

Project A45

Comprehensive file format for the measurement and analysis of surface chemical analysis data

Objectives

The purpose of this collaborative research is to identify specifications and considerations that should be reflected in a comprehensive data format that describes data, metadata, and workflows related to the measurement and analysis of surface chemical analysis instruments and software. The achieved results of this interlaboratory comparison study will be used in future ISO/TC 201 standard proposals.

Background

There is a wide variety of equipment and software for surface chemical analysis, and new technologies and algorithms are continually being developed. Furthermore, research and development of new materials require the same material to be measured and analysed using multiple measurement and analysis equipment and software, i.e., multi-modal analysis. For this reason, data-driven research and development that fully uses AI and other technologies, integrating diverse, cutting-edge measurement and analysis, is required.

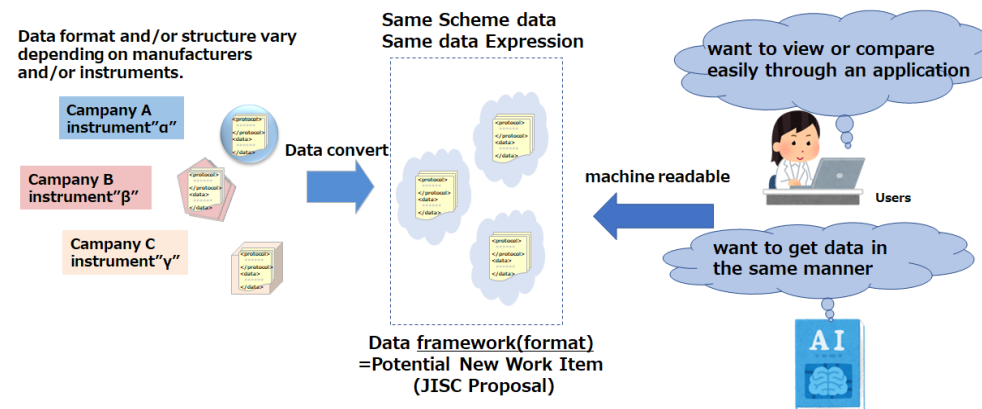
Standardisation Needs

There is a need for a standardized data format that can comprehensively handle data/metadata, including pre-processing for measuring, correlation analysis by multiple instruments, etc. This will enable the extraction and comparison of measurement conditions, sample information, and analysis results using the same application, which will benefit data-driven research. The data format must be capable of describing a variety of workflows in response to complex measurements. Even if the observed data of complex measurements are placed in cyberspace, they must be usable as data independent of the device, and the data uniqueness must be guaranteed. Furthermore, to deal with issues such as data tampering, there must be information that ensures reproducibility and traceability.

Work Programme

Participants are asked to use the measurement examples described in this comprehensive data format to evaluate their independent usability, usefulness, and readability. Inter-laboratory comparisons are expected to be conducted in triplicate.

Call for Participation



First, it will be evaluated whether it has a mechanism for expressing metadata and data from various measurements and expressing them within the analysis process. Second, it will be assessed whether it has a mechanism for recording results obtained according to the method described in the format, including metadata/data related to the process. Third, it will evaluate whether it has a mechanism for recording the analysis results, processes, and logs that guarantee traceability by performing correlation analysis using multi-modal measurements from the same sample. The prototype tools will be available for participants to use freely for verification.

Deliverables and Dissemination

The results of the inter-laboratory comparison evaluating this format,

carried out according to the proposed procedure, will be documented in a VAMAS/TWA 2 technical report and also in a scientific journal paper and will then be used to draft a generic data format for future proposals of relevant ISO standards.

For more information on participation, please contact:

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