Photon etc
A spectrum of solutions

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CANADA

RIMA™
RAMAN IMAGING SYSTEM

The perfect Raman imager for the analysis of nanomaterials from graphene to carbon nanotubes, RIMA is a state-of-the-art ultrafast hyperspectral imaging system available at various excitation wavelengths (532 nm, 660 nm, 785 nm). RIMA is also a tool of choice for non-invasive monitoring and analysis of biological tissue.

RIMA NANO - 532 nm, 660 nm

MEGAPIXEL IMAGES **IN MINUTES!**

TECHNICAL SPECIFICATIONS

	RIMA 532	RIMA 660	RIMA 785
Spectral Range*	190 to 4000 cm^{-1}	100 to 4000 cm^{-1}	130 to 3200 cm^{-1}
Spectral Resolution	< 7 cm^{-1}	< 6 cm^{-1}	< 5 cm^{-1}
Microscope	Upright	Upright	Inverted
Objectives	20X, 50X, 100X	20X, 50X, 100X	20X, 60X, 100X
Excitation Wavelengths*	532 nm	660 nm	785 nm
Spatial Resolution	Sub-micron		
Maximum Scanning Speed	250 μm^2/min at full spectral range		
Wavelegth Absolute Accuracy	1 cm^{-1}		
Camera*	Back-illuminated CCD or sCMOS camera 1024x1024 px		
Video Mode	Megapixel camera for sample vizualisation		
Preprocessing	Spatial filtering, statistical tools, spectrum extraction, data normalization, spectral calibration		
Hyperspectral Data Format	FITS, HDF5		
Single Image Data Format	JPG, PNG, TIFF, CSV, PDF, SGV		
Software	Computer with PHySpecTM control and analysis software included		

UPGRADES*	RIMA 532	RIMA 660	RIMA 785
	Low-Noise Back-Illuminated Camera,EMCCD	Low-Noise Back-Illuminated Camera,EMCCD	Deep-depletion camera, EMCCD
	Additional excitation wavelengths available	Additional excitation wavelengths available	Broadband COL Camera, Motorized stage with piezo positioning on z-axis
	Spectral Range Extension: Anti Stokes	Broadband COL Camera: Color 3MP Camera	Spectral Range Extension: Anti Stokes
	Broadband COL Camera: Color 3MP Camera		Additional excitation wavelengths available

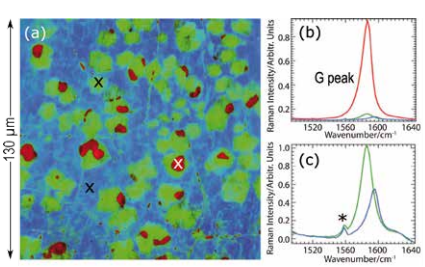
FIGURE 1

www.photonetc.com

Hyperspectral Raman imaging using Bragg tunable filters of graphene and other low dimensional materials

Journal of RAMAN SPECTROSCOPY

Etienne Gaufrès, Stéphane Marcet, Vincent Aymong, Nathalie Y-Wa Tang, Alexandre Favron, Felix Thouin, Charlotte Allard, David Rioux, Nicolas Cottenye, Marc Verhaegen and Richard Martel.



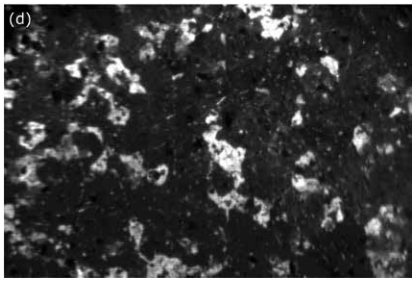


Figure A

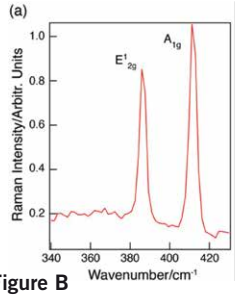


Figure B

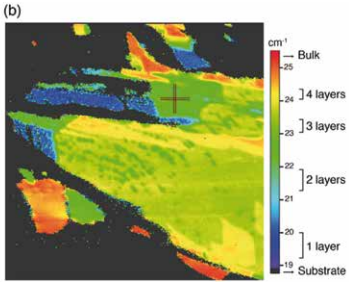


Figure A. (a) 130 µm× 130 µm Raman mappings of the G peak intensity at λ = 532 nm of graphene bilayer islands on a graphene monolayer.
(b,c) Spectra of monolayer (blue) graphene and of nonresonant (green) and resonant (red) bilayer graphene islands from selected points in (a). The peak indicated by * is an instrument artifact.
(d) Raman image (70 × 47 µm²) of the G peak intensity of an artificial bilayer of graphene composed of two monolayers stacked on top of each other.

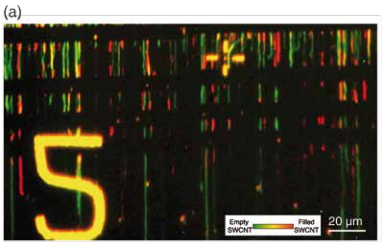


Figure C

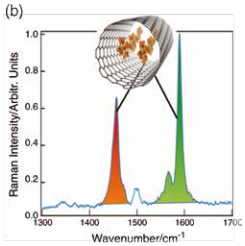


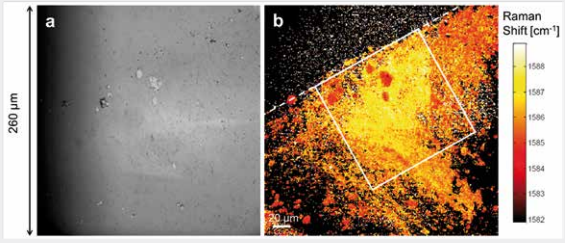
Figure B. (a) Raman spectrum at λexc = 532 nm of few layers MoS_2 extracted from a RIMA hyperspectral cube of the sample and corresponding to the area pointed by a cross in (b).
(b) Color coded cartography (130 µm× 130 µm) of the layer composition of exfoliatedMoS_2 deposited on 100 nm SiO_2/Si substrate.
The color code is obtained from the difference in peak positions between the A_{1g} and E^1_{2g} modes.

Figure C. (a) 260 × 260 µm² Raman mapping of 6T molecules encapsulated in carbon nanotubes (6T@SWCNTs). The image is a superposition of the maximum intensity of CNTs at 1590 cm^{-1} (green scale) and 6T at 1450 cm^{-1} (red scale) obtained after background subtraction. Empty CNTs in green can be distinguished from filled CNTs with 6T molecules in yellow or red, depending on the intensity.
(b) A representative Raman spectrum of the sample showing the characteristic peaks of 6T around 1460 cm^{-1} and the G band of CNTs around 1590 cm^{-1}. Adapted from[37].

MDPI

Electrostatic Deposition of Large-Surface Graphene

Charles Trudeau, Laura-Isabelle Dion-Bertrand, Sankha Mukherjee, Richard Marte and Sylvain G. Cloutier

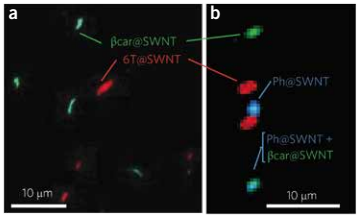


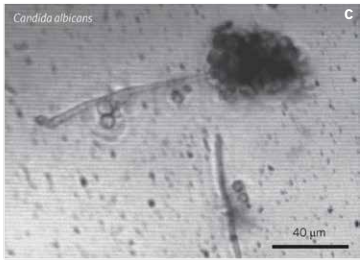
(a) White-light hyperspectral image with high field-of-view showing the edge of the deposition (dashed line).
(b) Hyperspectral image of the full graphene deposition mapping the position of the highest intensity around the G peak (1500–1600 cm^{-1}).
The white box represents 130 µm × 130 µm.
Acquired using RIMATM NANO - Photon Etc

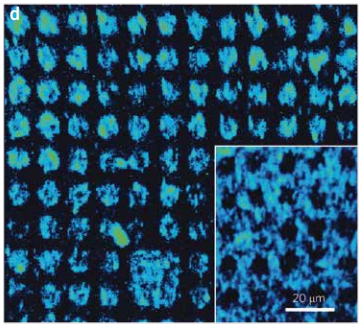
Giant Raman scattering from J-aggregated dyes inside carbon nanotubes for multispectral imaging

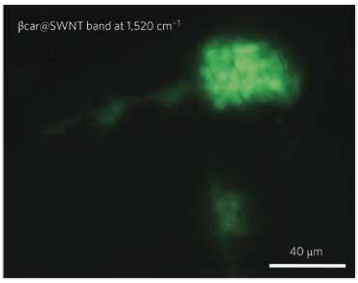
nature photonics

E. Gaufrès, N. Y.-Wa Tang, F. Lapointe, J. Cabana, M.-A. Nadon, N. Cottenye, F. Raymond, T. Szkopek and R. Martel









Raman multiplexing, protein recognition and tagged bacteria with dyes@SWNTs nanoprobes.
(a) Raman hyperspectral image at l ¼532 nm of isolated bundles of 6T@SWNTs (red) and bcar@SWNTs (green) co-deposited at low coverage onto a Si/SiO2 substrate.
(b) As in a, but using a mixture of 6T@SWNTs, bcar@SWNT and Ph@SWNT (blue) nanoprobes on Si/SiO_2.
(c) Top image: optical image of Candida albicans tagged with bcar@PEG–SWNT. Bottom image: corresponding Raman image taken at 532 nm of the bcar@f-SWNT mode centred at 1,520 cm^{-1}.
(d) Raman image of the bcar@PEG-biot–SWNT probe taken at 532 nm using the peak centred at 1,520 cm^{-1}.
The bcar@PEG-biot–SWNT probes selectively attached to immobilized streptavidin by microcontact printing in circular dot shapes (diameter, 10 mm).
Inset: results using the reverse pattern with surface streptavidin located surrounding the dots.