filtering (LC-MS and TOC/TN)n

9 Thaw ~ 20 mL sample prior to filtering

10 Using a new clean syringe for each sample, pull up 50 mL up Ultrapure DI water

11 Attach a new 0.45 um filter to the syringe and press the water through the filter to rinse the filter.

12 Remove the filter without touching the tip and pull up the ~ 20 mL of thawed sample

13 Re attach the rinsed filter and discard the first 1 - 2 mL of sample filtered

14 Filter the sample into two falcon tubes, two 15 mL tube labeled for TOC and LC-MS respectively.

15 Filter 10 mL of solution into the LC-MS tube and all remaining sample into the TOC/TN tube.

16 If the filter becomes difficult to press sample through, rinse a new filter using a clean (DI ONLY syringe using steps 3 and 4) and attach the rinsed filter to the syringe with sample. Discard the first 1 - 2 mL and continue filtering into the respective tubes.

17 Store filtered samples in the freezer prior to analyses.