

Green laser setup:

The Raman data were collected using a custom built Raman spectrometer in a 180 ° geometry. The sample was excited using a 150 mW Coherent Sapphire SF laser with a 532 nm laser wavelength. The laser power was controlled using a neutral density filters wheel and an initial laser power of 100mW. The laser was focused onto the sample using a 50X super long working distance plan APO Mitutoyo objective with a numerical aperture of 0.42. The signal was discriminated from the laser excitation using a an Ondax® SureBlock™ ultranarrow-band notch filter combined with two optigrate notch filters.

Red laser setup:

The Raman data were collected using a custom built Raman spectrometer in a 180 ° geometry. The sample was excited using a 70 mW Ondax® SureLock™ wavelength stabilized diode laser with a wavelength of 633 nm. The laser power was controlled using a neutral density filters wheel. The laser was focused onto the sample using a 50X super long working distance plan APO Mitutoyo objective with a numerical aperture of 0.42. The signal was discriminated from the laser excitation using a laser Kaiser® bandpass filter combined with a Semrock RazorEdge® ultrasteep long-pass edge filter.

NIR laser setup:

The Raman data were collected using a custom built Raman spectrometer in a 180 ° geometry. The sample was excited using a starbright 785 XM 500 mW laser from Torsana with a wavelength of 785 nm. The laser power was controlled using a neutral density filters wheel. The laser was focused onto the sample using a 50X super long working distance plan APO Mitutoyo objective with a numerical aperture of 0.42. The signal was discriminated from the laser excitation using a laser Kaiser® bandpass filter combined with a Semrock RazorEdge® ultrasteep long-pass edge filter.

NUV laser setup:

The Raman data were collected using a custom built Raman spectrometer in a 180 ° geometry. The sample was excited using a 20mW Cobalt Zook laser with a wavelength of 355 nm. The laser power was controlled using a combination of neutral density and changing the laser output power. The laser was focused onto the sample using a 50X super long working distance plan MPlan APO NUV Mitutoyo objective with a numerical aperture of 0.42. The signal was discriminated from the laser excitation using a Semrock RazorEdge® ultrasteep long-pass edge filter.

Spectrometer:

The data were collected using an Acton 300i spectrograph and a back thinned Princeton Instruments liquid nitrogen cooled CCD detector.

Or

The data were collected using an Andor 750 spectrometer combined with an iDus Backthinned CCD detector.