Warsash Scientific Pty Ltd
t: +61 2 9319 0122
www.warsash.com.au

PRESS RELEASE
04 September 2013

Standalone Low Wavenumber Raman Spectroscopy

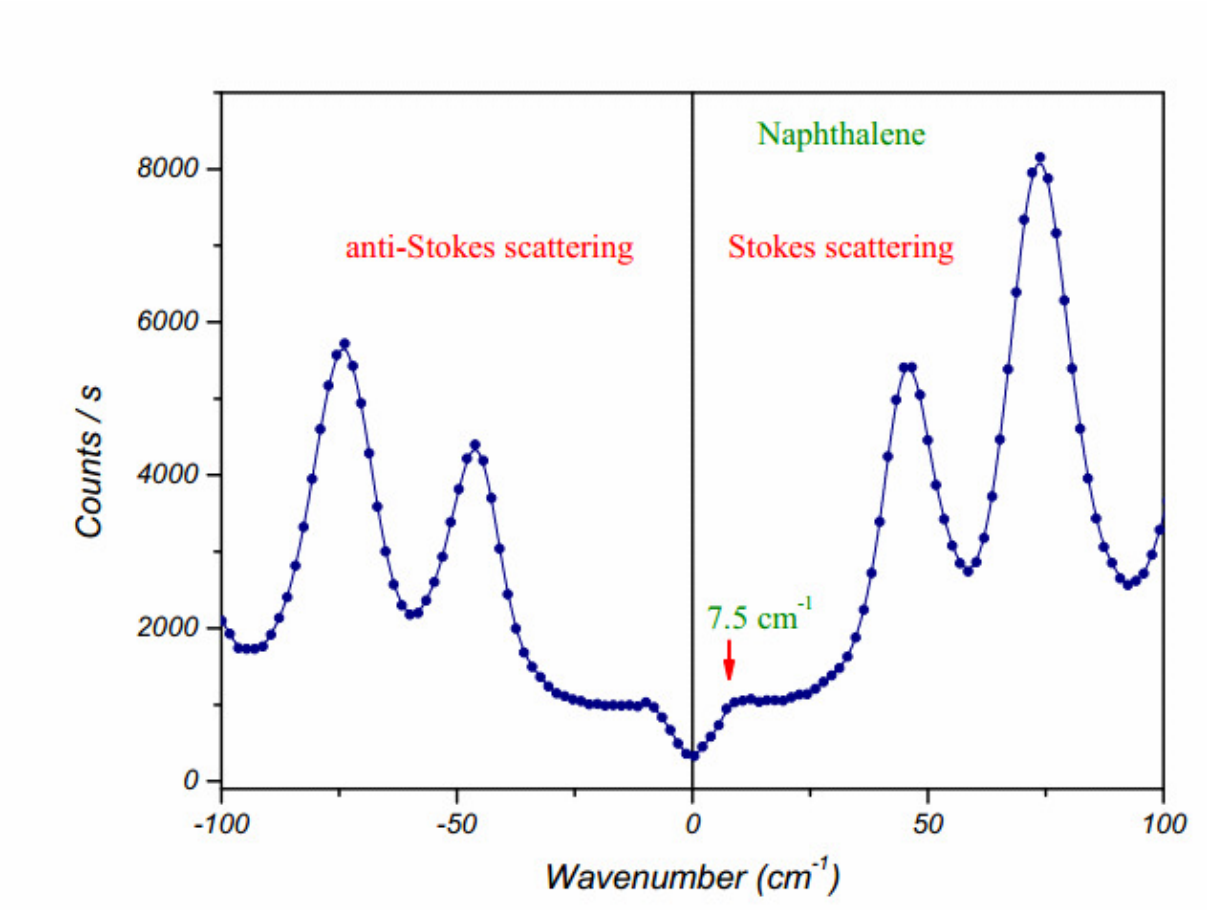
*Innovative Raman filters from **Enspectr** ensure spectral range from 7 up to 4000cm^{-1} with spectral resolution 3cm^{-1} (Stokes component) simultaneously in one shot with spectral range from -1000 to -7 cm^{-1} (anti-Stokes component).*

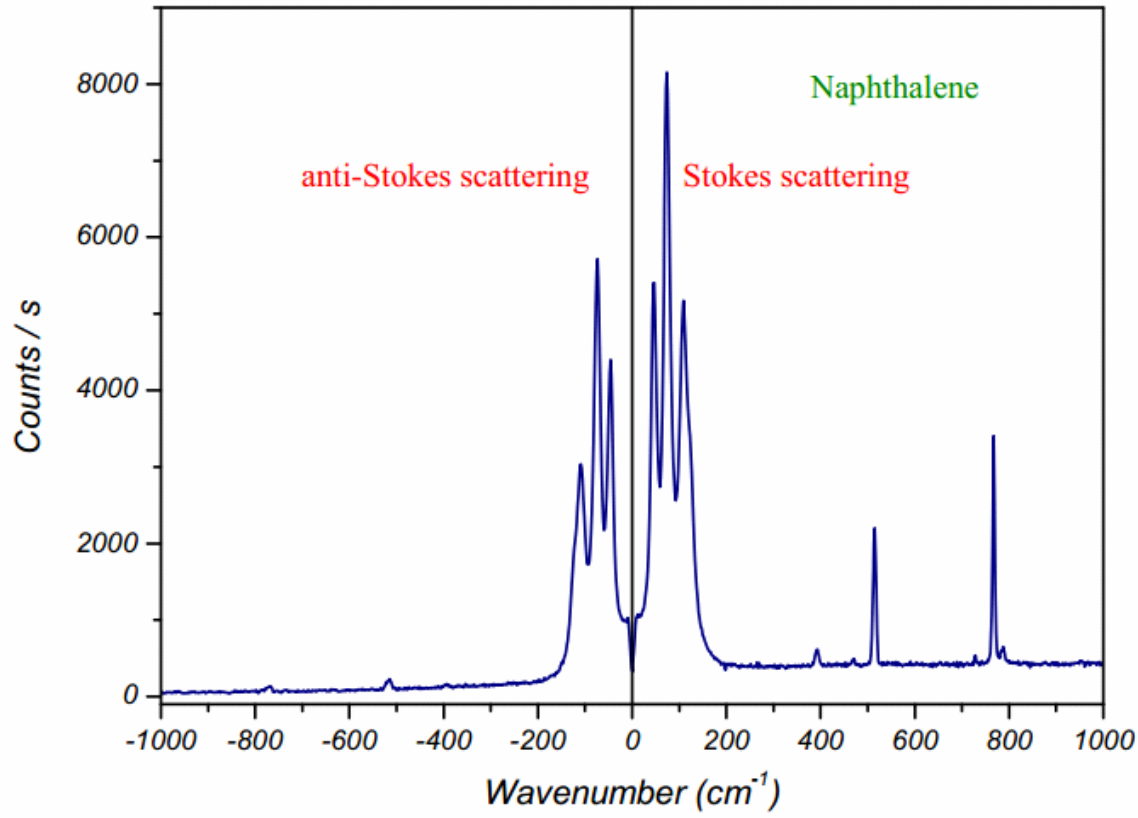
Ultra-low frequency Raman analysis substitutes perfectly well the terahertz spectroscopy carrying valuable information about long range bonds in polymers, low energy vibrations in complex organic molecules, low frequency phonons in solids and other.

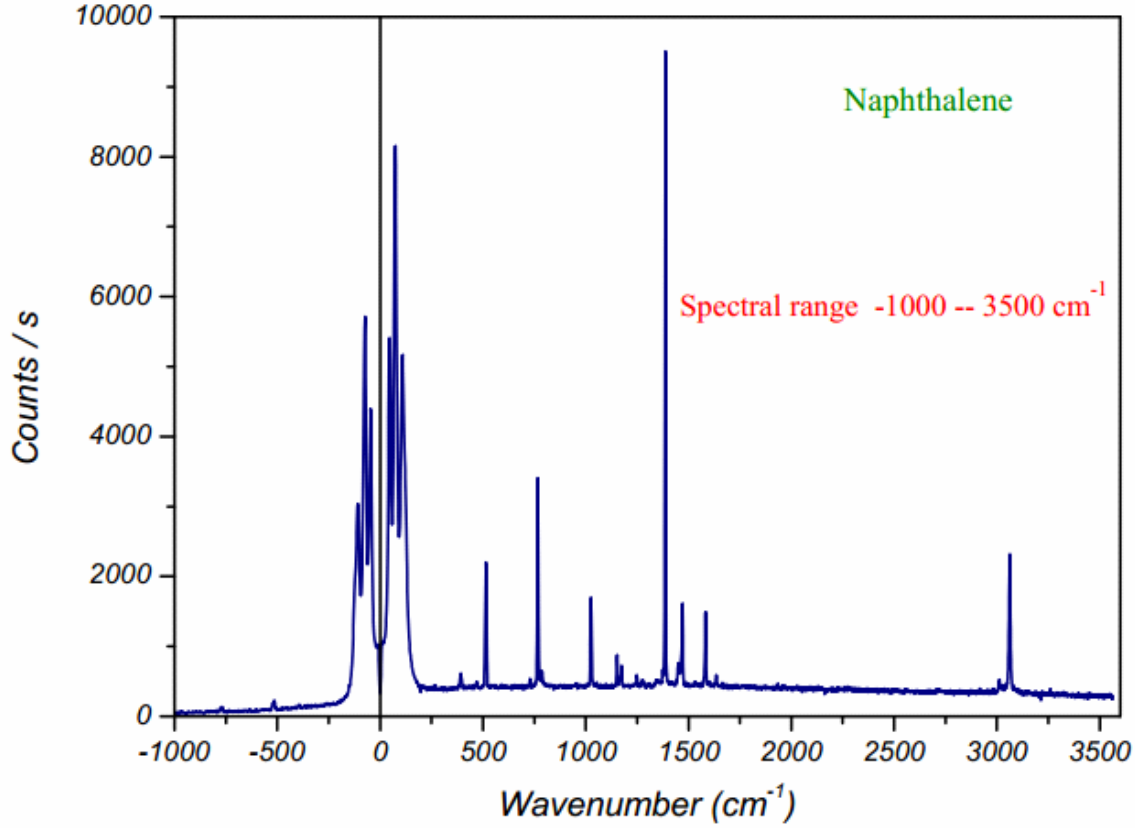
Ultra-low frequency Raman analysis (below 100cm^{-1}) gives a lot of useful information for researchers of important modern materials:

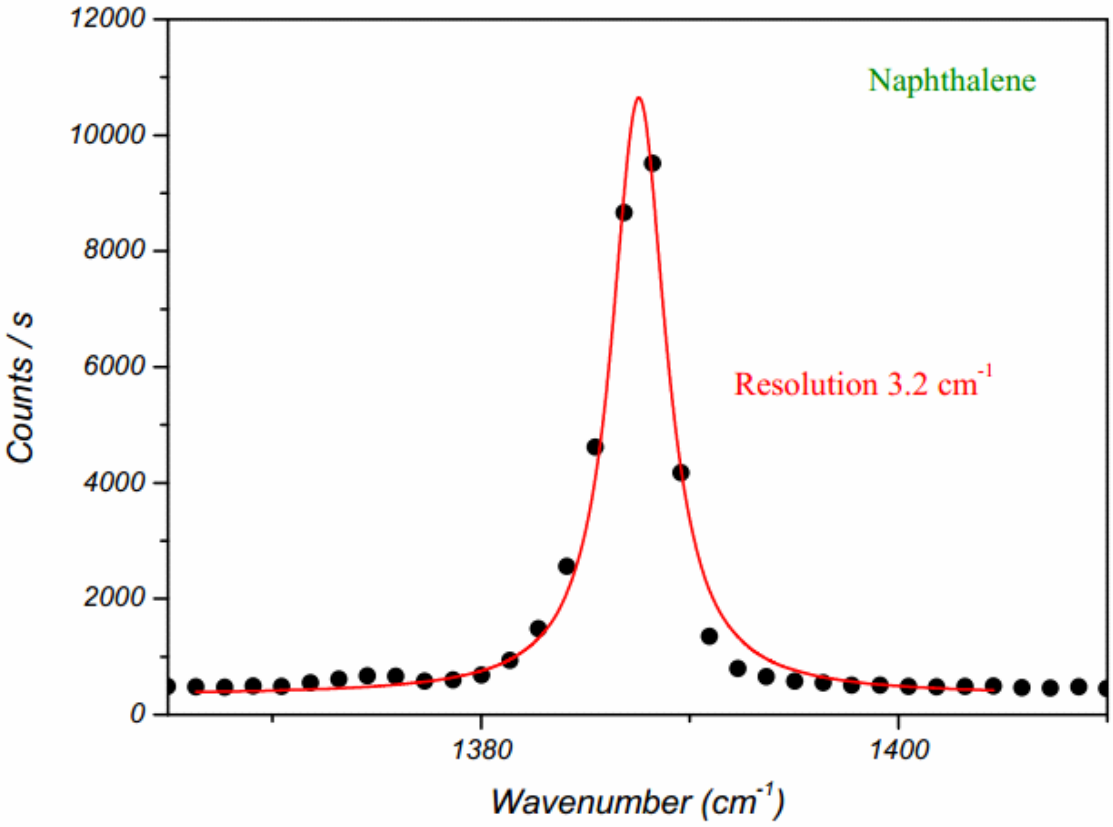
- Radial breathing modes of single- and multi-wall carbon nanotubes exhibit Raman spectral components that depend on the tube diameter and that can be used to determine sample quality and composition
- Folded acoustic modes of multilayer superlattice structures in advanced semiconductor devices show multiple strong signals below 100cm^{-1}
- Heavy atom vibrations in compounds (like halides used in incandescent lights)
- Relaxation mode measurements of various liquids and solutions can help identify their dynamic structure
- Rotational mode measurements of gases can be used to determine bond lengths
- Analysis of low wavenumber shear modes and lattice modes

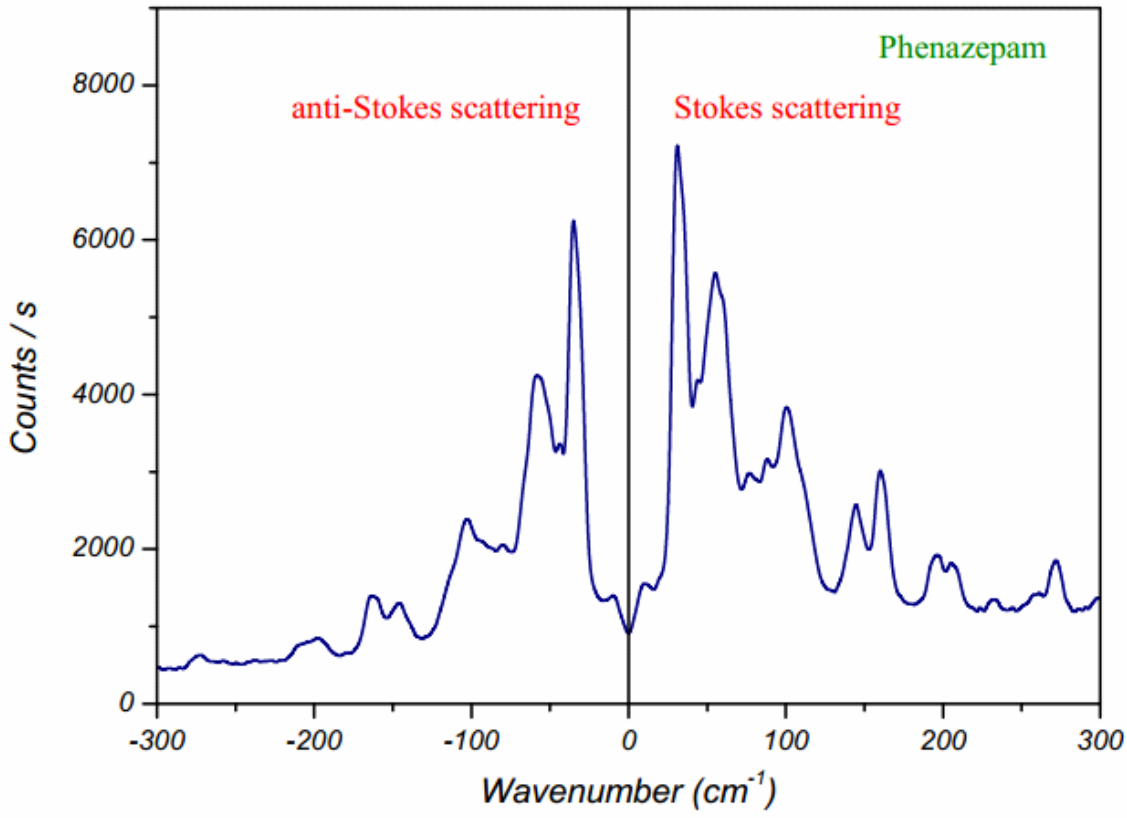
For more information, contact **Warsash Scientific** on +61 2 9319 0122 or sales@warsash.com.au.

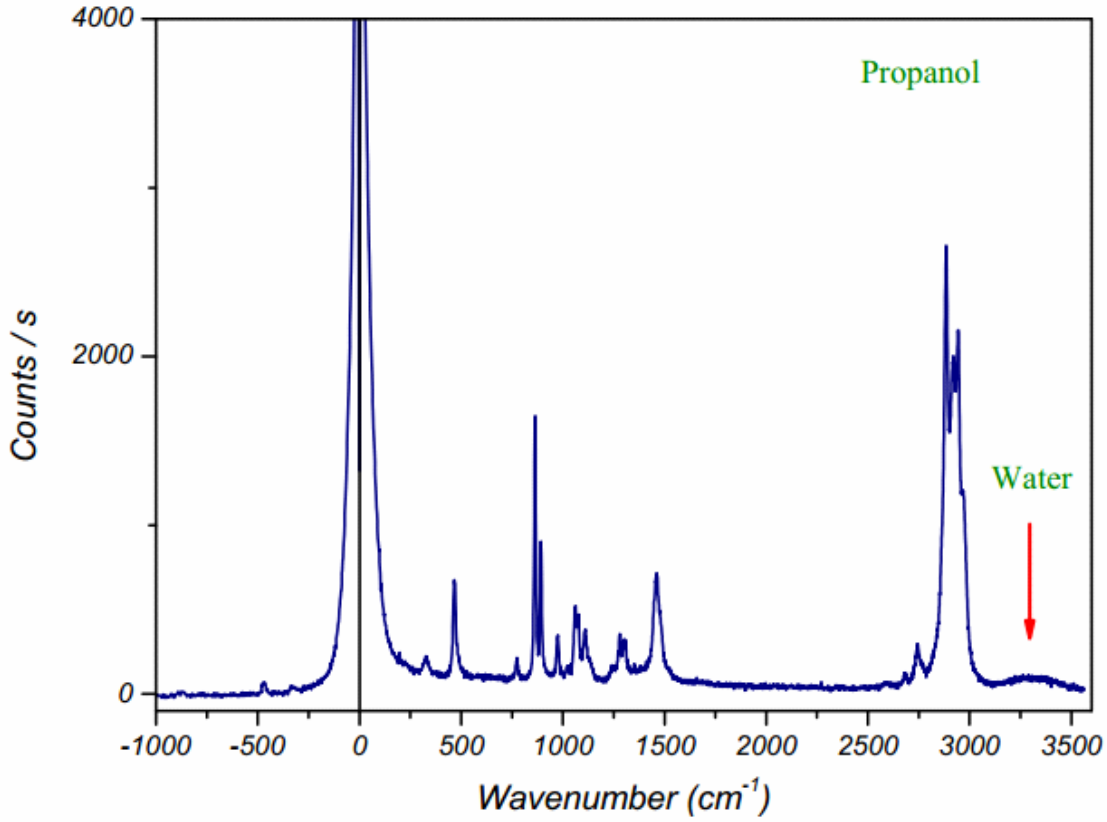


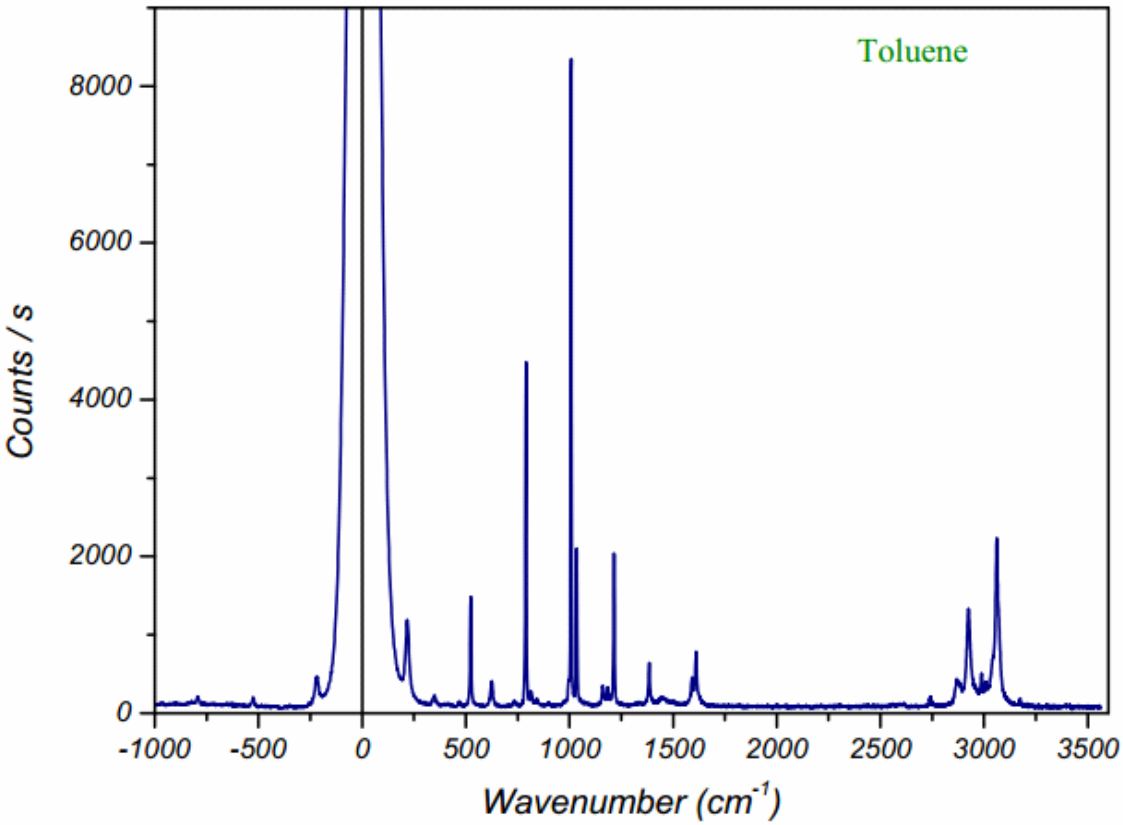

Naphthalene
anti-Stokes scattering
Stokes scattering
Counts / s
Wavenumber (cm-1)
8000
6000
4000
2000
0
-1000
-800
-600
-400
-200
0
200
400
600
800
1000

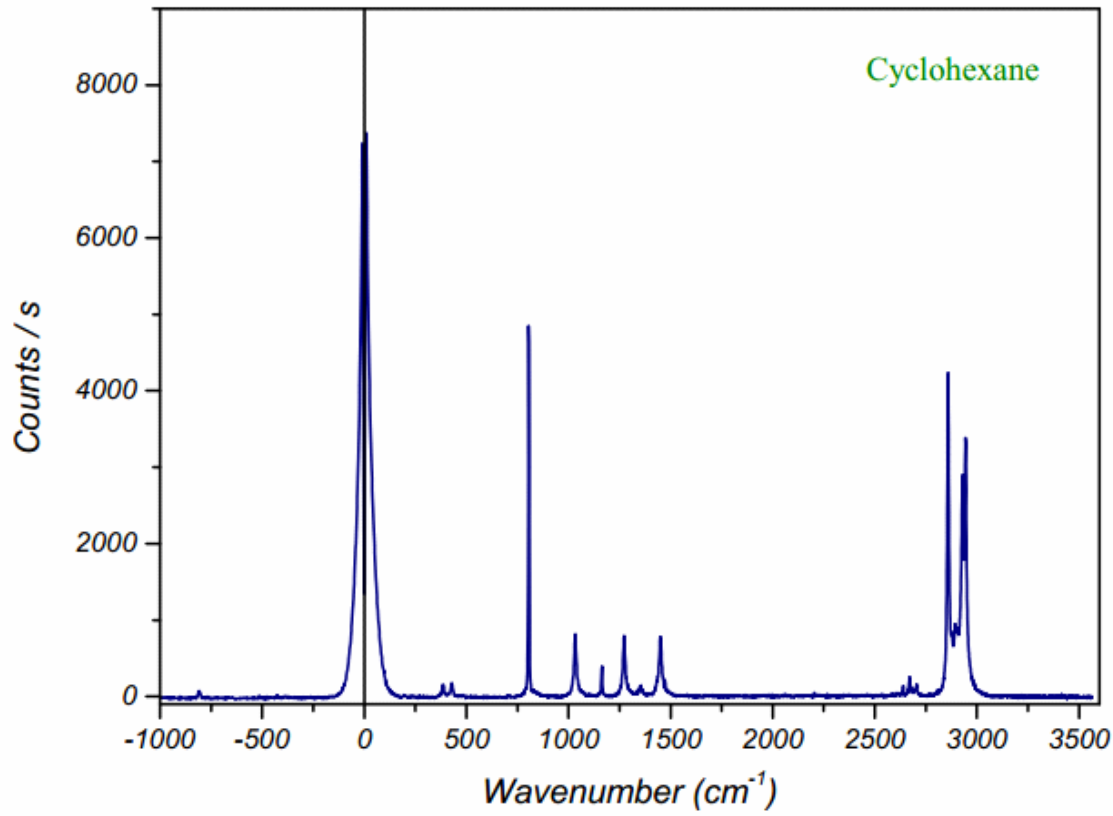

Naphthalene
Spectral range -1000 -- 3500 cm-1
Counts / s
Wavenumber (cm-1)
10000
8000
6000
4000
2000
0
-1000
-500
0
500
1000
1500
2000
2500
3000
3500

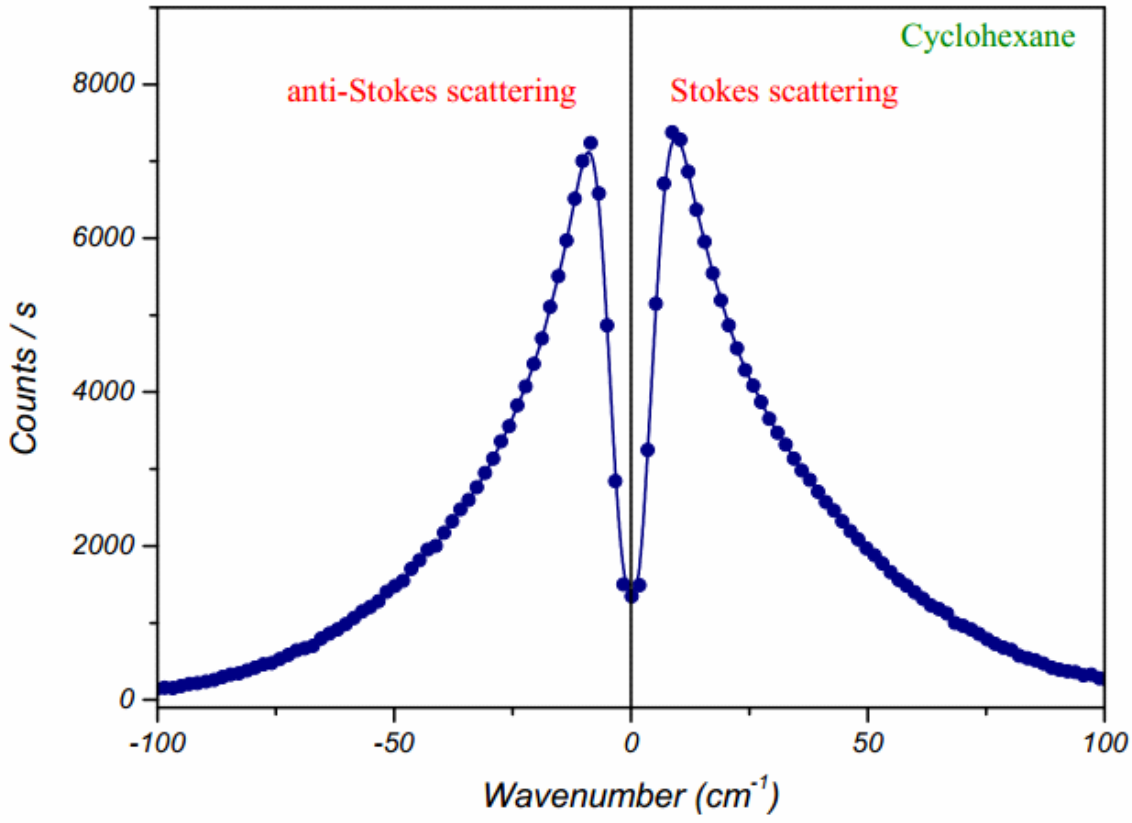

Naphthalene
Resolution 3.2 cm-1
Counts / s
Wavenumber (cm-1)
12000
10000
8000
6000
4000
2000
0
1380
1400


Phenazepam
anti-Stokes scattering
Stokes scattering
Counts / s
Wavenumber (cm-1)
8000
6000
4000
2000
0
-300
-200
-100
0
100
200
300


Propanol
Water
Counts / s
Wavenumber (cm-1)
4000
2000
0
-1000
-500
0
500
1000
1500
2000
2500
3000
3500


Toluene
Counts / s
Wavenumber (cm-1)
8000
6000
4000
2000
0
-1000
-500
0
500
1000
1500
2000
2500
3000
3500


Cyclohexane
Counts / s
8000
6000
4000
2000
0
-1000
-500
0
500
1000
1500
2000
2500
3000
3500
Wavenumber (cm-1)


Cyclohexane
anti-Stokes scattering
Stokes scattering
Counts / s
8000
6000
4000
2000
0
-100
-50
0
50
100
Wavenumber (cm-1)