SIMTRUM

Widefield Raman Microscope
MicroRam
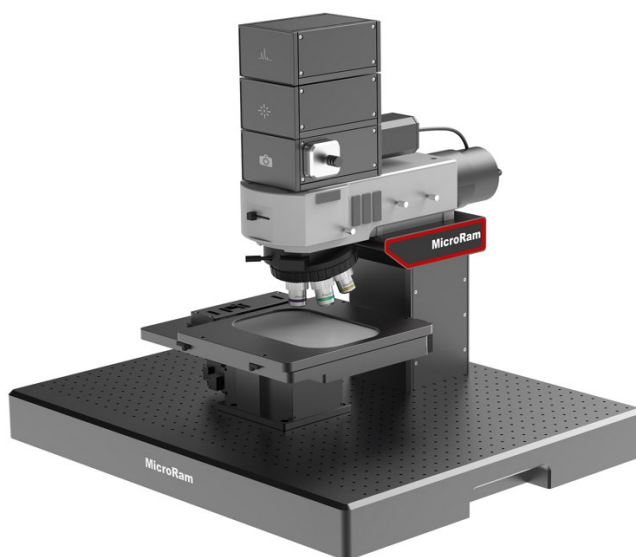
2023 V2
For customized projects please Contact us:
info@simtrum.com

SIMTRUM

MicroRam - Raman Widefield / Confocal Microscopy

MicroRam is an easy-to-use tool for acquiring Raman Spectrum, with a motorized stage customers can perform Raman spectral image mapping of the samples.

SIMTRUM's Micro-Raman adopted a modular design concept, with an external connection port, providing great flexibility. Customers can always connect an external laser source or spectrometers to the systems.
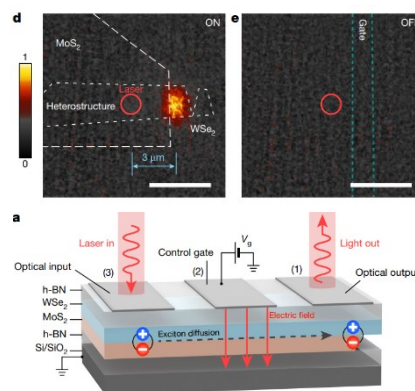
Features

- Raman spectral mapping: **Acquisition of Raman Spectral at every image pixel**
- Photoluminescence micro-spectroscopy
- Multi-channel design
- Using referenced scan image to get localized spectrum
- Standard laser wavelengths offered include 532, 785, and 1064nm, with more available upon request.
- Standard Raman spectrometers, option for large NA high sensitivity Raman spectrometer.
- Option for Bright Field or Dark Field microscope
- Standard Free space setup, option for external fiber port.
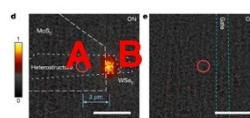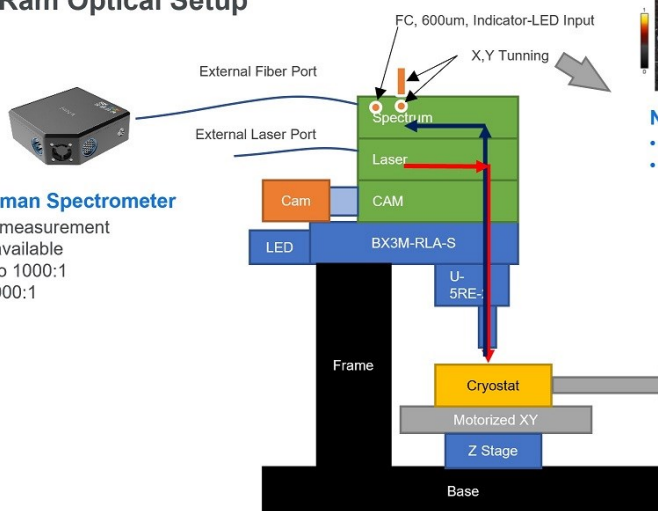
Applications

- Biology and Life Sciences
- Materials Science
- Graphene and Carbon Nanotubes
- Nanomaterials
- Catalysts
- Semiconductor
- Process Contamination Analysis
- Pharmaceutical Quality Control

Micro-Ram Optical Setup

FC, 600um, Indicator-LED Input

X,Y Tunning

External Fiber Port

External Laser Port

Spectrum

Laser

Non-coaxial measurement
- Laser excitation on point A
- Raman detection on point B

High Sensitivity Raman Spectrometer
- Low signal Raman measurement
- 530, 785, or 1064 available
- Signal to Noise ratio 1000:1
- Dynamic range 10000:1

Cam

CAM

LED

BX3M-RLA-S

U-5RE-

Frame

Cryostat

Motorized XY

Z Stage

Base

Low-temperature Raman measurements
- -190 to 600 degrees
- 8 probe arm

Product Specifications

Parameter	Channels		
Laser Choice	532nm	785nm	1064nm
Laser Power	Multi Mode: 100mW Single Mode: 100mW	Multi Mode: 500mW Single Mode: 100mW	Multi Mode: 500mW
Linewidth	<0.1nm		
Raman Range	Typical: 0~3600cm-1	Typical: 0~3200cm-1	Typical: 150~2500cm-1
Resolution	4-6cm-1	4-6cm-1	4-8cm-1
Detector	Cooled SBI CCD	Cooled SBI CCD	Cooled InGaAs
Spot Size	<1um@100x	~1um @50x	20um@100x
Illumination Method	Kohler Lighting & Darkfield Lighting		
Objective	5 Port Turret：Objective choice 10X，20X，50x，100X		
FOV	200um ~250um @50X Objective		
Working Distance	10mm @50X Objective (Customizable）		
Imaging Camera	16Mega Pixels; Pixel size: 1.34 x 1.34um		
Indicating Laser	Yes (Upgrade option for localized spectrum detection)		
Stage	XY Motorized, Z Manual (Avaible for updating to be motorized)		
Stroke Distance	130 × 85 mm		
Repeatability Accuracy	+/- 1um		
Precision Control	Built-in grating ruler full closed-loop control		
Max. Speed	20mm/s		
Max. Load	6.8kg		
Confocal Setting	Can be updated to confocal raman microscope		

| Parameter	High-sensitivity Raman (Upgrade)		
Raman	532nm	785nm	1064nm
CCD Detector	Hamamatsu, S7031-1006S		Hamamatsu G14237-512WA
Dynamic Range	10000:1		14000:1
Signal-to-Noise Ratio	1000:1		
Grating	1800l/500mm	1200l/850mm	830l/1200nm
F/#	F/2		

Software Function

- Support Raman spectrum mapping, and single Raman measurement
- Based on node.js Electron framework
- Support Windows, Linux-based OS, for professional customers.
- Integrated mighty open-source chart, supporting various gestures.
- Support wavelet smoothing algorithm, specially built for Raman application, can improve user spectrum SNR significantly.
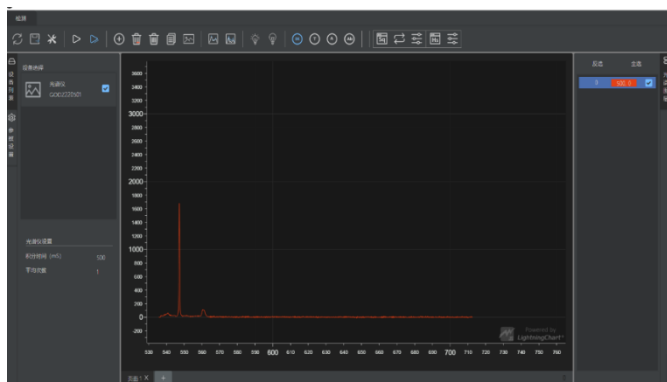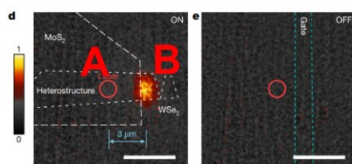

Example for 532 Raman for Si Condition

Options for System Upgrade
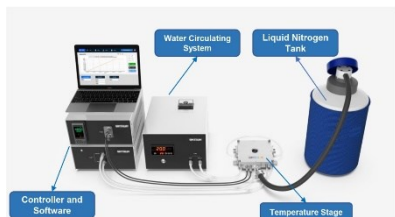
Compatible with SIMTRUM Cryostat to perform **Low-temperature Raman measurement**
- -190 to 600 degrees
- 8 probe arm able to upgrade to adjustable probe arm
- Reflection or transmission mode available

Upgrade Using referenced scan image to get localized spectrum
- Laser excitation on point A
- Raman detection on point B
- Manual localization

Update to SIMTRUM Large NA **High Sensitivity Raman Spectrometer**
- Specialized for low signal Raman measurement
- 530, 785 or 1064 available

Upgrade to Confocal Raman Imaging for Depth profiling
- 3D imaging construction
- Different laser wavelength choice
- High image resolution

Add SIMTRUM Spectrometer for UV, VIS, NIR **Spectral Measurement**
- Wavelength range from 200 to 2500nm
- Spectral resolution up to 0.1nm

Additional Lasers or Multi-wavelength upgradeable

Upgrade to Piezo stage for Nanometer scan sample scanning