BAM
Bundesanstalt für Materialforschung und -prüfung

Reference procedure

Spectroscopic Ellipsometry (SE) for spectral determination of optical and dielectric material properties and layer thicknesses

Proof of competence

ISO/IEC 17025 accreditation

Testing quantities and objects

Layer thickness *d*; optical constants, i.e. refractive index *n* and extinction coefficient *k*, and dielectric function *ε*

Coated and bare sufficiently smooth surfaces, thin film systems

Testing range

Testing range strongly dependent on sample properties:
layer thickness *d*: 0.1 nm to 10 µm.

Spectral range for determination of *n*, *k* and *ε*:
wavelength 192 nm to 20 µm

Expanded measurement uncertainty (*k* = 2)

Strongly dependent on sample properties:

Layer thickness *d*: 0.5 nm absolute (0.1 nm in best case) to 10% relative
Refractive index *n* down to 0.01 and extinction coefficient *k* down to 0.1

Field of application

Material- and surface analysis; optics: determination of layer thicknesses from the lower nanometer to the micrometer range as well as of optical material constants and their dispersion. Homogeneity, stability and identification testing of surfaces and thin films.

References

H. Fujiwara, *Spectroscopic Ellipsometry: Principles and Applications*, John Wiley & Sons, Ltd, https://www.doi.org/10.1002/9780470060193, **2007**.
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