VAMAS

Raman Spectroscopy and Microscopy

Technical Work Area 42

Call for Participation

Project 10

Wavenumber Validation of Raman spectrometers

Objectives

- Develop a simple protocol for Raman spectrometer validation that can be performed by beginners.
- Ensure that comparable results can be obtained after calibration.
- Define the desired quality materials to achieve comparable results.

Background

Raman spectroscopy has been widely used across various research and industrial fields. Depending on the users' objectives, the capabilities of Raman spectrometers and the measurement conditions can vary significantly. However, there are currently no standardized calibration and validation methods, which leads to results that are difficult to compare across different systems.

Standardization Needs

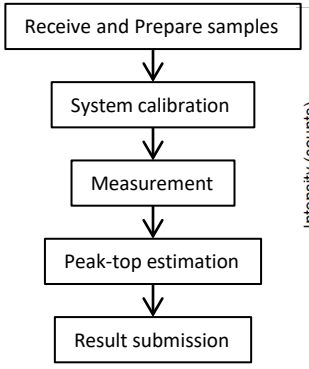
Users of Raman spectrometers often calibrate their systems in their own ways, and some users are not even aware that calibration is necessary. As a result, it is well known that results obtained from different systems and operators are often not comparable. To improve this situation, it is important to raise awareness about the need to calibrate and validate systems in order to obtain consistent results across different instruments, measurement conditions, and users. For this purpose, documentary standards with simple protocols, along with information on suitable validation materials, are needed.

Work Programme

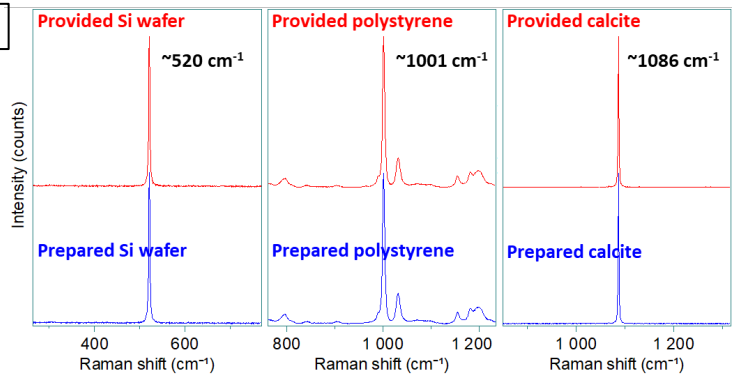
The project leader prepares and provides a set of samples (Si wafer, polystyrene, and calcite) to the participants. Each participant is also required to prepare an additional set of samples that meet the criteria described in the protocol. After calibrating their systems using their own methods, participants measure both sets of samples (the provided set and their own prepared set) according to the protocol. They then complete a reporting sheet detailing the measurement conditions and results, and submit it to the project leader along with the spectral data saved as text files. The project leader analyzes the submitted data.

Deliverables and Dissemination

The results of the interlaboratory study will be published in a peer-reviewed scientific journal, with participants acknowledged as co-authors if they contribute to data analysis and manuscript writing. These results will also be used to refine the protocol, which will be proposed as a documentary standard within ISO TC201/WG5.



Procedure of ILC



Raman spectra examples of Si wafer, polystyrene, and calcite

International participants

Current participants represent Brazil, China, Germany, Italy, Japan, Korea, Spain and UK.

Funding

Participants fund their own involvement in the project. A set of samples (Si wafer, polystyrene, and calcite) will be provided, and participants are required to prepare an additional set according to the protocol. This preparation involves approximately one day of work even under several measurement conditions.

Status

The project is expected to be completed in 12 months after despatch samples.

For more information:

Project Leader
Dr. Nobuyasu Itoh
NMIJ/AIST, Japan
nobuyasu-itoh@aist.go.jp

TWA 42 Chair
Dr. Erlon Henrique Martins Ferreira
Inmetro, Brazil
ehferreira@inmetro.gov.br

Registration link

https://forms.office.com/r/jhZQk90ZCH

www.vamas.org

October 2025