

Trace analysis and metal speciation with voltammetry

Voltammetry instruments are favorably priced and compact, yet great in their detection capabilities. You can analyze water, environmental samples or ultrapure chemicals!

Broad range of applications

Total metal concentration and speciation: Apart from the determination of the total concentration, which is normally obtained with spectroscopic methods, voltammetry is highly suitable to distinguish the different oxidation stages of metal ions or differentiate between free and bound metal ions. This allows statements to be made about the biological availability and toxicity of heavy metals and makes voltammetry an essential tool for environmental analysis. Comparable results can only be achieved by spectroscopy after complicated separation of the metal species. Due to their compact size VA instruments can also be used in mobile laboratories. Samples with high ionic concentration are no problem for voltammetry.

Organics and anions: Not only metals but also various organic compounds can be determined by voltammetry. VA techniques are used in organic chemistry and in the pharmaceutical industry. A substantial range of anions can also be determined by voltammetry. The determination of environmentally relevant anions like cyanide, sulfide, nitrite or nitrate is of particular interest.

Voltammetric trace analysis

- has extremely low detection limits
- works in the presence high salt concentrations
- allows metal speciation and can differentiate between free and complexed metal ions
- can also analyze non-metals such as anions or organics.

Typical Detection Limits

(1 ppt = 1 part per trillion = 1 ng/kg)

Antimony	Sb(III), Sb(V)	200 ppt
Arsenic	As(III), As(V)	100 ppt
Bismuth	Bi	500 ppt
Cadmium	Cd	50 ppt
Chromium	Cr(III), Cr(VI)	25 ppt
Cobalt	Co	50 ppt
Copper	Cu	50 ppt
Iron	Fe(II), Fe(III)	50 ppt
Lead	Pb	50 ppt
Mercury	Hg	100 ppt
Molybdenum	Mo	50 ppt
Nickel	Ni	50 ppt
Platinum	Pt	0.1 ppt
Rhodium	Rh	0.1 ppt
Thallium	Tl	50 ppt
Thungsten	W	200 ppt
Uranium	U	25 ppt
Zinc	Zn	50 ppt

