Associated content

Tangential filtration characteristics

316L SAE steel grades. The primary circuit flows through a porous pipe. A flow of 1 litter per hour of water oozes to the outside of this pipe and feeds a secondary circuit: Filtered water circuit. Each 5 minutes, ultrasound motor checks the filter and a back flushing of compressed air system keep pores of the pipe free. The porous pipe is composed of stainless steel. It is changed each 6 month.

The acetate of cellulose filter at 0.2 μm is changed each two weeks to prevent clogging and cross contamination.

The material in contact with the sample solution is PEEK (poly- ether–ether–ketones).

Ion Chromatographs characteristics

Both ICS2100 chromatographs work under an isocratic eluent regime. The running time is 39 minutes and the injection time is 2 minutes. For more details and information, please see the company website: http://www.dionex.com. The volume injected is with a 25-μL sample circuit. A deionised water tank purified by a Millipore system purveys pure water for elution preparation. The software developed by Dionex, Chromeleon 7® controls the whole system.

1) Cation measurement

The cation chromatograph is thermostated at 40.0 ± 0.1 °C for the column and the detection cell. The system is provided with a guard column (2x50mm). To reduces the baseline drift by removing contaminants instrument is equipped IonPac® Cation Trap Columns (CR-CTC). The precolumn is a CG16 and the column is a CS16 in 2mm. The system is equipped with a suppressor system CSRS 500 (2 mm) set to 32 mA. The

eluant is generated from a concentrate cartridge of EGCIII, MSA. The eluent concentration is 30.00 mM. The flow rate is 0.36 ml/min. Consequently, the eluent cartridge autonomy is 3 months.

2) Anion measurement

The anion chromatograph is thermostated at 30.0 ± 0.1 °C for the column and at 35.0 ± 0.1 °C for the detection cell. The system is provided with a guard column (2x50mm). To reduces the baseline drift by removing contaminants instrument is equipped IonPac® Anion Trap Columns (CR-ATC). The precolumn is an AG18 and the column is an AS18 in 2mm. The system is equipped with a suppressor system ASRS 300 (2 mm) set to 15 mA. The eluant is generated from a concentrate cartridge of EGCIII, KOH. The eluent concentration is 23.00 mM. The flow rate is 0.25 ml/min. Consequently, the eluent cartridge autonomy is 9 months.

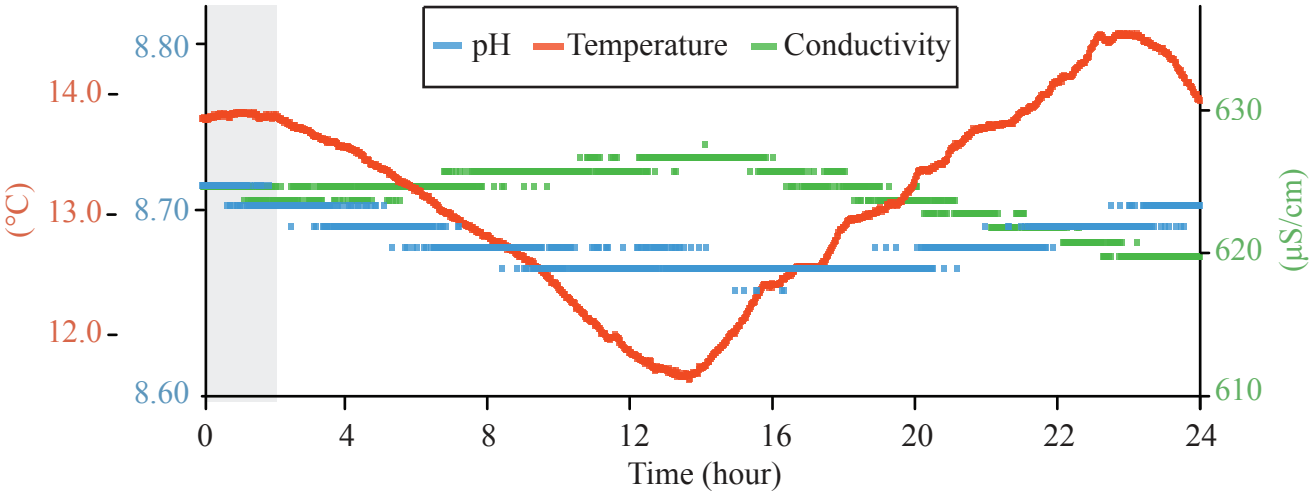
3) Blank Control

Pure distilled water is regularly (every two weeks) introduced to check the residual noise. The check is always satisfactory for all elements except for two cationic species.

Reproducibility test conditions

For each sample, water collected was filtered directly after sampling using 0.2 µm cellulose acetate filters using a Teflon® filtration unit. Samples were consigned in two acid-washed polypropylene bottles. One bottle was acidified to pH 2 with ultra purified HNO_3 for cation analysis and Sr isotopes ratio measurements. The second one was kept non-acidified for anion analysis. Solute concentration of major elements, i.e. Na, K, Mg, Ca, Cl, NO_3 and SO_4 were measured by ionic chromatography (IC) Dionex® 120 at IPGP, Paris. Each sample has been run in triplicate with a relative external reproducibility better than 1% (2σ).

Figure SI 1


pH
Temperature
Conductivity
8.80
8.70
8.60
14.0
13.0
12.0
(°C)
630
620
610
(µS/cm)
0
4
8
12
16
20
22
24
Time (hour)