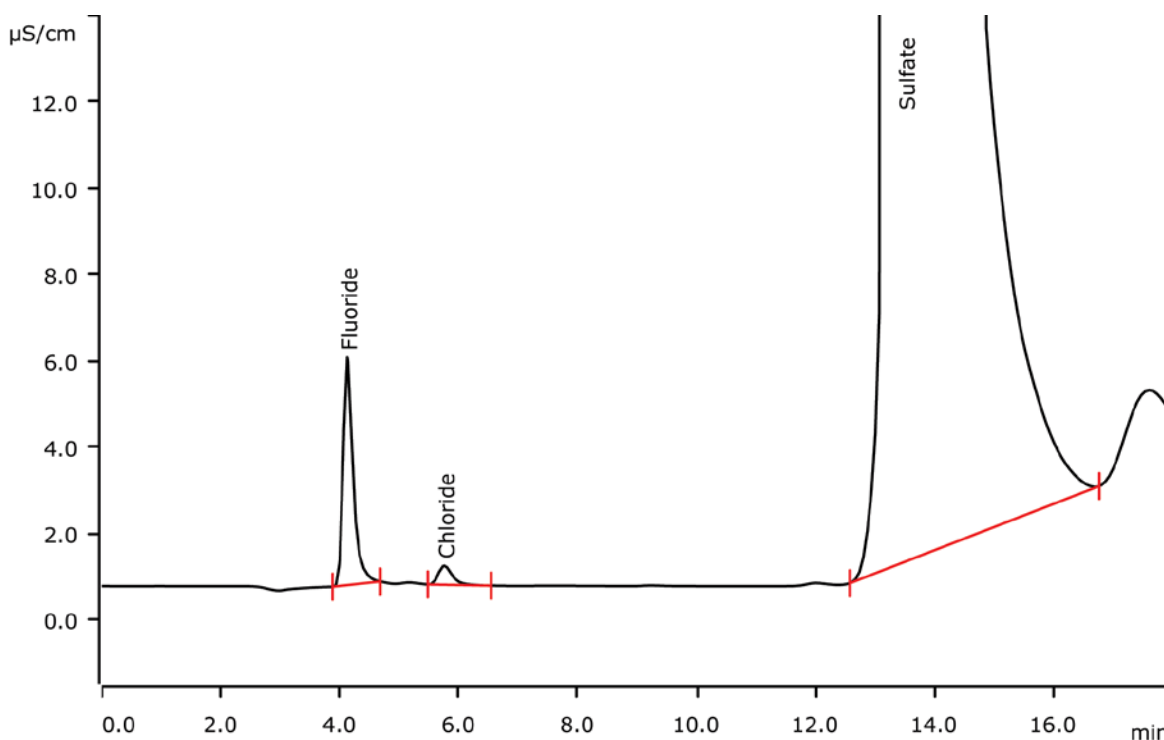


Fluorine in copper concentrate applying Metrohm Combustion IC



Copper concentrate is a raw material for copper smelters. A common impurity in these concentrates is the corrosive fluorine. It can be easily and reliably determined by Combustion IC using the sacrificing vial technology. In the latter, the sample is placed in a horizontal quartz vial with quartz wool on both sides. During combustion, evolving quartz-destroying sample components (e.g., fluoride, alkali and alkaline earth metals) are trapped by the sacrificing vial and the wool and thus spare the quartz combustion tube.

Results

	Mean [$\mu\text{g/g}$]	RSD [%] n = 19
Fluorine	365	9.2

Chlorine and sulfur not quantified

Sample

Copper concentrate

Sample preparation

The sample is placed in a quartz tube with quartz wool and subsequently covered with quartz wool. This sacrificing vial is analyzed by Combustion IC with flame sensor technology and intelligent Partial Loop Injection Technique with Inline Matrix Elimination.

Columns

Metrosep A Supp 5 - 150/4.0	6.1006.520
Metrosep A Supp 4/5 Guard/4.0	6.1006.500
Metrosep A PCC 1 HC/4.0	6.1006.310

Solutions

Eluent	3.2 mmol/L sodium carbonate 1.0 mmol/L sodium hydrogen carbonate
Suppressor regenerant	100 mmol/L sulfuric acid
Rinsing solution	STREAM
Absorber solution	200 mg/L hydrogen peroxide

Parameters

Flow rate	0.7 mL/min
Injection volume (IC)	50 µL (MiPT)
P _{max}	15 MPa
Recording time	18 min
Column temperature	30 °C

Combustion parameters

Argon	100 mL/min
Oxygen	300 mL/min
Oven temperature	1050 °C
Post-combustion time	180 s
Initial volume of absorption solution	2.0 mL
Water inlet	0.2 mL/min

Analysis

Conductivity after sequential suppression

Instrumentation

930 Compact IC Flex Oven/SeS/PP/Deg	2.930.2560*
IC Conductivity Detector	2.850.9010*
MSM Rotor A	6.2832.000*
Adapter sleeve for Suppressor Vario	6.2842.020*
920 Absorber Module	2.920.0010*
Combustion Module (oven and ABD)	2.136.0700*
Autosampler MMS 5000	2.136.0800
Kit for solid sampling	6.7302.000

* available as 930 Metrohm Combustion IC (2.930.9010)

