



International Interlaboratory Comparison
Call for participants

Secondary Ion Mass Spectrometry (SIMS)

Surface Analysis of Oxide Nanoparticles

Undertaken as part of VAMAS TWA 2 – Surface Chemical Analysis



VAMAS

Objectives

- Comparability of the analysis of the surface chemistry obtained with SIMS measurements of titania nanoparticles (in suspension and as powder);
- Comparability of the grouping of different types of nanoparticles (uncoated, coated, anatase, rutile) with principal component analysis (PCA);
- Dissemination of best practice for sample preparation, instrument calibration, accurate measurement and data reduction.

Background

Risk assessment of nanoparticles requires standardised procedures which are still at the beginning of the development. One of the endpoints of the REACH annexes for the registration of chemicals at the European Chemicals Agency (ECHA) is surface functionalisation. SIMS with its capability to chemically characterize surfaces with micro- to nanometer resolution is one of the key methods for the measurement of this property.

More Information:

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Standardization Needs

The reliable, accurate, and reproducible measurements of surface functionalisation are an important step towards a well-characterized nanomaterial.

Validation of procedures for sample preparation, accurate measurement and data reduction through ILCs will support the determination of reproducibility that is necessary for international standardisation. If the ILC indicates that the results of the methods are reproducible, new work item proposals will be offered to ISO (ISO/TC 201 or ISO/TC 229) and/or CEN (CEN/TC 352) for standardization after detailed consultation/discussions with the respective committees. Additionally, the results of the ILC are proposed to be included in appropriate form in the development of OECD guidelines for the determination of surface functionalisation.

Funding

Participants fund their own involvement in the project.

Work Program

An ILC will be carried out to assess the quality of sample preparation, measurement conditions and data reduction of SIMS measurements of titania nanoparticles. The samples, data sets and protocols will be provided by BAM. The ILC will request participants to measure the surface of one titania nanoparticle sample (BAM-P110) in the positive and/or the negative ionization mode of SIMS. The sample will be analysed as suspension and as powder according to well-defined protocols.

Deliverables and Dissemination

The expected ILC output is an assessment of the inter-laboratory reproducibility of SIMS as a method for the measurement of the surface functionalisation of oxide nanoparticles. It will be reported and discussed in a first step with the ILC participants.

International Participation

Current participation includes institutes from Europe. More participants are welcome!

