Distribution measurement in one or two phases

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Liquid-Liquid extraction and radiotracers

- Measures the distribution between two phases
- Relative numbers, the count represent the concentration
- Distribution ratio can be inserted into equilibrium expressions

$$D = \frac{[M]_{org}}{[M]_{aq}}$$

Liquid-Liquid extraction and ICP measurements

- More preparation of samples
- Needs calibration curve measures absolute concentration
- Dilute samples
- Easier to measure multi element
- Easiest to measure aqueous phase

$$D = \frac{[M]_0 - [M]_{Aq}}{[M]_{aq}} \qquad R = 1 - \frac{[M]_{aq}}{[M]_0}$$

D-ratios vs % extracted



Error in D-ratio measurements two phases





Entrainment



Comparing radiotracer measurements with ICP-ms measurements, should get the same result



Comparing percent extracted



Back extraction with 1mol/kg sulfate



summary

- ICP- MS seems to give higher D-ratios
- Detection limit is reached
- More work is needed for a proper comparison
- Sulfate strips from Aliquat 336
- Confirms that Aliquat 336 extracts Zn, Cd better than Co

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