SAWG
(Surface and Micro/Nano Analysis Working Group)

Measurands:

- Composition of films (0.5 nm to 50 … 100 µm) in [mol/mol] – K67, 129
- Amount of substance expressed as a layer thickness in [nm] – K32
- Specific Surface area (BET) in [m^2/g] and related parameters derived from adsorption isotherms – K136
- 2D and 3D spatially resolved chemical composition (elemental and phases) in the future

Customers: Analytical laboratories in the industry:
semiconductors, transportation, telecom, sensing, medical devices, oil and gas,…

SAWG: Portfolio of methods

Traceable methods		Methods not traceable but highly relevant for customers (industry)	
XRR: PTB at BESSY II, NMIJ & NIM (laboratory)	UHV	Photoelectron and Augerelectron Spectroscopy (XPS, AES)	UHV
Neutron reflectometry: NIST	HV	Secondary Ion Mass Spectrometry (SIMS)	UHV
XRF: PTB at BESSY II	UHV	Electron probe micro analysis (EPMA)	HV
ID - ICP MS: KRISS, NIM, NIST, BAM, NMIJ, UNIIM, CENAM		Total reflection X-ray Fluorescence Spectroscopy XRF	ambient … UHV
HR TEM, STEM: KRISS, NMIJ, NIM, NIST	UHV	Ellipsometry	ambient
		Optical methods: Infrared and Raman Spectroscopy	ambient
		Specific surface area measurement (BET surface and related parameters as pore diameter) Methods operationally defined; NMIs provide the highest level of reference for this measurements.	

Approach: Use traceable methods to calibrate relevant field methods (using CRMs, film thickness to determine e.g. effective attenuation lengths for XPS (K 32), sputter rates, …

SAWG: Achievements and challenges

- *Major Achievement for WG in last period?*
  - KC on CIGS solar cell material,
  - KC on BET specific surface area of alumina powder

- *Major Challenges for WG in last period?*
  - traceability issues,
  - cross disciplinary character

- *Major Challenges for WG in the future period?*
  - establishment of traceability routes for industrially relevant methods for surface chemical analysis*
  - implementation of core competencies and related broader CMC claims

- *Number of comparisons per year for future period?*
  - 1 - 2 per year

*Responsibility of SAWG (strategy doc):
(2) To identify and carry out inter-laboratory work and pilot studies required to underpin the development of reference measurement systems in the field of spatially resolved chemical surface analysis at the micro and nanoscale, of the highest possible metrological order with traceability to the SI, where feasible, or to other internationally agreed units, to support NMI/DI measurement services being developed in response to customer needs.