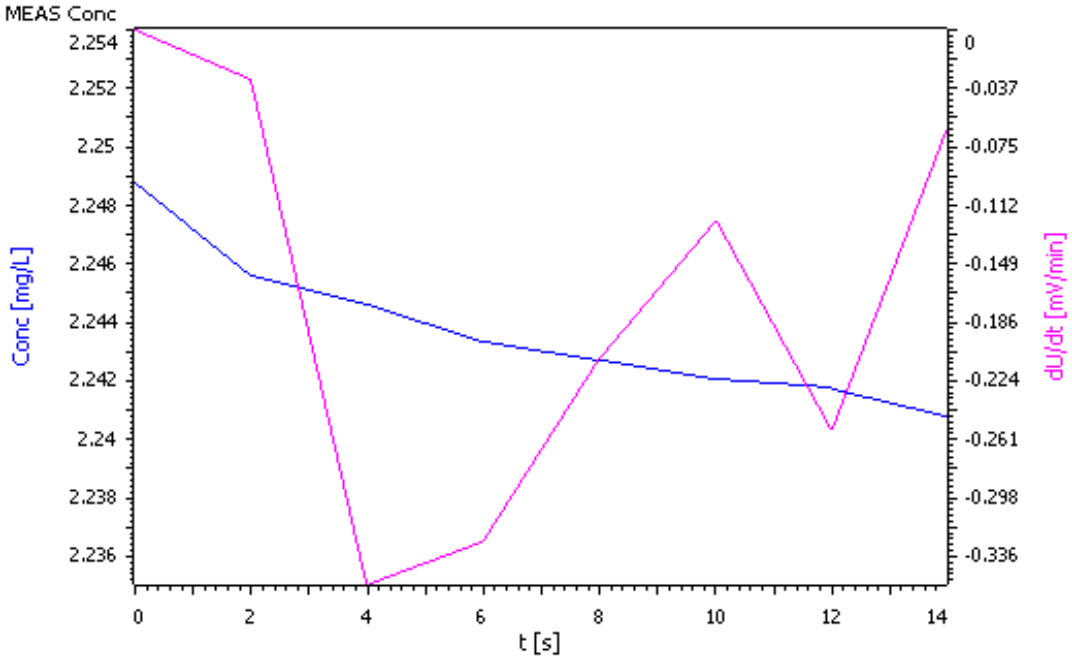
ISE Application Note I-022

Potassium in surface water

Fast and inexpensive determination by direct measurement



Potassium is naturally occurring in surface water caused by weathering of stones and soil. As potassium in drinking water is regulated and should not exceed a certain threshold value, it is necessary to assess the potassium concentration.

This can easily be done by direct measurement using a potassium selective electrode. First, a calibration is performed, afterwards, the samples are measured within tens of seconds. This is a fast, inexpensive and reliable method to determine the potassium content in various water samples.

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Method description

Sample

Surface water

Sample preparation

No sample preparation is required.

Configuration

814 USB sample processor (1T/2P)	2.814.0020
Titration head, 3x SGJ 14	6.1458.040
Sample rack 22 x 120 mL	6.2041.470
Sample beakers plastic (PP), 120 mL, 250 pieces	6.1459.300
Propeller for 120 mL beaker	6.1909.050
802 Rod stirrer	2.802.0020
tiamo 2.5 full	6.6056.252
867 pH module	2.867.0010
800 Dosino, 3x	2.800.0010
Dosing unit, 50 mL	6.3032.250
Dosing unit, 10 mL, 2x	6.3032.210
Cable USB A- mini DIN 8 pin	6.2151.000
Electrode cable 2 m / F	6.2104.030
Electrode cable 2 m, 2 x 2 mm	6.2104.150
Combined K-ISE	6.0510.110
Temperature sensor Pt1000	6.1110.100

Solutions

Standard solution for additions	β(K^+) = 100 mg/L 0.2 g dried potassium chloride is weighed into a 1 L volumetric flask and filled up to the mark with deionized water.
ISA	c(NaCl) = 3 mol/L 175.3 g sodium chloride is weighed into a 1 L volumetric flask and filled up to the mark with deionized water.

Analysis of samples

2 mL ISA is added to 40 mL sample and the direct measurement is carried out. In between each measurement the electrode is conditioned for 30 s in c(KCl) = 0.01 mol/L and then well rinsed with deionized water.

Parameters

Mode	MEAS Conc
Signal drift	0.2 mV/min
Min. waiting time	10 s
Max. waiting time	300 s
Measuring interval	2.0 s
Stirring rate	8

Result

Sample	□(K^+) in mg/L	s_{rel} / % (n = 3)
Sample 1	1.094	1.28
Sample 2	2.346	0.24

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