

Combined scanning probe microscopy and Raman spectroscopy: a new nanotechnology tool

Researchers require new tools to study their nanostructured creations.

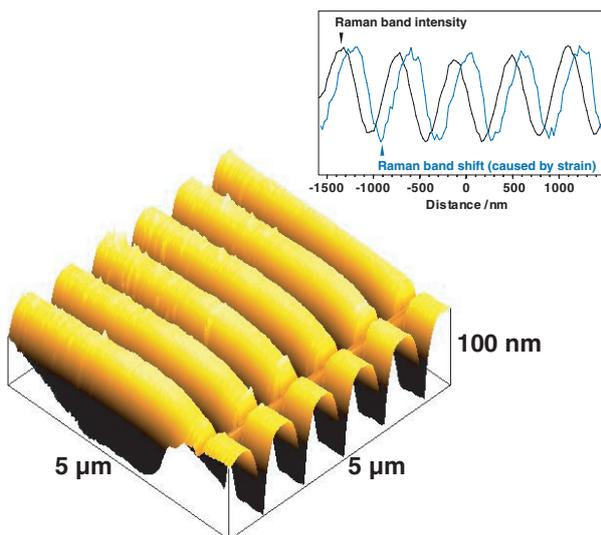
The combination of Renishaw's inVia Raman microscopes and Nanonics Imaging's scanning probe microscopes enable researchers to characterise their devices with nanometric resolution.

Raman-AFM

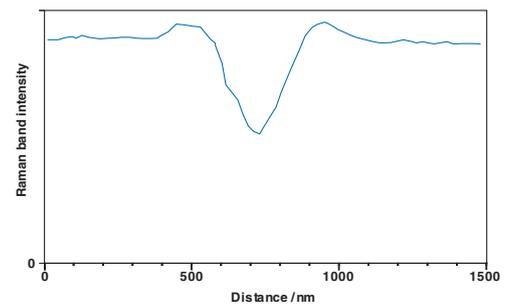
The ultra-high spatial resolution of the atomic force microscope coupled with the chemical and physical characterisation capabilities of Raman spectroscopy.

TERS

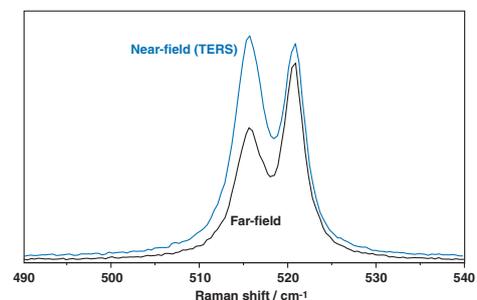
Tip-enhanced Raman scattering: the dramatically increased Raman signal from the minute tips of specially prepared probes enables users to extract Raman data from regions much smaller than the normal far-field diffraction limit.



Raman-AFM: AFM image of a SiO₂/Si pattern, and (inset) a combined plot of the Raman band intensity and (offset) the strain-induced Raman band shift.



TERS: The variation in Raman scattering intensity from a laser spot on Si as a TERS tip is scanned across the spot. The intensity profile shows the enhancement within the spot and the effect of tip-shadowing when the tip is near the centre of the spot.



Near-field (TERS) spectrum and far-field spectrum of strained Si on SiGe. The surface sensitivity of TERS exhibits more of the stressed surface Si component.