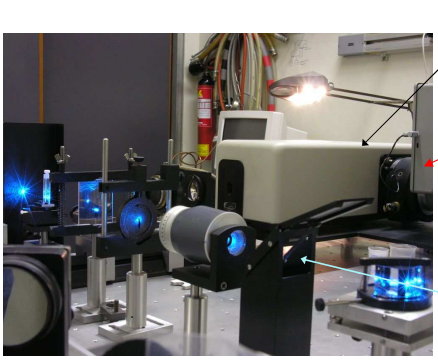
Raman set-up

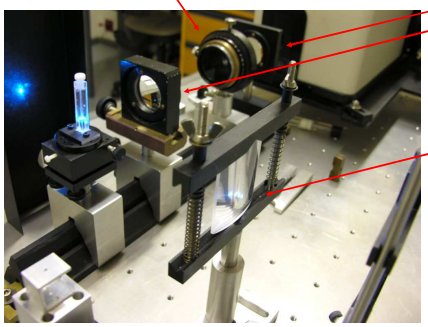
- The instrument
- Experimental advantages
- Accessories
- Examples of spectra

Raman set-up

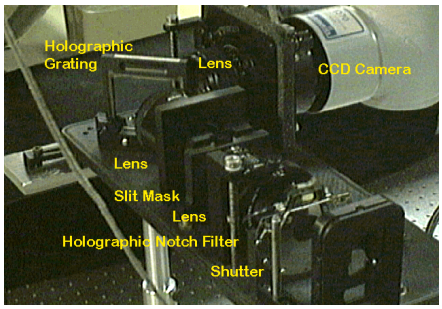
- Diode Laser(488nm), He-Ne Laser (632nm)
- Holospec f/1.8 spectrometer
- LN2-cooled CCD camera
- Home-built computer control (D. Lovy)

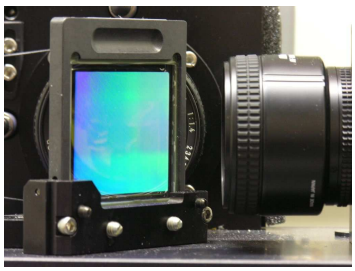
Spectromètre Raman





Kaiser Optical Holospec Spectrometer





Transmission gratings:

Low frequency Stokes gratings	488nm	100 – 2600 cm^{-1}
	632.8nm	100 – 2020 cm^{-1}

Computer control

- Program WROA (D. Lovy) (PC)
  - Define acquisition window on CCD
  - Set binning (max 1500 counts/pixel, total 65k)
  - Define exposure time, number of accumulations
  - Data saved as ascii files (extension .w1), experimental data in header part ($text etc)
  - Program extended for R.O.A.
  - Compatible with data treatment program « Spectraw » by D. Lovy

Experimental advantages

- No moving parts
- High light throughput (f/1.8)
- Shot noise detection (long accumulations possible)
- Raman spectrum from 150 to 2500 cm^{-1}
- Easy to use

Experimental disadvantages

- Limited spectral range C-H, N-H and O-H stretching vibrations not accessible
- Lattice modes below 150 cm^{-1} not accessibles

Accessories

Polarization rotator

Polarizer

Rotating quarter-wave plate for Raman Optical Activity

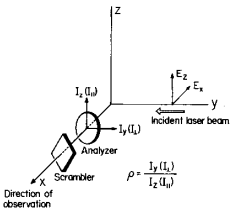


Fig. I-27. Experimental configuration for measuring depolarization ratios. The scrambler is placed after the analyzer because the monochromator gratings show different efficiencies for ⊥ and ∥ directions.

Accessories

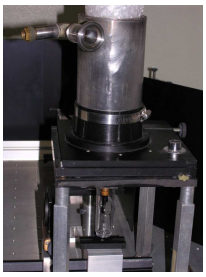
Circulating bath heated cell (up to 200℃) for powder samples in capillaries

Backscattering geometry

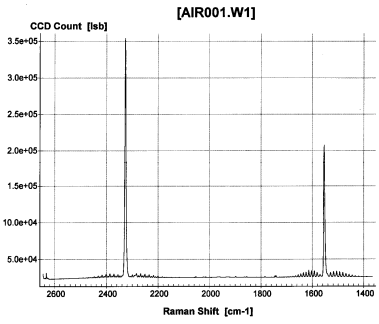
Thermostatted cell holder 1cm cells

Helium flow cryostat

Liquid nitrogen dewar



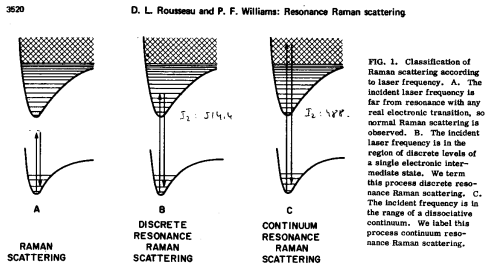
Examples



Spectre Raman rovibrationnel de l'oxygène (vers 1600 cm^{-1}) et de l'azote (vers 2300 cm^{-1})

Acquisition time : 30 x 60 sec

Resonance Raman



Resonance Raman

Charge transfer complex (Chem. Eur. J. 2009, 15, 63 – 66)

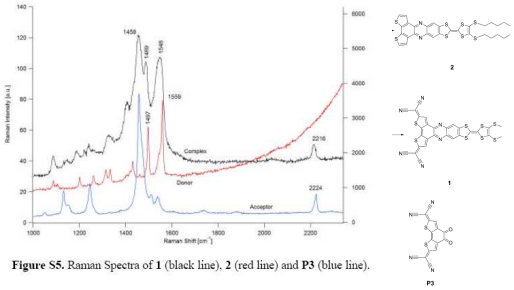


Figure S5. Raman Spectra of **1** (black line), **2** (red line) and **P3** (blue line).

Other Raman instruments available

- Spex 1404 or 1403 (for measurements of lattice vibrations)
- Labram Raman Microscope (in the geology department)