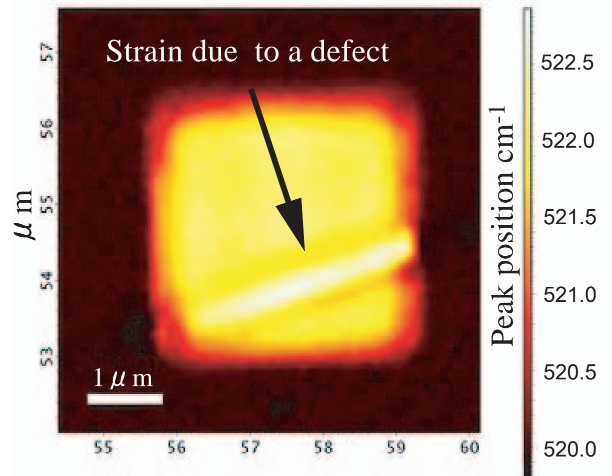
3D Nano Raman System
Nanofinder® 30

Strained Si Measurement

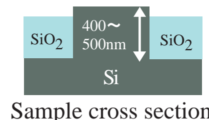
Spatial Resolution <130nm, Strain 0.01%(0.1cm^{-1}shift), High Sensitivity



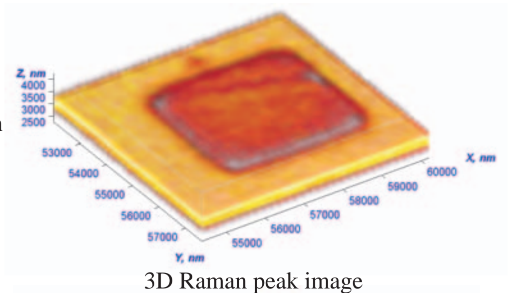
Strain distribution of Si by 364nm excitation
Measurement field: 5.5x5.5 μ m, Laser power:0.4mW
Step scan: 100nm(55x55 point)
Exposure time: 0.1sec/point, Measurement time: 5 minute

Feature

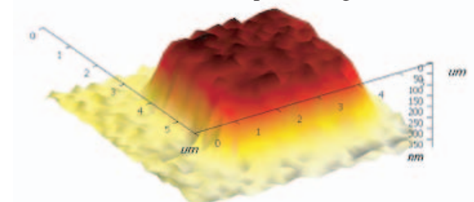
- UV laser confocal Raman Microspectrosecopy:
  Surface analysis on strained Si.
  High sensitivity short time measurement on Si surface (~4nm).
- Echell Spectrometer: High spectral resolution, high sensitivity, high mechanical stability
- Spatial resolution: <130nm
  (@364nm,objective lens 100x NA=1.2)
- Strain measurement accuracy
  0.05% <0.5cm^{-1} @364nm (spectrometer)
  0.01% <0.1cm^{-1} (spectrum fitting)
- Maximum scannig field: 100 μ mx100 μ m
- 10 x improvement over previous instruments:
  Sensitivity, spatial resolution



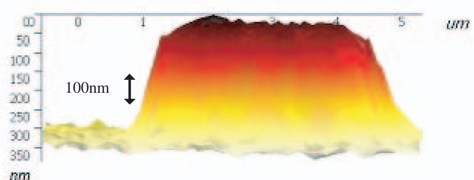
Sample cross section



3D Raman peak image

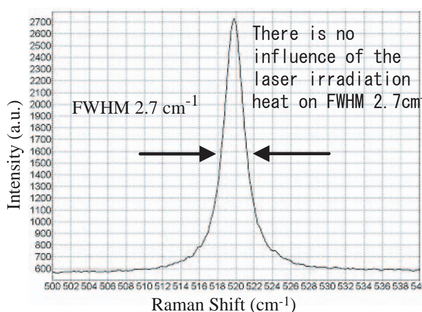


3D Raman topographic image.

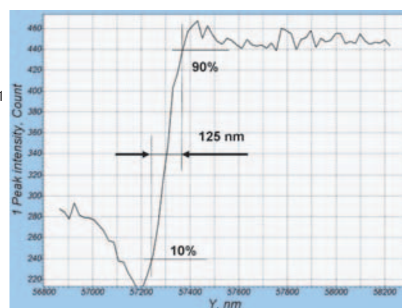


2D Raman topographic image (side view).

Raman image of Si pit (520cm^{-1})
Measurement field: 5.5x5.5 μ m, Laser power:0.4mW
Step scan: 200nm, Exposure time: 0.1sec/point



Raman spectrum from Si.
Sample: Si, Laser: 364nm,
Exposure time: 1sec, Si Ranan peak: 520cm^{-1}
Laser power : 0.4 mW



Spatial resolution measurment (X-Y) on Si sharp edge.
Resolution at 10-90% rising, Step scan: 20nm
Objective lens 100x NA=1.2, Laser : 364nm

Courtesy of Ph.D Kanayama, MIRAI Project (NEDO) and Advanced Semiconductor Research Center (AIST)

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