BMS INSTITUTE OF TECHNOLOGY AND MANAGEMENT

AVALAHALLI, YELAHANKA, BANGALORE – 560064.

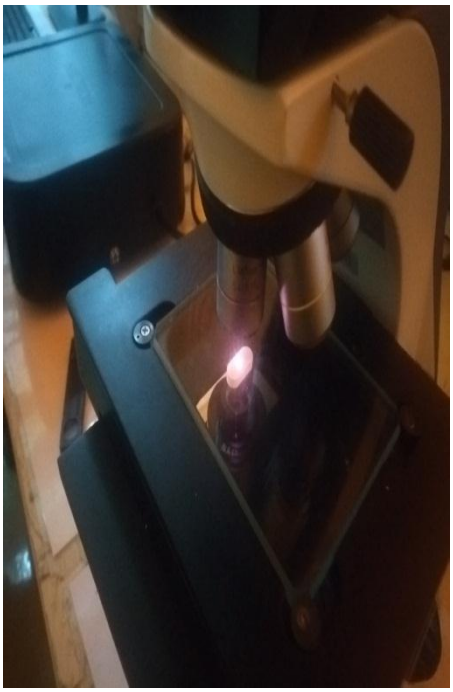
Department of Physics – R&D Center

Materials Synthesis and Raman/FT-IR/UV-Visible Characterization Facilities:

The **C**entre for **A**dvanced **M**aterials **R**esearch (**CAMR**) lab is equipped with DST-SERB, VGST Sponsored Confocal Raman Microscope, FT-IR Spectrometer, UV-Visible Spectrometer for Material/Nano material Characterization along with basic synthesis facilities. These Spectroscopy facilities are open for characterization of samples from internal (BMSIT&M)/External institutions/Industry.

Usage of Raman Facility Norms

Peak Seeker Confocal Video Raman Microscope



The ***RSM Video Raman Microscope*** is supplied with long working distance, infinite plan achromatic objectives. The higher magnification objectives provide a smaller laser spot size. The Raman spectrum is recorded with PeakSeeker Pro ™ Raman system. The sample has been excited with in built **785 nm** wave length laser. The power of the laser is **5-300 mW**. It has TE-cooled, high efficiency CCD detector arrays. The detector array is cooled to -20 ºC. The sample has been kept in the flat glass plate. The instrument meets the stringent requirements of USP Monograph 1120 for resolution, sensitivity and stability. Deep blocking

laser rejection filters obstruct Rayleigh scatter and isolate Raman scatter for valuable molecular analysis. The Raman spectra were recorded with RSIQ software. The resolution of the spectra is ~ 6 cm^{-1}. The accumulation time is 30 s.

The accessory is supplied with a ***Reflected Light, Brightfield Illuminator*** and with a ***USB Color Video Camera.*** The ***USB Color Video Camera*** facilitates precise sample positioning of the laser spot from the Raman spectrometer onto a solid sample surface.

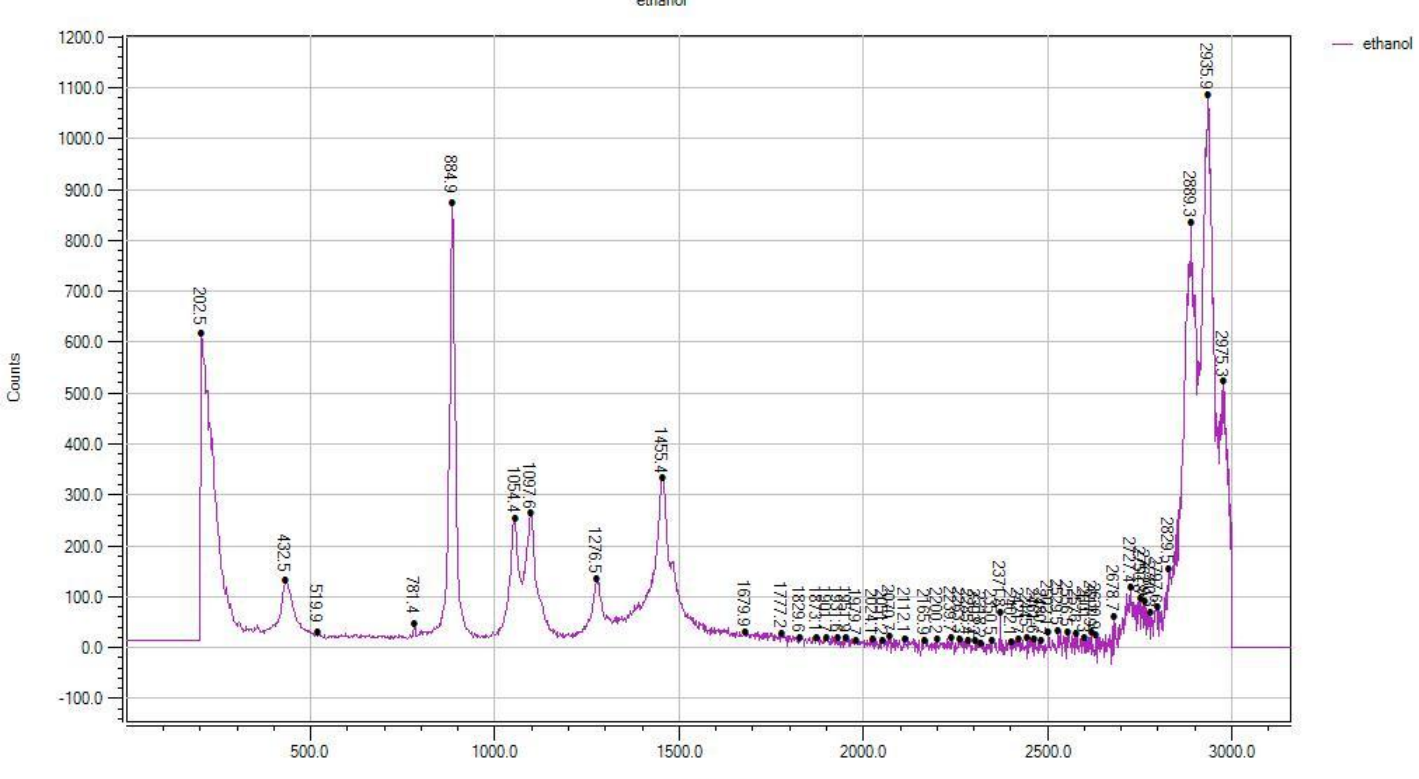
Raman spectra applicable for:

- Characterisation of Materials/Nanomaterials.
- Determination of composition and phase, Band gap determination, Material Quality, Impurity levels and defect detection.
- Anti-counterfeiting
- Carbon nanotubes
- Coatings
- Forensics
- Mineralogy
- Semiconductors
- Solar Cells
- SERS

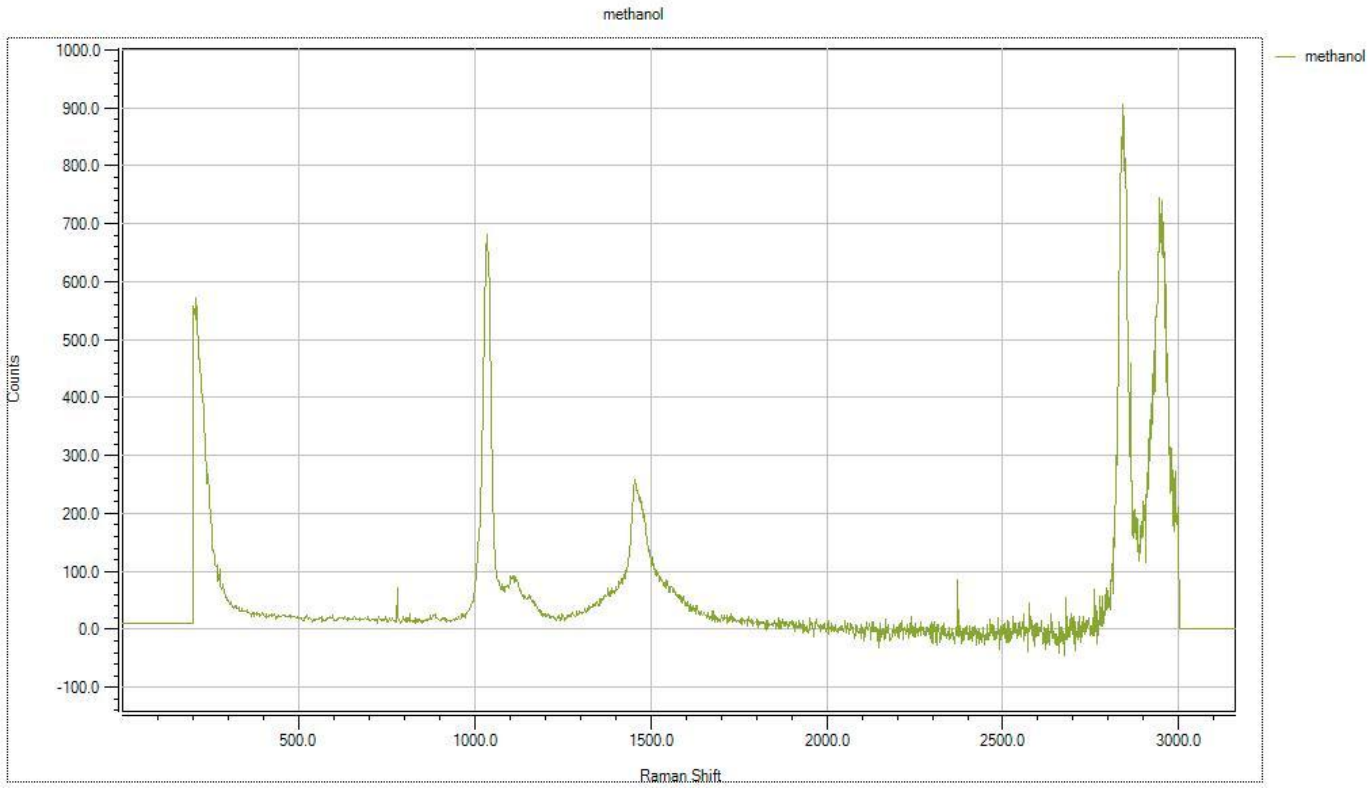
Samples requirement for Raman spectrum: Solid, liqids, powders, Pellets, Thin films substrate 5mm×5mm.

Examples of Raman spectra Recorded for known samples:

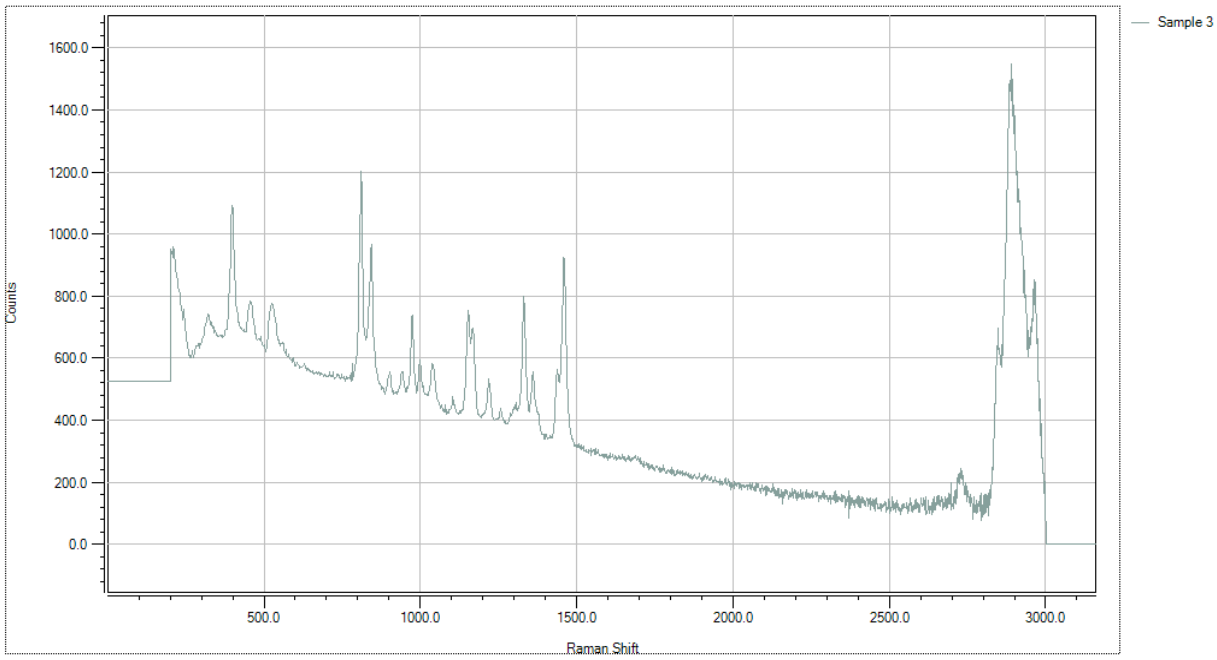
Ethanol

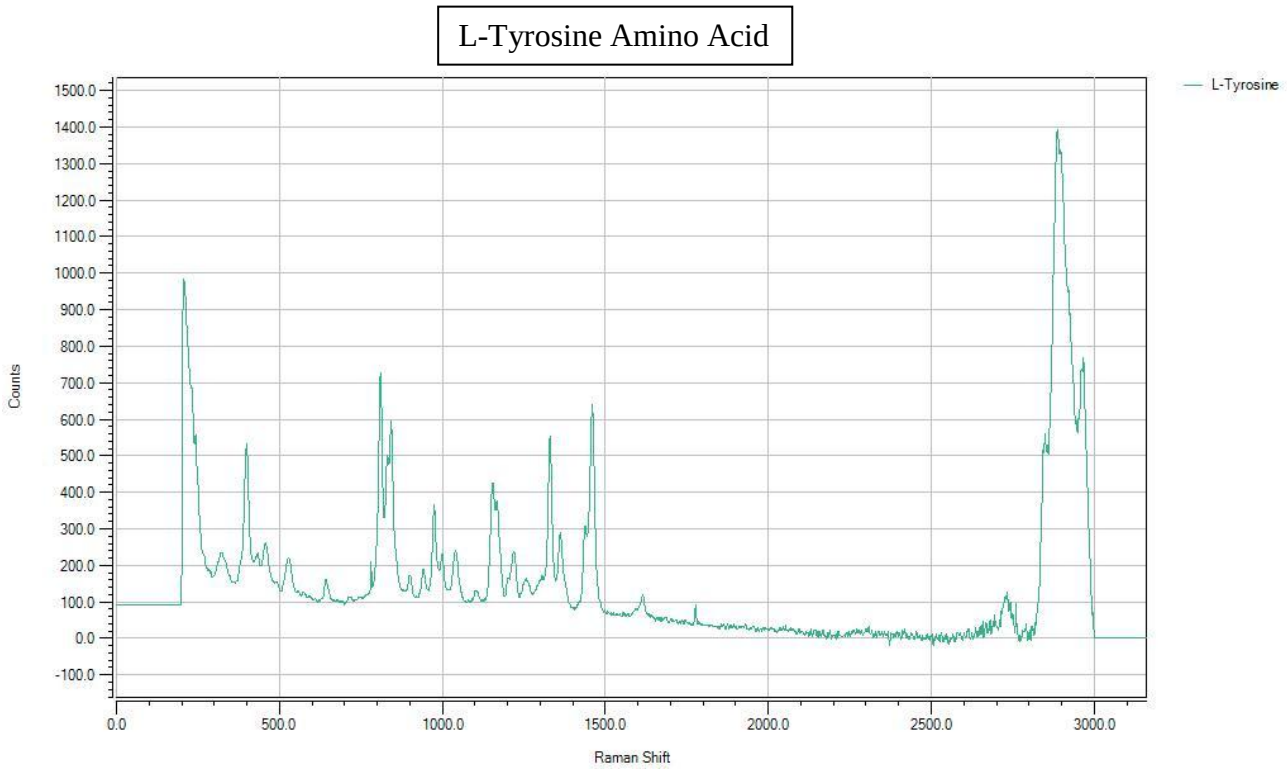


Methanol



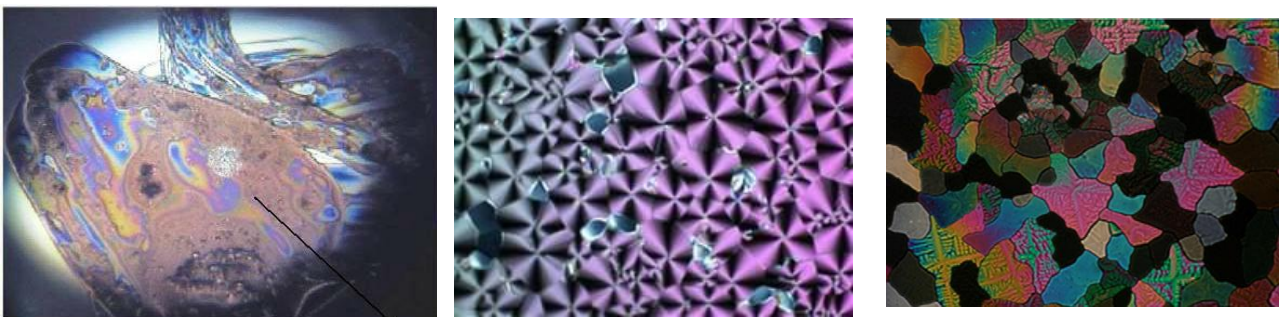
Lithium





The Raman spectra have been calibrated and has good agreement with known samples found in the literature.

Optical imaging of the samples with 5X, 10X, 20X, 50X objectives is possible.



Procedure for recording Raman spectra:

Candidates interested in recording Raman spectra has to follow the below points

1. First author/Corresponding Author should sent a request mail to gkavitha21@bmsit.in from their institute/Industry mail id. The mail should contain the following details.
   a) Sample name:
   b) Number of Samples:
   c) Spectral Range:

d) Corresponding Author Official addres:
e) HOD/Corresponding author signature:

2. BMSIT faculties are welcome to utilize our research facilities for their Ph.D work in a collaborative manner.

3. For non BMSITans, the Raman Characterization is available for nominal payment basis

   For an academic candidates – Rs. 500 per sample for Raman
   Rs. 200 per sample for FT-IR
   Rs. 100 per sample for UV-Visible

   For an Industry candidates – Rs. 1000 per sample for Raman
   Rs. 400 per sample for FT-IR
   Rs. 200 per sample for UV-Visible

   The payment will be in the mode of cheque/DD addressed to Principal, BMSIT&M, and payable at Bangalore. Further the candidates should acknowledge Raman facilitiy, Department of Physics, Centre for Advanced Materials Research, BMSIT&M in their publications.

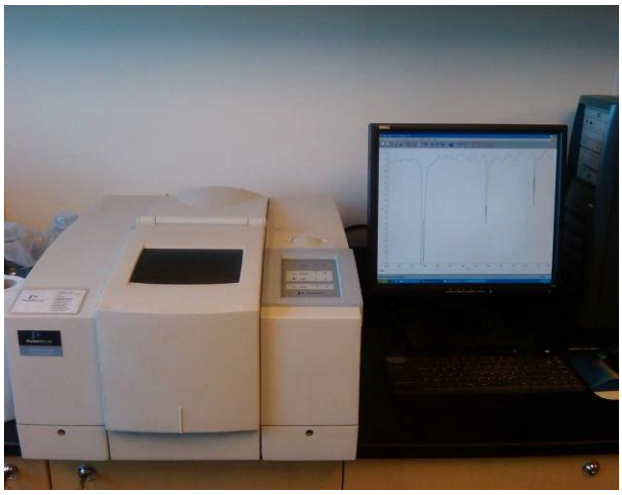
   For non BMSITans, collaborative work will be considered only after brief discussion about their research work with first author/corresponding author.

4. Physics and Chemistry Candidates who are interested in doing part time/full time Ph.D under VTU/other universities can contact Dr. C. Kavitha, Assistant Professor, Department of Physics, Centre for Advanced Materials Research, BMSIT&M, Bangalore.

5. Interested Out station candidates can courier their samples along with the DD and requisition form filled by the candidate to Dr. C. Kavitha's above mentioned Office address. The requisition form is attached at the end.

Raman Data: The Raman data has been mailed to first author/Corresponding authors mail id

Other Research Facilities available in CAMR Lab/Physics R&D



FT-IR Spectrometer

Muffle furnaces

Hot-Air oven, uv-degradation unit

UV-Visible Spectrometer

Muffle furnaces

Pelletizer

Micro Balance

Centrifuge machine

Heater with stirrer

Hot-Air oven, uv-degradation unit

Muffle furnace with fume hood

Consumables

Solar Simulator

Thin Film Coater

Contact Details:

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Deparment of Chemistry R&D Center

Sample Analysis Requisition form

(For Raman/FT-IR/UV-vis Spectroscopy Analysis)

Date:

I. User Information:

Name:

Designation:

Department/Institution/Affiliation:

Address for Communication:

Phone no:

Email:

Certification by Guide/HOD: certified that the user is the faculty/student of our department and the work is meant for Teaching/Experimental/Research purpose of institution.

Signature with date and office seal:

Guide/HOD

II Sample Information:

Sample Name:

XRD confirmed :

No of Samples:

Nature of sample:

Expected Spectral Range: