



# Raman spectroscopy standardisation, BCARS and materials exploration

30 November 2023 | 13:00 – 14:30 (GMT)



**Chair: Dr. Dimitrios Tsikritsis**

*National Physical Laboratory (NPL), UK*

Raman spectroscopy has a vast variety of applications in materials characterization. Important elements include the accuracy and standardisation of Raman measurements as well as pathways in harmonising results across the wider scientific community. In this webinar, Raman spectroscopy standardisation and materials that enable metrological traceability will be presented, along with cutting-edge broadband-CARS (Coherent anti-Stokes Raman spectroscopy).



**Semiconducting Nanowires for Metrological Calibration of spatial resolution in Raman microscopy**

**Dr. Sebastian Wood**

*National Physical Laboratory (NPL), UK*

A new reference sample is presented for assessing spatial resolution in confocal Raman microscopy, addressing the lack of existing standards and reference materials. The proposed method employs nanowire-based measurements with superior spatial resolution, enabling metrological traceability through atomic force microscopy. The sample exhibits strong Raman scattering contrast and can withstand repeated laser exposure with promising scalability for super-resolution Raman spectroscopy, including tip-enhanced Raman spectroscopy with sub-100 nm resolution.



**Fairness and relevance of Raman spectroscopy characterization**

**Dr. Raquel Portela**

*CSIC, Instituto de Catalisis y Petroleoquimica, Madrid, Spain*

The industrial and academic use of Raman spectroscopy is becoming wider as the number of specialised techniques, devices, and Raman active products increases, costs are reduced, and relevance is enhanced by measuring in realistic conditions (pressure, temperature, environment, sample). This has fostered the development of standards and norms for terminology, calibration, performance validation, data analysis, and specific applications, as well as research on harmonization, automation, and Findable, Accessible, Interoperable, and Reusable (FAIR) repositories. EU-funded [CHARISMA](#) Project (Characterisation and HARMonisation for Industrial Standardisation of Advanced Materials) aims to contribute to Raman spectroscopy harmonisation.



**Broadband coherent anti-Stokes Raman scattering microscopy for material science and biology applications**

**Prof. Dario Polli**

*Physics Department- Politecnico di Milano, Italy*

In this seminar, I will introduce Coherent Raman Scattering, a label-free non-invasive technique to map the chemical content of matter at high speed and with three-dimensional spatial resolution, thanks to the identification of the vibrational fingerprints of molecules. I will present our recent results on solid-state materials including crystals and biological samples.