

Workshop Registration

Measurement uncertainty of spark spectrometry

Name, First Name

Company

Department

Street

ZIP, Location

Phone

Fax

Email

By registering for the workshop, you agree to the processing of your personal data for the workshop in accordance with the GDPR.

- I hereby consent to receiving the newsletter from TAZ GmbH.
Your personal data will not be disclosed to third parties.
You can revoke the newsletter at any time.

Date, Signature

Company stamp

Dates

- 11 to 12 March 2026
 21 to 22 October 2026

You will receive suggestions for accommodation with your registration confirmation. Please reserve your room with the respective accommodation ahead of time, as there may be shortages during trade fairs in Augsburg.

Registrations:

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Email aankner@tazgmbh.de



TAZ GMBH

WORKSHOP

Measurement uncertainty
of spark spectrometry
in theory and practice

11 to 12 March 2026
21 to 22 October 2026

w [C %] = 0,421 ± 0,012

www.tazgmbh.de



Registrations and Informations
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REQUIREMENTS

Addressed are managing directors (GF), quality management officers (QM) and those responsible for determining measurement uncertainties, whose aim is to achieve a consistently high quality of the analysis results in accordance with current standard specifications.

Basic knowledge of spark spectrometry and statistics is not mandatory. These will also be taught on the first day of the seminar.

AIM OF THE SEMINAR

The workshops objective is to show practical options for determining measurement uncertainties in emission spectrometry. The necessary basics of emission spectrometry, the different types of certified reference materials and the statistical evaluation of measurement results are briefly explained.

Mainly, however, the requirements of the DAkkS for the calculation of measurement uncertainties are shown and practical solutions are suggested.

YOUR SPEAKERS



Thomas Asam,
Dipl.-Ing Physical Technology
TAZ GmbH



Moritz Winter,
Master of Science Materials Science
Damage analysis, Measurement uncertainties
TAZ GmbH

WORKSHOP SCHEDULE

DAY 1

Thomas Asam and Moritz Winter

1. Approaches to the determination of measurement uncertainty

- > Bottom-up and top-down method
- > DIN 32632-1: Chemical analysis - Guideline for the determination of measurement uncertainty of measurement for quantitative test results
- > Presentation of an Excel application for the implementation of the top-down method

2. Top-down method in practice

- > Independent determination of the measurement uncertainty using examples on a mobile spark spectrometer

3. Basics of statistics

- > Basic principles
- > Systematic and random deviations, Gaussian normal distribution
- > Rounding of measurement results and measurement uncertainty
- > BEC value, detection, recording and determination limits
- > Outlier tests

4. Fundamentals of spark spectrometry

- > Structure and mode of operation
- > Excitation sources: Spark discharge, arc discharge & pulsed single spark evaluation
- > Optics: Rowland circle, CCDs, PMTs, ...
- > Differentiation: calibration, recalibration, type recalibration
- > Optimisation of measurement results and measurement uncertainties: weighting of standards weighting of standards, resolution, interference correction, matrix correction using examples
- > Determination of detection limits by determining the 3-fold background and the BEC value using 2-point calibration

DAY 2

Thomas Asam and Moritz Winter

5. literature references and normative background

- > Overview of ISO Guides, Eurachem Guides & Nordtest, literature
- > Normative background: DIN EN ISO 17025, DIN EN ISO 17034, IATF 16949

6. reference materials

- > Differentiation: certified, traceable, CRM, RM, SUS

7. insight into statistical process control

- > Control charts using an example

8. calibration certificate

- > Evaluation and analytical significance of a traceable calibration certificate calibration certificate

9. measurement uncertainty without effort in daily operation

- > Derivation of a process uncertainty from the calibration certificate, validation data and control charts

10. practic. Determination of measurement uncertainties using examples

- > Achievable accuracy of a high-resolution spark spectrometer through correction options
- > Optimisation of measurement results in optical emission spectrometry by incorporating interference corrections, weighting of standards weighting of standards, use of different calibration methods and -functions, decay rate factors and much more.

STANDARDS TO BE TRAINED

DIN EN ISO 17025: General requirements for the competence of testing and calibration laboratories

ISO 9001: Quality management systems - Requirements

IATF 16949: Requirements for quality management systems for series and spare parts production in the automotive industry

DIN EN ISO 17034: General requirements for the competence of reference material manufacturers

ISO Guide 35: Reference materials - Guidance for characterisation and assessment of homogeneity and stability

GUM: Evaluation of measurement data - Guide to the expression of uncertainty in measurement

BAM Guide: Determination of measurement uncertainties for quantitative test results

Eurachem Guides

RATE

2.145,- Euro (plus 19 % VAT)

SERVICES

The workshop price includes

- > Digital workshop materials provided in advance
- > 2 lunches together
- > Dinner on the first day of the event
- > Work on the devices
- > Certificate of participation according to ISO 9000ff

REGISTRATION

To register, please send the registration form back to us by fax or email.

REGISTRATION DEADLINE

2 weeks prior to the scheduled date

CANCELLATION

Please understand that if you cancel after receipt of the written registration, we will have to charge you 15% of the participation fee, unless you have registered a substitute participant.

