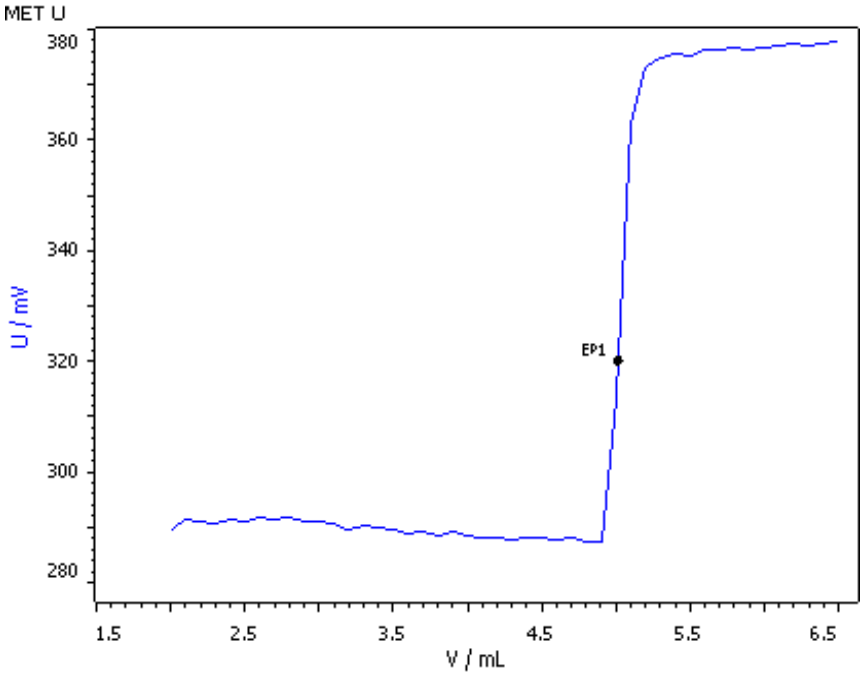
Titration Application Note T–124

Photometric determination of copper in aqueous solution



Copper can be determined by photometric titration with EDTA at a wavelength of 520 nm.

Metrohm

Method description

Sample

Aqueous solution of copper

Sample preparation

Strongly acidic sample solutions (e.g., from acid digestions) have to be pre-neutralized to pH = 4…5 with c(NaOH) = 1 mol/L.

Configuration

905 Titrando	2.905.0010
800 Dosino, 3 ×	2.800.0010
802 Stirrer	2.802.0020
10 mL Dosing unit, 2 ×	6.3032.210
50 mL Dosing unit	6.3032.250
Optrode	6.1115.000

Solutions

Titrant	c(EDTA) = 0.1 mol/L If possible this solution should be bought from a supplier.
Buffer solution pH = 5	116 g ammonium acetate is weighted into a 1 L volumetric flask and dissolved in ca. 500 mL dist. water. The pH is adjusted to pH 5 by adding glacial acetic acid. Then the flask is filled up to the mark with dist. water.
PAN indicator	100 mg PAN are dissolved in 100 mL ethanol.
Solvent	Ethanol

Analysis

An appropriate amount of sample solution (see Comments) is pipetted into a titration vessel and diluted with approx. 20 mL dist. water. 25 mL ethanol, 2.5 mL acetate buffer and 0.05 mL PAN indicator are added and the solution is titrated with c(EDTA) = 0.1 mol/L until after the first equivalence point.

Parameters

Mode	MET U
Pause	30 s
Stirring rate	8
Signal drift	50 mV/min
Max. waiting time	26 s
Volume increment	0.1 mL
EP criterion	30 mV
EP recognition	greatest

Results

Mean result (n = 3)

Cu concentration / (mol/L)	0.0994
s(rel) / %	0.17

Comments

The sample size should be chosen in such a way that the titrant volume needed for the titration lies between 10 and 90% of the buret volume.