Project A41

Alignment procedure for identical location analysis between different microscopic measuring instruments

Objectives

The aim of this international interlaboratory study is to identify the specifications and considerations that should be reflected in guidelines in the alignment procedures for analyzing the identical locations on different instruments for surface chemical analysis.

The results of this interlaboratory comparison study will be used for future ISO/TC 201 standard proposals.

Background

Correlative imaging involving multiple different instruments analysing the same area of the same sample is becoming more common and more important. In analysis using various measuring instruments, it is generally rare for the structure of a substance to be homogeneous at the microscopic level, and there is a problem in that the measurement points for different instruments on a sample do not necessarily match unless precise alignment is performed.

Standardization Needs

To develop novel materials that make advanced use of analytical measurement data, it is necessary to understand measurement positions at the microscopic level and establish a reproducible procedure that can trace the identical locations on the same sample using a variety of analysis instruments. It is important to promote the standardization of alignment procedures for sample analysis positions to ensure the integrity of measurement data. It is expected to improve the efficiency of high-performance material development in response to data-driven research and development such as artificial intelligence (AI) analysis.

Work Programme

The interlaboratory samples will be delivered with sample holders imprinted with alignment markers. In the first round of the study, to avoid the potential risk of sample displacement during transport, cross-marker imprints are used as virtual samples. Participants will be asked to make several observations of the specified locations using the provided samples
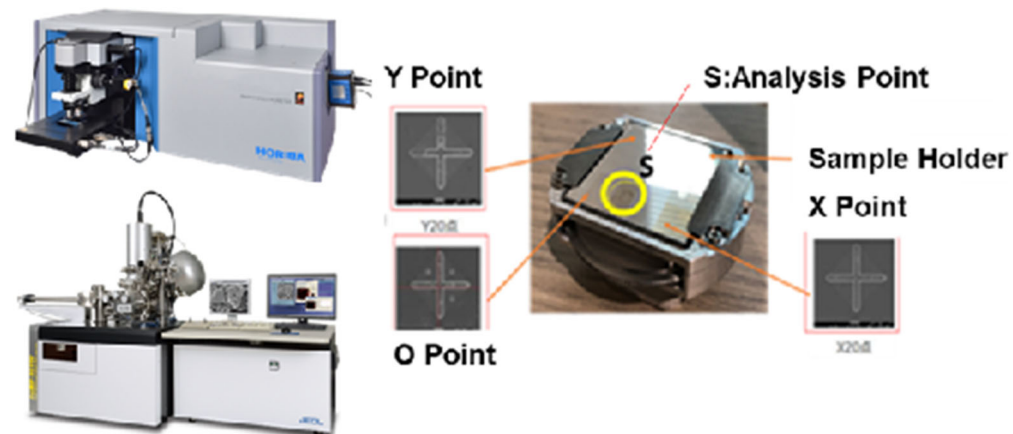
and to report on the amount of deviation of the sample observation position, calculated using the method described in the protocol to be distributed later.

This study will take approximately one or two days per instrument. The study is suitable for surface chemical analytical instruments equipped with both digital X-Y stages and microscopic imaging capabilities, including XPS, SIMS, SPM, Raman microscopes, SEM, and some other optical microscopes.

Deliverables and Dissemination

The study results will evaluate the amount of sample observation position deviation calculated by the proposed protocol and will be documented as a technical report of VAMAS/TWA 2, as well as a

scientific paper. Then it will be used in creating a draft guidelines on alignment

For more information on participation, please contact:

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