

**NANOBASE** is a market leader in high resolution optical microscopy solutions for scientific and industry applications.

- *Compact Size* for 532nm Excitation Main Users
- *Excellent Resolution* and *Affordable Price*
- *High throughput* using Holographic Transmissive Grating
- 200 $\mu$ m x 200 $\mu$ m Image *fast Scanning & 2D Mapping* (x 40 objective)
- User Friendly Interface and Simple Operation

Through continuous corporate commitment on innovation, **NANOBASE** has acquired depth of expertise and know-how in optics and spectroscopy system, thus has been achieved number of unique technological excellences such as patented tunable laser and spectrometer for Micro Raman Spectroscopy.

**NANOBASE** has developed the **Confocal Raman Imaging System** combining patented spectrometer with our own technology. You can start with the basic **XperRam compact** system and upgrade later selecting the various optional functions. Extremely simple operation and maintenance will make users who just start Raman spectroscopy very close to it, also extendable and customizable system service will provide the high flexibility to the Raman experts.

## FEATURES

### LASER SCANNER

- **Excellent resolution & repeatability**- resolution < 0.02  $\mu$ m & repeatability < 0.1  $\mu$ m.
- **Large area Raman imaging** scan area exceeding 200 x 200  $\mu$ m using a 40X, NA=0.75 objective
- **Diffraction limited laser spot**- over the scan area

### EXCELLENT RESOLUTION

- 1932 pixels CCD and 1800 l/mm grating provide **High Resolution and Wide Raman shift range**.

### AVERAGE MODE

- **High Speed in averaging mode**— Acquire a single Raman spectrum over the 200 x 200  $\mu$ m area in just 4 seconds
- **Minimum CCD readout-noise**- CCD acquires one Raman spectrum while the laser scans over the area, thus reducing the CCD readout-noise greatly compared to conventional 2D Raman mapping method.
- **Useful for quick quantitative analysis** of the analytes on thin samples - thin films or nanoparticles on a glass slide

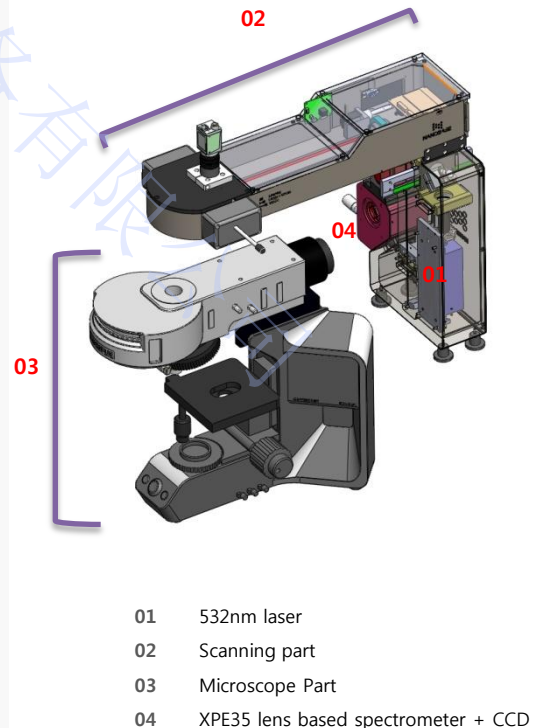
### FIXED 532NM EXCITATION LASER

- Only 532nm excitation laser is available. Most of Raman spectrum can be **Obtained from the 532nm laser**.

### OPTIMIZED BEAM PATH

- Small sized spectrometer and highly optimized beam path deliver **Compact and Super-performance System**

### STANDARD MODEL & BEAM PATH



**SPECIFICATIONS - BASIC**

- LASER** •532nm, up to 100mW DPSS laser
- MICROSCOPE**
- Mechanical stage with right-hand control
  - Reflected LED illuminator for bright field
  - Quintuple Revolving Nosepiece
  - USB 2.0 Full HD camera
- STANDARD OBJECTIVE**
- x40 , NA=0.75
  - >60% transmission from 360 to 1000 nm
- SPECTROMETER (XPE35)**
- Input f/1.8
  - Focal length 35mm /50mm
  - 1200/1800lpm VPHG
  - Micrometer for center wavelength adjustment
  - FWHM resolution : ~ 0.12 nm (@1800lpm VPHG)
  - Raman Shift Range : > 3300 cm<sup>-1</sup> (@1800lpm VPHG)
- DETECTOR** • ICX674

**SPECIFICATIONS - OPTIONS**

**Low freq. filter set**

- >>Grade 2 (Available)
  - Observe the Raman spectrum by 45cm<sup>-1</sup> (Typ. 30cm<sup>-1</sup>)
- >>Grade 3 (Available)
  - Observe the Raman spectrum by 70cm<sup>-1</sup> (Typ. 50cm<sup>-1</sup>)

**Laser Scanner**

- Optimized for raster scan
- Wavelength range: 450 ~ 700 nm
- FOV: 200 X 200 μm using a 40X objective
- Single Protected silver mirror (450~1000 nm) for XY scan
- >> Laser scan controller
  - USB 2.0
  - Labview example provided

**Power Control**

- Variable ND filter (OD 0.04~4)

**Polarization Control**

- >> Excitation polarization control
  - 0~180° continuous rotation of excitation laser polarization
  - Operating wavelength : 532±20 nm
  - Utilize a zero order half-wave plate
- >>Collection polarizer
  - Operating wavelength: 420~700 nm
  - Extinction ratio > 200:1
  - Transmission > 83%

**APPLICATIONS**

▪ **Biology**

- Cell research / Disease detection / Stents and implants
- Cosmetics and in vivo skin analysis

▪ **Chemical Identification**

▪ **Forensics**

- The non-destructive and in-situ identification of controlled drugs and narcotics.

▪ **Pharmaceutical , Cosmetics and Food Science**

- Characterization and Mapping of active pharmaceutical ingredients and excipients

▪ **Semiconductor , Photo voltaics and OLED**

- Strain measurements of a Si cap layer deposited on a SiGe substrate determination of Ge content
- Defects identification during the manufacturing process

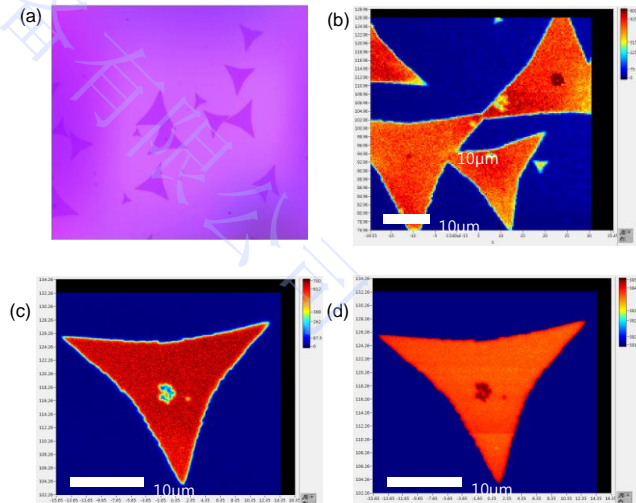
▪ **Solid State Materials**

- Analysis of Solid State Chemical Reactions and Composite Materials : Raman Maps Identify and Located Phases.

*It can be adapted to :*

- Microscopy, mapping, and imaging
- Real-time reaction monitoring
- Routine quality control/ quality assurance
- On-line process control

**MAPPING IMAGE**



(a) MoS<sub>2</sub> sample microscope image  
 (b) 50x50μm size 0.3μm step Intensity mapping image  
 (c) 30x30μm size 0.1μm step Intensity mapping image  
 (d) 30x30μm size 0.1μm step Frequency mapping image