



VAMAS

Raman Spectroscopy & Microscopy

Technical Work Area 42

Project 09

Interlaboratory study to measure variability in Coherent Raman Scattering (CRS) microscopy peak position

Objectives

This project aims to measure the variability in peak position values for coherent Raman scattering (CRS) microscopy methods. Candidate sample materials for use as reference standards will be measured to assess within and across instrument variability. These polymer samples are suitable for the most widely used modalities of CRS microscopy: coherent anti Stokes Raman scattering (CARS) and stimulated Raman scattering (SRS).

Background

CRS microscopy is an emerging technique permitting rapid imaging with Raman contrast. It is extensively used in both biological and materials research and has potential clinical applications. Successful translation and commercialisation of the technique demands standards to enable harmonised data acquisition and comparison of data acquired on different instruments. Currently CRS instruments range from home-built to completely commercial devices and comprise a wide range of hardware.

Standardization Needs

There are currently no standards for coherent Raman scattering microscopy. The variability in spectral resolution stemming from differences in instrument responses

and data analysis impacts the variability in peak positions. Reference materials with well-known Raman peaks are needed to calibrate the instrument response function. While the ASTM E1840¹ standard proposes a list of samples for spontaneous Raman spectroscopy, these samples are not readily suited for microscopy, for which additional optical properties are critical.

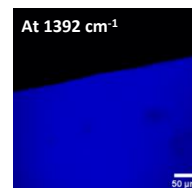
Work Programme

- Participants will receive candidate polymer reference samples and collect results according to provided protocol.
- Statistical analysis of the results from participants will be conducted by NPL and the variability in the peak position for the materials provided will be determined.

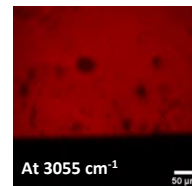
Deliverables and Dissemination

- A peer-reviewed article that discusses the results from the study, including all participants as co-authors.
- Data collected will be used to inform selection of reference materials and validation of the provided procedure for CRS microscopy. Samples are anticipated to cover the ranges of 500 cm⁻¹ to 1800 cm⁻¹ and 2700 cm⁻¹ to 3300 cm⁻¹.

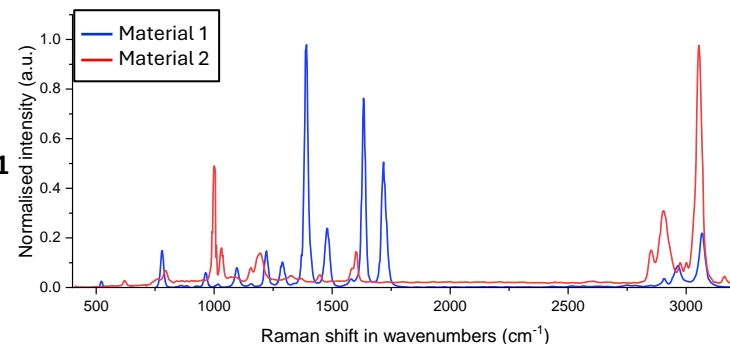
Call for Participation



Sample Material 1



Sample Material 2



Stimulated Raman scattering spectra of sample materials

Funding

Participants fund their own participation. Each participant may need up to 5 days effort to complete the exercise.

Status

The project is due to start in December 2025. Participants are requested to send the data by the end of May 2026. We anticipate the project will finish by end of December 2026.

References

¹ASTM International. "ASTM E1840-96 Standard Guide for Raman Shift Standards for Spectrometer Calibration". West Conshohocken, Pennsylvania: ASTM International, 2014.



[Link to register](#)

For more information:

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