



PSSRC @ Otago

North Island

Tasman Sea

Tasman Basin

South Pacific Ocean

South Island

Keith Gordon University of Otago

Steward Island

Whangarei

Waitakere

Auckland

Manukau

Tauranga

Hamilton

North Taranaki Bright

Rotorua

Whakatane

New Plymouth

North Taupo

Taupo

Gisborne

Mt. Ruapehu

South Taranaki Bright

Napier

Hastings

Hawke Bay

Wanganui

Palmerston North

Levin

Porirua

Masterton

Lower Hutt

Wellington

Westport

Karamea Bright

Nelson

Blenheim

Greymouth

Hokitika

Canterbury Plains

Kaiapoi

Pegasus Bay

Christchurch

Ashburton

Timaru

Canterbury Bright

Oamaru

Queenstown

L. Tekapo

L. Pukaki

L. Wakatipu

L. Te Anau

Wairaki

Timaru

Oamaru

Dunedin

Invercargill

Foveaux Strait

Mt. Anglem

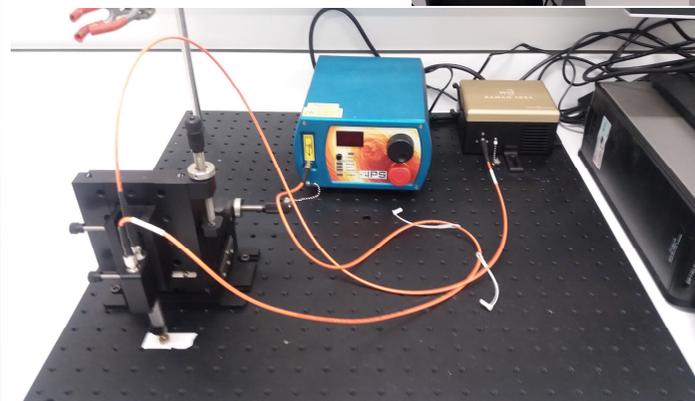
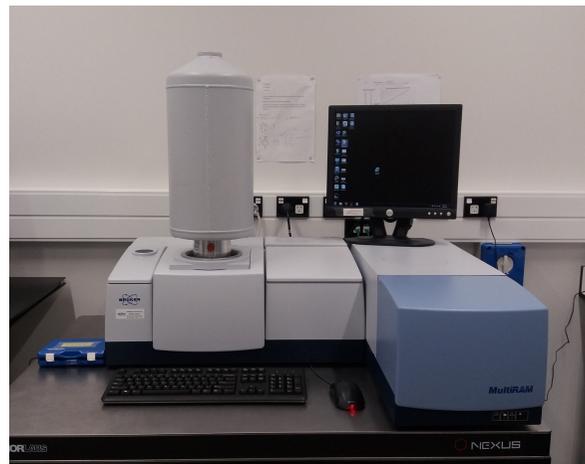
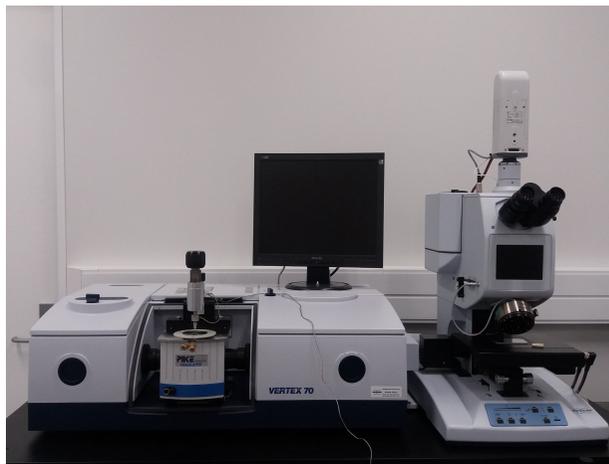
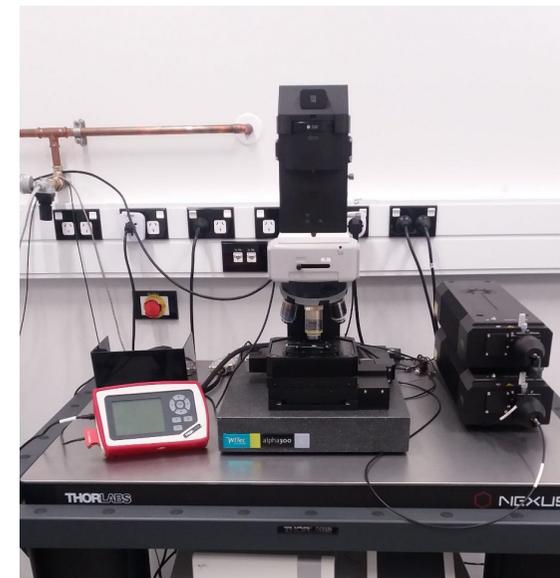
Florida Inlet

Capabilities

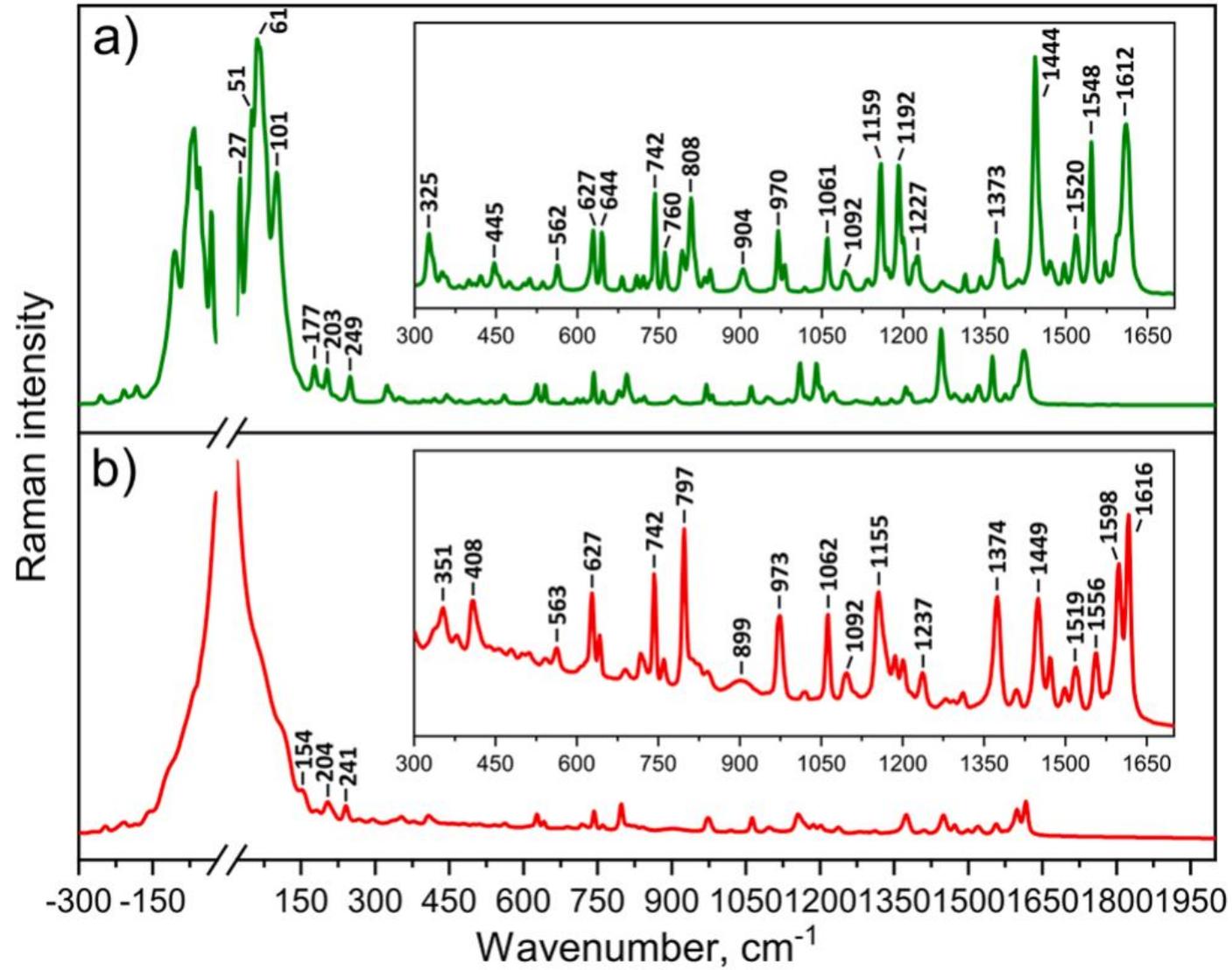
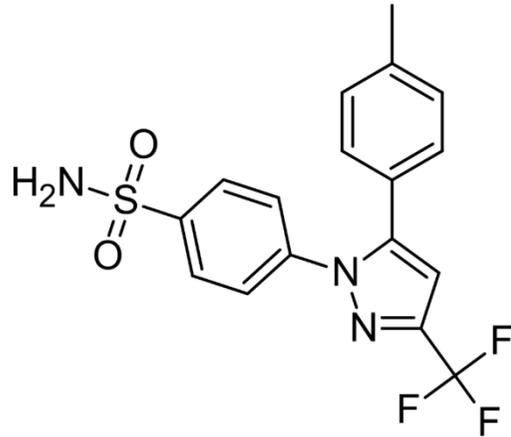
Spectroscopy and chemometrics – solid-state species and identification

Computational chemistry

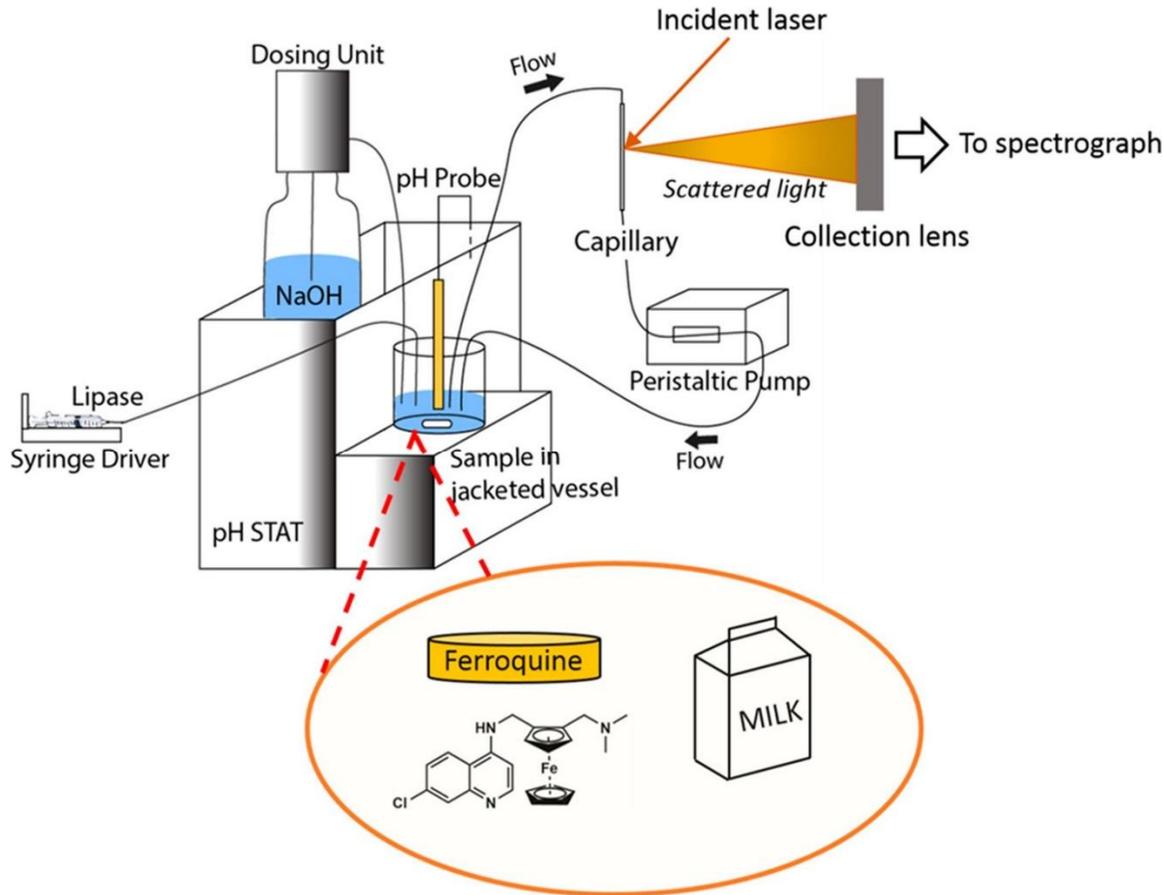
Focused lab – multimodal approach, Raman, infrared, near-IR and low frequency Raman



Low frequency Raman spectroscopy

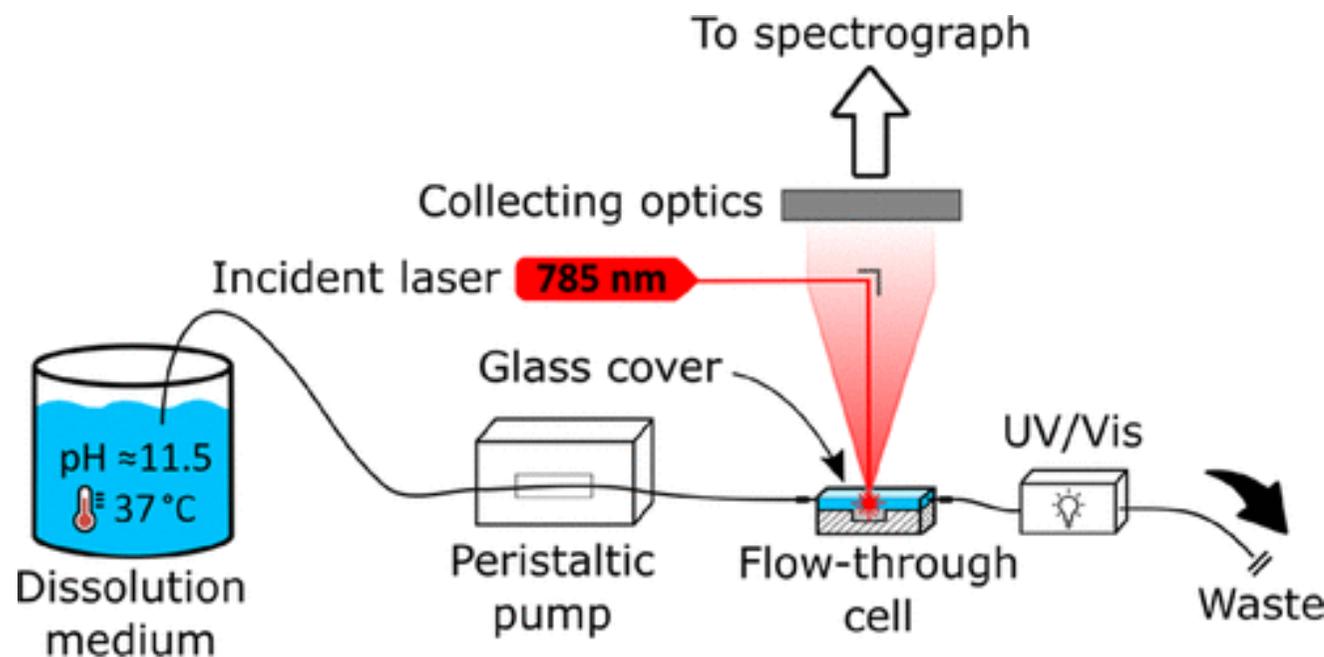


Low frequency system



- 180 or ~130 deg backscatter
- 300 μm spot or through microscope objective closer to micron
- Used for:
 - analysis of tablets and powders,
 - mapping tooth sections,
 - continuous monitoring of drug digestion (light focused on capillary with suspension flowing through)
 - Previous drug dehydration measurements.
 - Spatially offset low frequency Raman (SOLFRS)

- Downwards looking
- 300 μm spot or through microscope objective
- Can use with stages to map, heating stage, flow through cell, anything needs measuring from above.



- This is used for:
 - Monitoring tablet/amorphous disk during dissolution,
 - Micro-SOLFRS,
 - Monitoring solid state form changes with a wider temperature range (enclosed temperature stage)

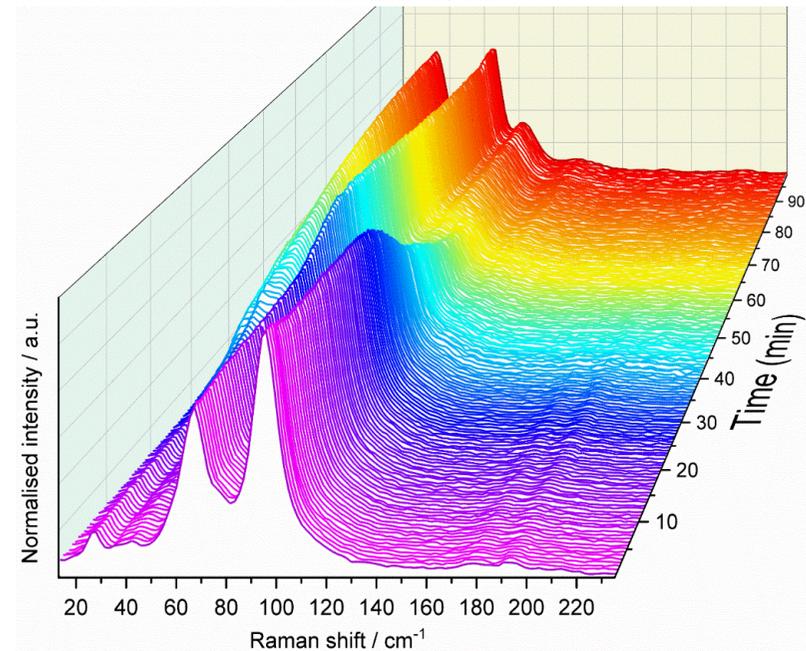
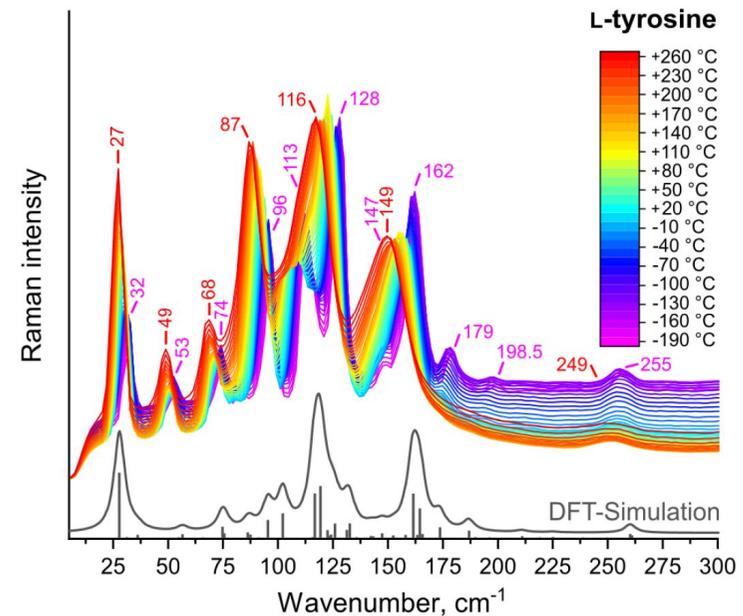
Measurements are rapid (< 1 s) and may be completed at a range of temperatures

Expertise in extracting data via multivariate methods

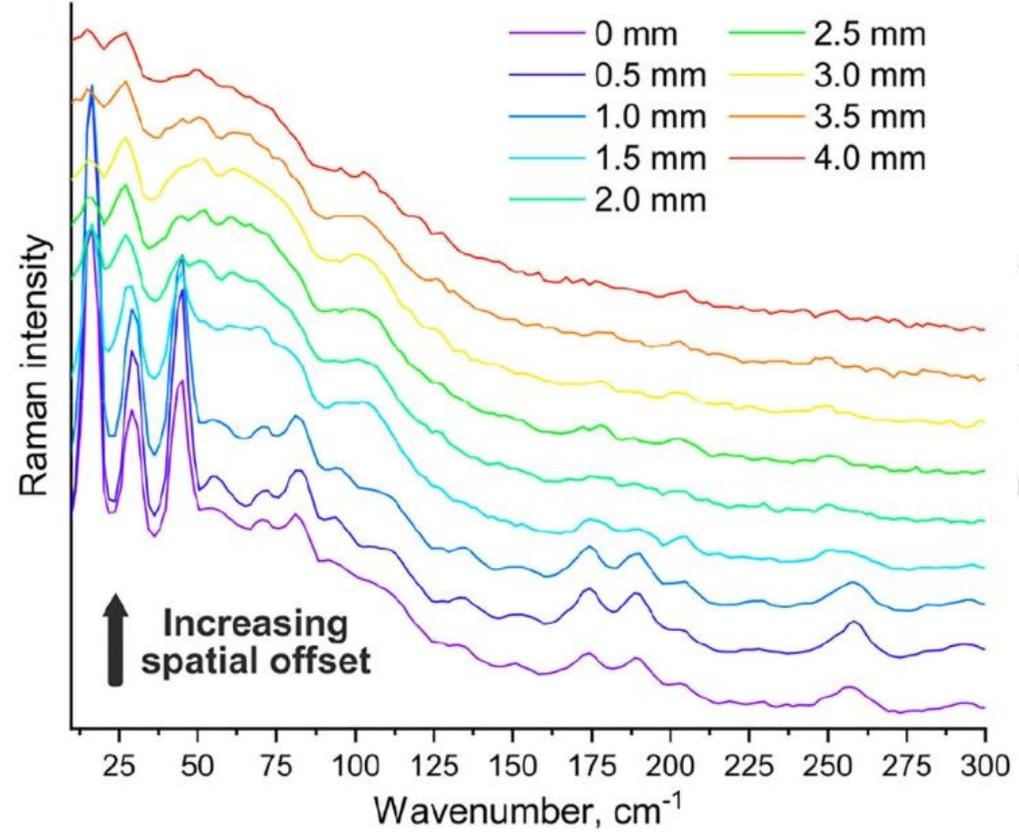
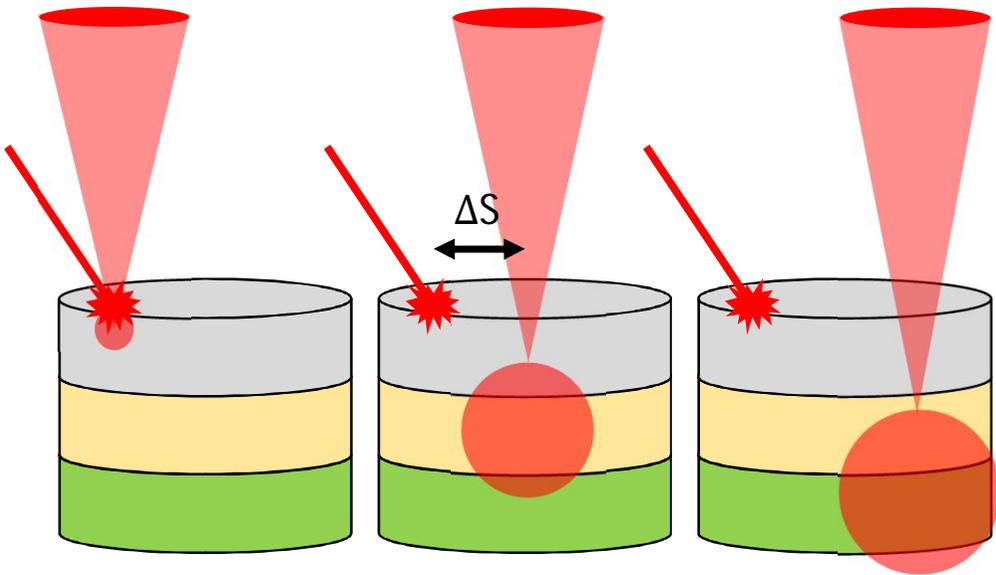
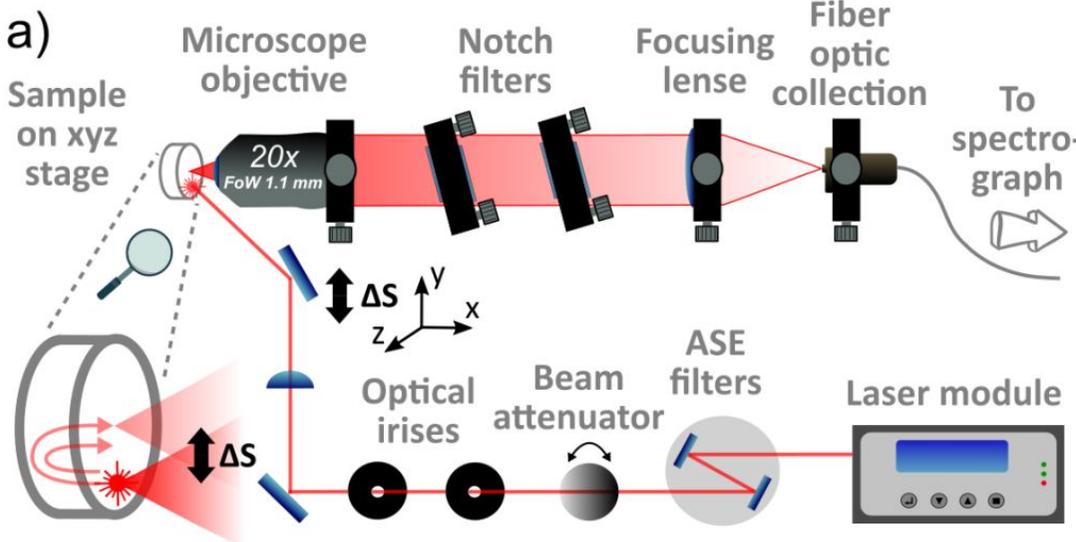
Modelling spectra (with Tim Korter, Syracuse) for interpreting data

Cryst. Growth Des. 2020, 20, 10, 6947–6955

Mol. Pharmaceutics 2021, 18, 3, 1264–1276

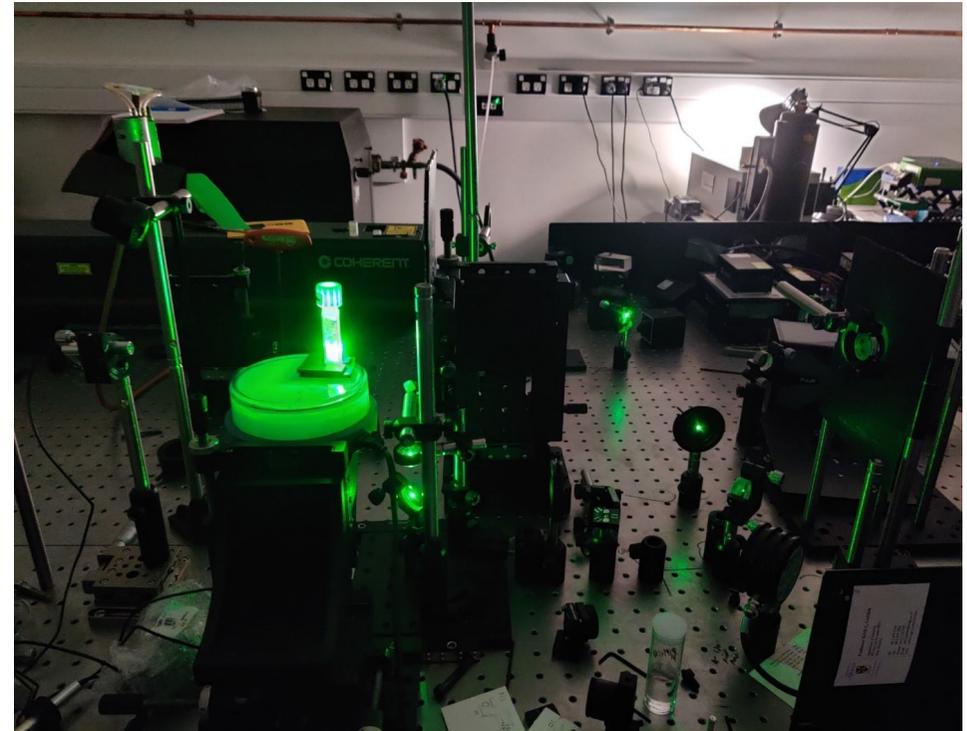


Spatially offset Low Frequency Raman spectroscopy SOLFRS



Other LFR systems

- 830 nm Ondax low frequency system (higher resolution, smaller spectral window, detector not well suited to the wavelength (poorer throughput – lower S:N)
- 532 nm LFR system, similar to 785 nm 130° backscatter setup.



PhD scholarships at Otago are open to all - fees stipends are included

Externally funded work is also at domestic rates

Dodd Walls funding for a PhD

MacDiarmid funding for a PhD

See us on <https://blogs.otago.ac.nz/keithgordon/>

Funding

<https://www.royalsociety.org.nz/what-we-do/funds-and-opportunities/marsden>



**MINISTRY OF BUSINESS,
INNOVATION & EMPLOYMENT**
HĪKINA WHAKATUTUKI

<https://www.mbie.govt.nz/science-and-technology/science-and-innovation/funding-information-and-opportunities/investment-funds/endeavour-fund/>

Mostly directly in University and un-named

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