BAM
Bundesanstalt für Materialforschung und -prüfung

Reference procedure

Isotope dilution mass spectrometry (IDMS) for the quantification of elemental mass fractions

Proof of competence

CMC entry and ISO/IEC 17025 accreditation

Testing quantities and objects

Quantification of elemental mass fractions and amount of substances in liquid and solid samples. Elements: B, Mg, S, Cr, Fe, Ni, Cu, Zn, Ga, Ag, Cd, Sn, Sb, Ba, Hg, Tl and Pb. Matrices: metals, alloys, food & feed, sediments, serum, polyethylene, environmental and aqueous samples.

Testing range

a) Elemental mass fraction	10^{-6} g/kg to 10^{1} g/kg
b) Amount of substance content	10^{-8} mol/kg to 10^{0} mol/kg
c) Absolute elemental mass	10^{-9} g to 10^{-4} g
d) Absolute amount of substance	10^{-10} mol to 10^{-5} mol

Expanded measurement uncertainty (k = 2)

a) Elemental mass fraction	0.1 % to 5 %
b) Amount of substance content	0.1 % to 5 %
c) Absolute elemental mass	0.1 % to 5 %
d) Absolute amount of substance	0.1 % to 5 %

Field of application

Applied as primary method of measurement to the certification of reference materials, to the validation of all measurement procedures in elemental analysis and to all other cases whenever a reference procedure in elemental analysis is needed.

References

J. Vogl, W. Pritzkow, Isotope Dilution Mass Spectrometry –
A primary method of measurement and its role for RM certification, *MAPAN*, **2010**, *25*, 135-164, https://doi.org/10.1007/s12647-010-0017-7.

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