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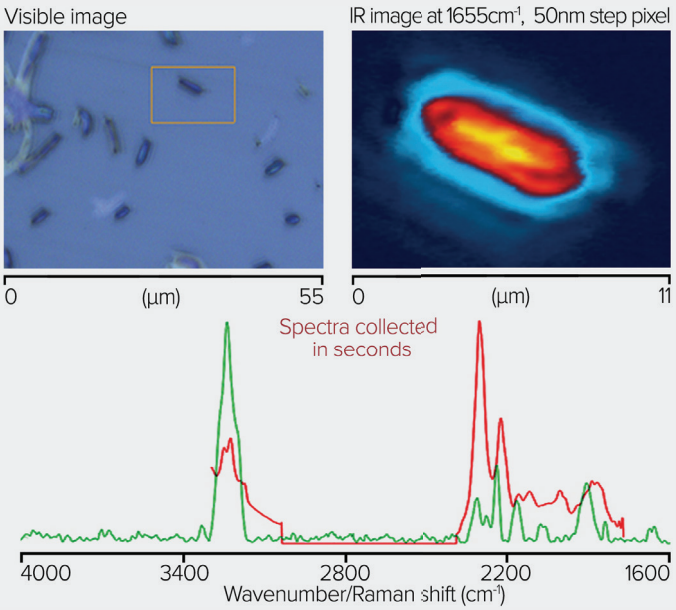
mIRage-LS

500nm IR with simultaneous Raman and co-located Fluorescence

- Co-located Fluorescence microscopy and sub-micron IR spectroscopy
- <500nm IR and Raman spatial resolution
- Simultaneous IR and Raman spectroscopy
- Non-contact reflection-based IR measurement with FTIR transmission-like spectral quality
- No IR spectral artifacts like Mie/diffuse scattering or specular reflection
- Hydrated cell imaging (Fluorescence, IR, and Raman)



Simultaneous IR+Raman of cells

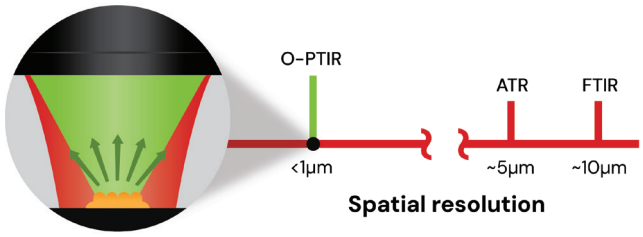
Co-located Fluorescence microscopy and sub-micron IR spectroscopy

Now, for the first time, a fully integrated and sample registration free combination of sub-micron IR, Raman and Fluorescence microscopy techniques are combined into a single platform that heralds a breakthrough for life science research, allowing researchers to truly exploit these combined techniques with powerful synergy, to access additional information and insights not available with the techniques on their own.

<500nm IR and Raman spatial resolution with simultaneous IR+Raman spectroscopy

O-PTIR combines the sub-micron spatial resolution of Raman with IR spectral information, enabling true IR and Raman complementarity and simultaneous measurements.

- Same spot, same resolution, same time
- Higher confidence ID with combined IR+Raman spectral data base searching
- Life sciences, micro-plastics, failure analysis and materials science materials



Tissue and single cell imaging including live cell capability

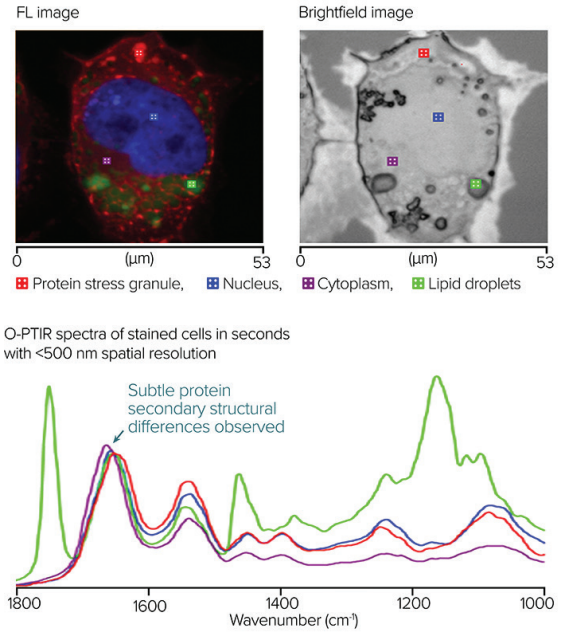
- Single Cells: normal/diseased cell differentiation, drug-cell interactions, intra-cellular (lipid droplet) imaging studies
- Tissues; cell typing, calcifications, disease state, collagen orientation
- Bacteria; Bacterial identification at the single cell level, cell metabolism studied with stable isotopic labelling (^{13}C, ^{15}N, Deuterium)

Non-contact reflection-based IR measurement with FTIR quality data

Unlike in ATR, no contact is required, hence no risk of damage to the sample or ATR, nor risk of contamination or sample carry-over. Furthermore, rough, hard, soft or sticky samples can be measured easily as well as points within sample valleys or crevices.

No IR dispersive scattering artifacts

Spectra collected in non-contact reflection mode produce FTIR transmission-like quality spectra, free of distortion or artifacts (e.g. Mie scattering, Restrahlen bands). Spectra are also unaffected by sample shape or size, thereby allowing easy spectral library searching and interpretation.



Co-located FL+sub-micron IR of cells

System specifications

Sub-micron infrared and simultaneous Raman spectroscopy

Technique	Spatial resolution	Spectral range	Mode	Probe laser
IR (O-PTIR)	<1 µm with co-propogating 500 ≤500nm with counter-propogaing	1800-800 cm-1 (a) 3600-2700 cm-1 (b)	Co-propagating Counter-propogating Transmission detection	532 nm 785 nm (b)
Raman	≤500 nm	3900-200 cm-1 (c)	Reflection	

Widefield Epi Fluorescence

Filter cubes	Objectives	Illumination	Camera
Standard filter cube options available	Standard optical objectives available	Combined 6 solid state white lights with liquid light guide	Sensor: Back illuminated sCMOS monochrome Resolution: 2048 x 2048 Quantum Efficiency: Up to 95% Spectral Range: 370 – 1100 nm

(a) Other IR ranges available upon request, (b) Optional capabilities, (c) Other Raman gratings available upon request

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