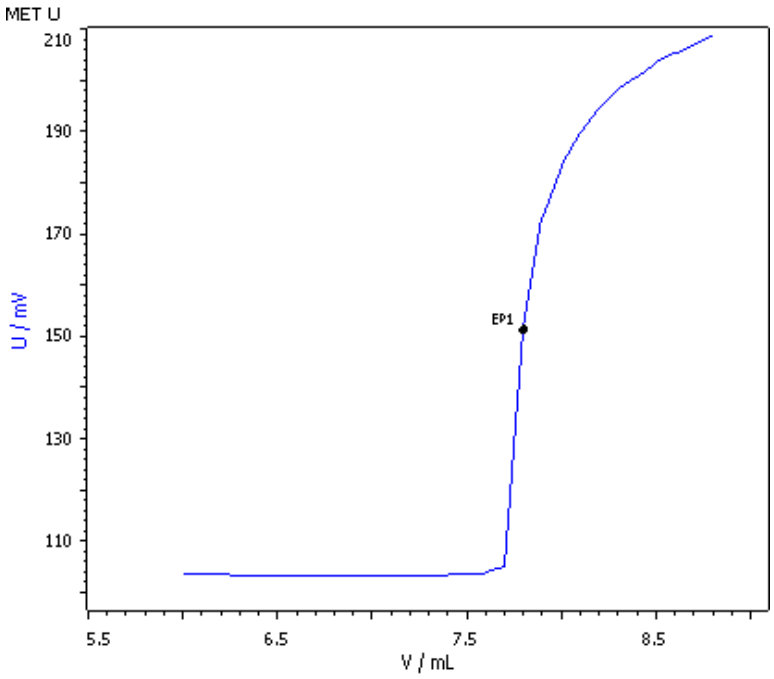
Titration Application Note T–121

Automated determination of indium in aqueous solution using the Cu ISE



Indium in aqueous solutions can be analyzed by back-titration in slightly acidic solution. The ion-selective copper electrode is used as indicator electrode.

Metrohm

Method description

Sample

Aqueous solution of indium

Sample preparation

No sample preparation is required.

Configuration

907 Titrando	2.907.0010
815 Robotic USB Sample Processor XL	2.815.0020
786 Swing head	2.786.0040
Swing arm	6.1462.070
Titration head	6.1458.010
Sample rack 28 × 200 mL	6.2041.830
800 Dosino, 5 ×	2.800.0010
802 Stirrer	2.802.0020
10 mL Dosing unit, 3 ×	6.3032.210
20 mL Dosing unit	6.3032.220
50 mL Dosing unit	6.3032.250
Disposable PP sample beakers, 200 mL, 1000 pieces	6.1459.310
Cu ISE	6.0502.140
LL ISE Reference	6.0750.100

Solutions

Titrant	$c(CuSO_4)$ = 0.1 mol/L If possible this solution should be bought from a supplier.
EDTA solution	c(EDTA) = 0.1 mol/L If possible this solution should be bought from a supplier.
Buffer solution pH = 4.7	123 g sodium acetate and 86 mL conc. acetic acid are dissolved in deion. H_2O and made up to 1 L.

Analysis

Pipet a sample volume containing no more than 100 mg In^{3+} into the titration vessel and dilute with 50 mL deion. H_2O. Add 10.00 mL c(EDTA) = 0.1 mol/L and 5 mL buffer solution pH = 4.7. If necessary adjust the pH to 4.7 with ammonia. After stirring for 30 s back-titrate the EDTA excess with $c(CuSO_4)$ = 0.1 mol/L until after the first equivalence point.

Parameters

Mode	MET U
Pause	30 s
Stirring rate	8
Signal drift	40 mV/min
Min. waiting time	10 s
Max. waiting time	28 s
Volume increment	0.1 mL
Stop EP	1
Volume after EP	1 mL
EP criterion	30 mV
EP recognition	greatest

Results

Mean results (n = 5)

In content / (g/L)	0.940
s(rel) / %	0.28