



Pune District Education Association's
Waghere College of Arts, Commerce and Science, Saswad
Department of Chemistry
Organize
Seven days Online Faculty Development Programme
On
“Characterization Techniques used in Chemical and Biological Sciences”
Under
DBT Star College Scheme
In Association with
UGC-HRDC SPPU, Pune
From
(10th February 2022 to 16th February 2022)

This FDP's theme is on “Characterization Techniques used in Chemical and Biological Sciences”, the primary objective of this FDP is to provide basic and advance knowledge of modern analytical tools/ characterization techniques used in the research field of Chemical and Biological sciences. This faculty development programme is very much helpful to understands the basic principles of various instrumental techniques such as UV-Visible Spectroscopy, Mass Spectroscopy, NMR spectroscopy, ESR spectroscopy, Electronic Spectroscopy, HPLC, LCMS Techniques, Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM) X-ray Powder Diffraction (XRD) techniques for material characterization, Screening of plant secondary metabolites and Extraction, Isolation and Purification of protein by LCMS techniques. The FDP is also mainly focused on upgradation of knowledge and applications of analytical techniques in the various fields of sciences. This FDP is also helpful to understands the spectral interpretation of data, types of software used in the analysis of scientific data. In addition to that, this FDP provide the platform for the participant for recent development in advance characterization techniques and their applications in the field of chemical and biological sciences.



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INAGURAL FUNCTION SHEDULE

🚩 10:30 am	Welcome
	Dr. Mangesh Jagtap
🚩 10:35 am	FDP Theme
	Dr. Sandip Rathod
🚩 10:50 am	Precedential Address
	Dr. S. S. Wavhal
🚩 11:00 am	Vote of thanks
	Dr. Mangesh Jagtap
🚩 Anchoring	Prof. Ashwini Kalbhor

This FDP targeted knowledge sharing experience and technical discussions on various characterization techniques used in Chemical and Biological analysis and separation through 16 brain storming sessions delivered by renowned personalities in the respective fields from IITs, Central and State Universities and reputed colleges of India.

The FDP Programme was inaugurated by the auspicious hands of Dr. Subhash Wavhal, Vice Principal, P.D.E.A.'s Waghire College of Arts, Commerce & Science, Saswad, Purandar, Pune. He gave best wishes for the FDP and motivated all the participants.

On the very first day, faculty development programme started with a session on **Powder X-ray Diffraction for Materials Characterization** which was graced by **Dr. Deu Bhange**, Assistant Professor, Department of Chemistry, Shivaji University, Kolhapur. He mentioned the latest development in the XRD and determination of the structure.

The next session was on Scanning Electron Microscopy a Tool for surface morphology by **Dr. Sanjay Latthe, Assistant Professor**, Department of Physics, Raje Ramrao College, Jath, Dist: Sangli who expressed his views on developing the method for characterization of chemicals. He mentioned basic principles, instrumentation and mechanism involved in analysis of materials surface morphology.

Second day started with a very elaborative session on NMR Spectroscopy by **Dr. S. K. Dhanmane**, Associate Professor, Department of Chemistry, Fergusson College, Pune. He mentioned the basic principles of NMR.

The next session was continued by Dr. Dhanmane Sir where he gave application and structure recognition explanation by NMR Spectroscopy.

The last session of the third day was on Transmission Electron Microscopy (TEM) by **Dr. Sanjay Latthe, Assistant Professor**, Department of Physics, Raje Ramrao College, Jath, Dist: Sangli, Maharashtra, India. He discussed determination of internal structure of metals, alloys, polymers and nano materials.

Third day started with a session on Mass Spectrometry by **Dr. V.D. Bobade**, Professor, Department of Chemistry, HPT and RYK College of Arts, Commerce and Science, Nashik. He mentioned the basic principles of mass spectrometry. The next session was by him in which he mentioned the applications of the technique.

The last session of the third day was on Screening of medicinal plants Secondary metabolites by LC-MS Techniques, by **Dr. Trupesh M. Pethani**, Associate Professor, Department of Pharmaceutical Sciences, Saurashtra University, Rajkot, Gujrat, India.

On Fourth day participants were enlightened by **Dr. Mahesh Kulkarni**, Scientist, Division of Biochemical Sciences, CSIR- National Chemical Laboratory, Pune. He

mentioned in a very elaborative way the latest development in the LCMS techniques for Protein Isolation.

Second and third session was on UV-Visible Spectroscopy-I by **Dr. Satyanarayana Sirasani**, Former Vice Chnacellor, Osmania University, Hyderabad. It was a very nice experience in listening to the experienced personality. He mentioned the detailed basic principles, instrumentation and application for spectroscopic study of metal complexes.

Fifth day started with a session by **Dr. M.K. Lande**, Professor and Head, Department of Chemistry, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad on Fundamental Requirement of Electronic Spectroscopy for interpretation of metal complexes. He mentioned the basic principles and working of the technique. In addition to that, Sir, discussed theoretical aspects of Electron Spectroscopy including Term Symbols and Orgel diagram for interpretation of metal complexes.

The next session was on Electron Spin Resonance and Mossborr Spectroscopy for characterization transition metal complexes by **Dr. S.D. Delekar**, Professor, Department of Chemistry, Shivaji University Kolhapur. He dicussed splitting patterns of ESR and Mossborr Spectroscopy and characterization of the metal complexes.

The last session of the fifth day was on LCMS techniques for Biological Analysis by **Dr. Vitthal Barvakar**, Assistant Professor, Department of Botany, SPPU, Pune.

Sixth day started with a session on High Performance Liquid Chromatography by **Dr. N.D. Satyanarayan**, Professor, Department of Studies & Research in pharmaceutical Chemistry. He mentioned the technique with elaborative powerpoint presentation.

The next session was on XRD Techniques by **Dr. Haram S.K.**, Professor, Department of Chemistry, Savitribai Phule Pune , University, Pune. Sir explained the crystal geometry and use of powder method XRD for elucidation of crystal structure. He also mentioned Profix and other softwares used for XRD analysis.

The last session of the sixth day was on Characterization Techniques used in Extractions, Isolation and Purifications of Proteins by **Dr. Padul M.V.**, Assistant Professor, Department of Biochemistry, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, Maharashtra.

Seventh day started with a session on Mass Spectrometry by **Dr. Sangeeta Jagtap** Professor, B.G. College, Sangvi, Pune. Mam mentioned detailed basic principles and structure determination using Mass spectrometry.

The second session was by **Prof. Dr. Mammen Daniel**, Managing Director, Dr. Daniel's Laboratories, Baroda on Screening of Plant secondary metabolites.

So in all total 16 knowledge provoking sessions were delivered in this Faculty development Programme to make this FDP a very successful one.

Activity Co-ordinator

Head of Department

DBT-Coordinator

Principal

meet.google.com/fox-nezr-ufu?authuser=0

Sanjay Latthe is presenting

Scanning Electron Microscopy (SEM): A Tool for Surface Morphology

Dr. Sanjay S. Latthe
Assistant Professor, Department of Physics,
Raje Ramooa College, Jalga.
Pitoke Road, Tal. Jalga, Dist. Sangli-416404, Maharashtra, India.
Mobile No: +91-9020310947, Email: latthe@ramooa.edu

Sanjay Datta Online Faculty Development Program on
"Characterization Techniques used in Chemical and Biological Sciences"

Organized by
Pune District Education Department's
Department of Chemistry, Wagholi College of Arts, Commerce & Science Savad
Tal. Pune, Dist. Pune - 412301, Maharashtra, India.
Online FDEP SEM COLLEGE IN THE SEM Faculties with LAC, AERDC, APSU, PUNE.
From 10P to 10P February 2022.

1:01 PM | FDP on CTCBS Feb 2022

Participants: Sanjay Latthe, GOKUL KRISHNAN, Pravin Kalekar, Dr. Sunita Jadhav, Apurva Tamhane, sadanand shringare, 19 others, You.

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Sanjay Latthe is presenting

Topography and Morphology

Morphology studies the shape, texture and distribution of minima at a surface, whereas Topography focuses on the quantitative dimensional measurement of features on a surface.

High Depth of Focus

A SEM typically has orders of magnitude better depth of focus than a optical microscope making SEM suitable for studying rough surfaces.

1:18 PM | FDP on CTCBS Feb 2022

Participants: Sanjay Latthe, Sanjay Latthe, Dr. S. Tarunrajiv S..., GOKUL KRISHNAN, Pravin Kalekar, satyendra borban, Dr. Sunita Jadhav, 26 others, You.

meet.google.com/... Sanjay Latthe is presenting

The SEM Instrument in Brief

Diagram illustrating the components of a Scanning Electron Microscope (SEM):

- Electron gun
- Condenser lens
- Magnification control
- Scan generator
- Beam stop
- Objective lens
- Detector

Participants in the meeting:

- Sanjay Latthe
- Dr. S. T. ...
- GOKUL KRISHNAN
- Pravni Kalekar
- satyendra borban
- Dr. Sunita Jadhav
- 28 others
- You

1:29 PM | FDP on CTCBS Feb 2022

Sushilkumar dhanmane is presenting

Spectroscopy

Sample at Equilibrium $\xrightarrow{\text{Radiation}}$ Excited State $\xrightarrow{\text{Observation}}$ Spectrum

Excited State $\xrightarrow{\text{Relaxation}}$ Sample at Equilibrium

UV-Visible: Presence of chromophoric system/conjugation in the molecules

IR Spectroscopy: Presence of Functional Groups in the molecules

¹H NMR Spectroscopy:

- The number of different types of Hydrogens in the molecules
- The relative numbers of different types of Hydrogens in the molecules
- The electronic environment of different types of Hydrogens in the molecules
- The "neighbours and a neighbours" of a functional group

These spectroscopic techniques are mutually complimentary and a combination of these three-along with a Mass Spectroscopy form a powerful device in the determination of structures of organic molecules.

Participants in the meeting:

- sushilkumar dhan...
- Snehal Latpate
- sonalika Pawar
- Rakhi Gawali
- vidya Patankar
- Ajay Ambhore
- Chhaya Bhalehank...
- 17 others
- You

FDP on CTCBS Feb 2022

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sushilkumar dhanmane is presenting

U.V. I.R. NMR

U.V. I.R. NMR

Rot-Excitation

Vibration

Elec.

FDP on CTCBS Feb 2022

09:34 11/02/2022

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sushilkumar dhanmane is presenting

FOA of SOA

SOA strongly coupled

$\Delta \nu / J < 1-8$

Complex

FOA weakly coupled

$\Delta \nu / J > 6-8$

(12) 6-8

210 - 90 = 120 / 10

12 / 24

Dr. Sudhir V. Patil has left the meeting

FDP on CTCBS Feb 2022

22°C 11:00 11/02/2022

Meeting interface showing a presentation slide titled "Second order Analysis" and "AB Quotient". The slide content includes:

Second order Analysis

AB Quotient

Quotient

Factors affecting on values of J:

- 1) O.Rydson angle
- 2) Substuent
- 3) Ring strain

Participants visible in the grid:

- sushilkumar dhan...
- Mangesh Jagtap
- Gaikwad Dhananj...
- Snehal Latpate
- vidya Patankar
- Rakhi Gawali
- sonalika Pawar
- 21 others
- You

Meeting title: FDP on CTCBS Feb 2022

Meeting interface showing a presentation slide titled "Outline of the Presentation". The slide content includes:

Outline of the Presentation

- Purpose of TEM
- Interaction between Electron Beam and Sample
- Composition of TEM
- Image and Diffraction Pattern Formed by TEM
- Necessity

Participants visible in the grid:

- Sanjay Latthe
- Sanjay Latthe
- Dr. Sanindhar Ga...
- Narendra Kamble
- Tarvi Jain
- Ajay Ambhore
- sonalika Pawar
- 9 others
- You

Meeting title: FDP on CTCBS Feb 2022

Sanjay Latthe is presenting

	Scanning Electron Microscopy	Transmission Electron Microscopy
Type of electron	Scattered, Secondary electron	Transmitted electron
High tension	~ 1 to 15 kV	~ 60 to 300 kV
Operation technique	Any	Typically ~ 150 um
Type of illumination	2-D image of the surface	3-D projection image of lower electron
Resolution capabilities	Up to 1-2 million times	More than 50 million times
Molecular field of view	Large	Loaded
Ultimate spatial resolution	~ 0.5 um	~ 50 pm
Image formation	Electrons are captured and recorded by detectors, image on PC screen	Direct image on fluorescent screen or PC screen with CCD
Operation	Little or no sample preparation, easy to use	Laborious sample preparation, biased view required

FDP on CTCBS Feb 2022

Participants: Sanjay Latthe, sonalika Pawar, Narendra Kamble, Rakhi Gawali, vidya Patankar, Dr. Bajjarang L. Sh, Ajay Ambhore joined

System tray: 27°C, 13:15, 11/02/2022

Sanjay Latthe is presenting

SEM: detector, sample

TEM: sample, detector, 5.5 nm

FDP on CTCBS Feb 2022

Participants: Sanjay Latthe, sonalika Pawar, Narendra Kamble, Rakhi Gawali, vidya Patankar, satyendra borban, 19 others, You

System tray: 27°C, 13:34, 11/02/2022

Link for today's session - wcafdj... Meet - eii-uulg-1oo chrome-extension://apponhiefc... chrome-extension://apponhiefc... meet.google.com/eii-uulg-1oo

Vivek Bobade is presenting

Uses of Mass Spectrometer in Organic and Biological Chemistry

Application	Samples	Methods	Comments
Molecular Weight Determination	Pure compounds, mixtures	Recognize intact molecular ion in the spectrum	Several ionization methods can be used for confirmation
Molecular Formula Determination	Usually Pure compounds	High resolution measurement on molecular ion	High resolution alone seldom gives a unique molecular formula
Molecular Structure Determination	Pure compounds or mixtures from LC-MS, GC-MS, MS-MS	Spectrum-structure correlations: Library comparisons	Confirmation of suspected structures is usual
Sequence Determination	Proteins, other biopolymers	Tandem mass spectrometry (MS-MS)	Sensitive, very rapid and increasingly useful
Isotopic Incorporation and Fractionation	Naturally and artificially labeled compounds (^{13}C , ^2H , ^{18}O , etc.)	Ion abundance measurements	Precise isotope ratio measurements require special instruments

Vivek Bobade

Prof. Vilas Shamra...

Snehal Latpate

Chhaya Bhalshank...

Dr. Sudhir V. Patil

sadanand shringare

Dr. Bajarang L. Shi...

19 others

You

9:37 AM | eii-uulg-1oo

Type here to search

Link for today's session - wcafdj... Meet - eii-uulg-1oo chrome-extension://apponhiefc... chrome-extension://apponhiefc... meet.google.com/eii-uulg-1oo

Vivek Bobade is presenting

Sequence of Operations in a Mass Spectrometer

Sample Introduction:

- Direct Insertion probe
- Chromatograph (online)
- Batch Inlet (vapor)
- Membrane introduction

Ionization:

- Electron Ionization
- Chemical Ionization
- Desorption Ionization
- Spray Ionization

Mass An...

- Tim...
- Qu...
- Qu...
- Ion...

Detection

- Ele...
- Fa...
- Im...

Vivek Bobade

Prof. Vilas Shamra...

Snehal Latpate

Chhaya Bhalshank...

Dr. Sudhir V. Patil

sadanand shringare

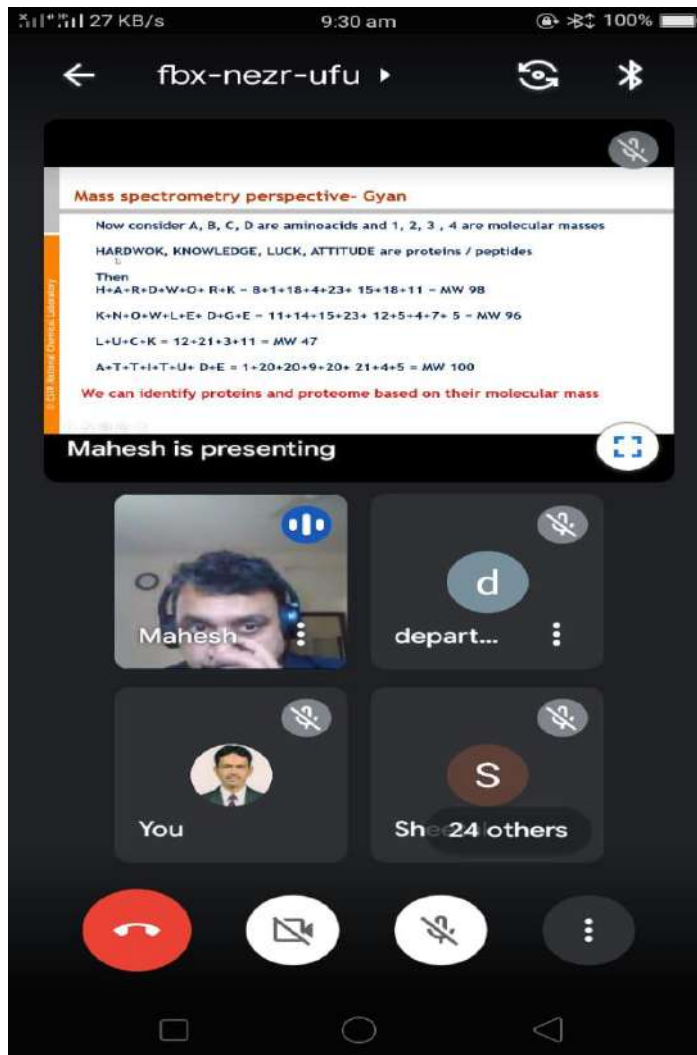
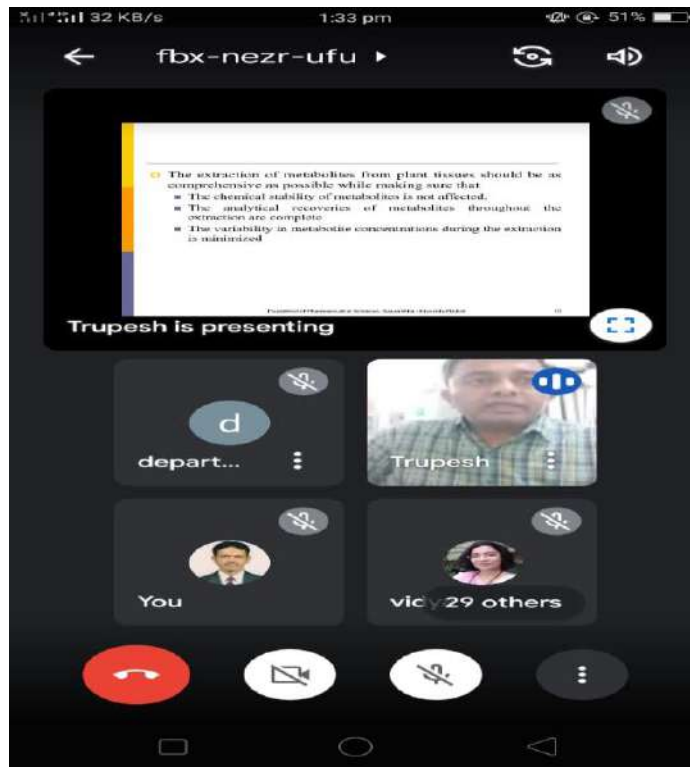
Dr. Bajarang L. Shi...

19 others

You

9:39 AM | eii-uulg-1oo

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SATYANARAYANA SIRASANI is presenting

Electromagnetic Spectrum

Visible spectrum: V (Violet), I (Indigo), B (Blue), G (Green), Y (Yellow), O (Orange), R (Red)

200 – 400 nm UV
400 – 800 nm Visible
10 – 200 nm Vacuum Ultra violet

$$E = h\nu \quad h = 6.626 \times 10^{-34} \text{ JS}$$

$$\nu = c/\lambda \quad c = 3 \times 10^8 \text{ m per sec} = 7.5 \times 10^{14} \text{ S}^{-1}$$

$$E = hc/\lambda \quad \lambda = 400 \times 10^9 \text{ m}$$

$$E = 6.62 \times 10^{-34} \text{ JS} \times 7.5 \times 10^{14} \text{ S}^{-1} = 4.970 \times 10^{-19} \text{ J}$$

$$E = \frac{6.62 \times 10^{-27} \text{ erg. sec.} \times 3 \times 10^{10} \text{ cm/sec}}{400 \times 10^{-7} \text{ cm}} = 4.97 \times 10^{-12} \text{ ergs} = 1 \text{ calorie}$$

11:05 AM | FDP on CTCBS Feb 2022

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SATYANARAYANA SIRASANI is presenting

UV Spectroscopy

The Spectroscopic Process

- In UV spectroscopy, the sample is irradiated with the broad spectrum of the UV radiation
- If a particular electronic transition matches the energy of a certain band of UV, it will be absorbed
- The remaining UV light passes through the sample and is observed
- From this residual radiation a spectrum is obtained with "gaps" at these discrete energies – this is called an *absorption spectrum*

Diagram showing a benzene ring with an arrow indicating an electronic transition from a lower energy state to a higher energy state.

11:07 AM | FDP on CTCBS Feb 2022

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SATYANARAYANA SIRASANI is presenting

Spectrophotometer

To measure the amount of light that a sample absorbs

The diagram illustrates the components of a spectrophotometer: Light source, Collimator (Lens), Monochromator (Prism or Grating), Wavelength Selector (Slit), Sample Solution (in Cuvette), and Detector (Photocell). A digital display or meter shows a reading of 0.20.

Visible spectrophotometer: uses light over visible range (400 - 700 nm) of electromagnetic radiation spectrum.

11:07 AM | FDP on CTCBS Feb 2022

Participants: SATYANARAYAN..., vidya Patankar, Snehal Latpate, Sheetal Kalhapure, Chhaya Bhalshank..., sandip patole, Pravin Kalekar, 29 others, You.

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SATYANARAYANA SIRASANI is presenting

The diagram shows a red beam of light entering a cuvette from the left, labeled "Light in". The beam passes through the cuvette, and a shorter red beam exits on the right, labeled "Light out". The distance the light travels through the cuvette is labeled "Path length". An arrow points to the cuvette with the text "Absorption takes place here."

11:08 AM | FDP on CTCBS Feb 2022

Participants: SATYANARAYAN..., vidya Patankar, Snehal Latpate, Sheetal Kalhapure, Chhaya Bhalshank..., sandip patole, Pravin Kalekar, 28 others, You.

Inbox (4) - wcfdp22@gmail.com | Meet - FDP on CTCBS Feb 2 | meet.google.com/7bc-nezr-ufu?authuser=0&pli=1

Machhindra Lande is presenting

```

    graph TD
      Root[Characterization techniques] --> Spectral
      Root --> Microscopic
      Root --> Diffraction
      Root --> Adsorption
      Root --> Thermal
      Spectral --- SpectralList["UV-VIS  
FTIR  
Raman  
NMR  
ESR  
MB  
Fluorescence"]
      Microscopic --- MicroscopicList["SEM  
TEM  
HRTEM"]
      Diffraction --- DiffractionList["XRD"]
      Adsorption --- AdsorptionList["BET  
TPO  
TPR"]
      Thermal --- ThermalList["TGA  
DTA  
DSC"]
  
```

9:08 AM | FDP on CTCBS Feb 2022

Participants: Machhindra Lande, Vaibhav Landage, Gajendra Ahiwale, Gaikwad Dhananjay, Prakash Patil, Prof.SHEETALKUMAR B..., Dr. Bajrang L. Shinde, Sandeep Dashmukh joined

CV Prof.Delekar.pdf

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19°C 09:08 14/02/2022

Inbox (4) - wcfdp22@gmail.com | Meet - FDP on CTCBS Feb 2 | meet.google.com/7bc-nezr-ufu?authuser=0&pli=1

Machhindra Lande is presenting

UV-Visible Spectral analysis

2. What information we get from UV-Vis spectroscopy

- absorption spectrum of molecule.
- Types of electronic transitions
- Charge transfer transition
- Inter-electronic repulsion
- Crystal field splitting energy
- Spln allowed, forbidden transition
- Kind of molecule

9:12 AM | FDP on CTCBS Feb 2022

Participants: Machhindra Lande, Prof.SHEETALKUMAR B..., Vaibhav Landage, Gajendra Ahiwale, Gaikwad Dhananjay, Prakash Patil, Dr. Bajrang L. Shinde, 19 others, You

CV Prof.Delekar.pdf

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19°C 09:12 14/02/2022

Inbox (4) - wcfdp22@gmail.com Meet - FDP on CTCBS Feb 21

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Machhindra Lande is presenting

Organic Molecule

- π-π* transition may be absorption or reflection from the molecule
- Reorganization of electron density
- Electronic transition

π-π*	σ-σ*
n-π*	n-σ*
π-σ*	σ-π*
π-n*	σ-n*

Inorganic Molecule

- π-π* transition may be absorption or reflection from the molecule
- Reorganization of electron density
- d-d electronic transition
- Charge transfer transition
- Inter-electronic repulsion with the electrons

9:12 AM | FDP on CTCBS Feb 2022

CV Prof.Delekar.pdf

Windows taskbar: Type here to search, 19°C, 09:12 14/02/2022

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Machhindra Lande is presenting

IR-VIS spectrum of $[\text{Co}(\text{NH}_3)_6]^{3+}$

Or(III), d^6

How will you interpret this spectrum?
 How many bands are there?
 Why this bands are appeared in the spectrum?
 What requirements are need to interpret this bands?
 What is use of this compound?

9:14 AM | FDP on CTCBS Feb 2022

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Apps New Tab Gmail YouTube Maps theory of electrolyt... ChemDraw JS Sam... Google Calendar...

Sagar Delekar is presenting

Outline of the talk

- Part I – Electron Spin Resonance Spectroscopy
- Part II – Mossbauer Spectroscopy

Sagar Delekar

Snehal Latpate

Prof.SHEETALKUMAR B...

Dr. Sunita Jadhav

Gaikwad Dhananjay

Bhimrao Torano

Ajay Ambhore

22 others

You

10:52 AM | FDP on CTCBS Feb 2022

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23°C 10:52 14/02/2022

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Apps New Tab Gmail YouTube Maps theory of electrolyt... ChemDraw JS Sam... Google Calendar...

Sagar Delekar is presenting

Points to be covered under ESR

- ✓ Introduction
- ✓ Fine, Hyperfine and Superhyperfine Splitting
- ✓ Zero-field splitting and Kramer's degeneracy
- ✓ Instrumentation
- ✓ g-value and factors affecting it
- ✓ Applications

Sagar Delekar

Snehal Latpate

Prof.SHEETALKUMAR B...

Dr. Sunita Jadhav

Gaikwad Dhananjay

Bhimrao Torano

Ajay Ambhore

23 others

You

10:53 AM | FDP on CTCBS Feb 2022

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23°C 10:53 14/02/2022

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Sagar Delekar is presenting

Introduction

- It is one of the absorption spectral technique in which microwave radiation of electromagnetic spectrum interacting with matter possessing at least one unpaired electron/s and hence it is called as ESR.
- ESR also deals the effect of applied mag field strength on the electron spin values of matter in presence of microwave radiations and hence it is called as EMR.
- Cu^{1+} ($Z = 29$) = $d^{10} s^0$ – No unpaired electron
- Cu^{2+} ($Z = 29$) = $d^9 s^0$ – One unpaired electron
- $S = \frac{1}{2}$ $M_s = +/- \frac{1}{2}$
- Radicals
- Oxygen

10:55 AM | FDP on CTCBS Feb 2022

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Sagar Delekar is presenting

ESR spectrum

11:13 AM | FDP on CTCBS Feb 2022

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meet.google.com/7bc-nezr-ufu?authuser=0&pli=1

Vitthal Barvkar is presenting

High-Performance Liquid Chromatography

Parameters detecting resolution and performance:

1. Column length
2. Matrix particle size
3. Matrix phase
4. System volume
5. System ability to withstand high backpressure
6. Automation
7. Selection of solvents
8. Optimization of separation method

1:09 PM | FDP on CTCBS Feb 2022

Participants: Vitthal Barvkar, Bhimrao Torane, Vaibhav Landage, Dr. Bajarang L. Shinde, Dr. Sachin P. Gadokar, Shootal Kalhapure, Snehal Latspte, 19 others, You.

2022-02-14T05_49...csv | 2022-02-14T05_47...csv | CV Prof.Delekar.pdf

Type here to search | 29°C | 13:09 14/02/2022

HPLC basic instrumentation


N D is presenting

Participants: N D, GOKUL, You, departm 29 others.

11 KB/s 10:56 am 86%

fbx-nezr-ufu

What are other possibilities in 2-D lattice ?



This lattice is called **Rectangular LATTICE**

$|\vec{a}| \neq |\vec{b}|$ and $\gamma = 90^\circ$

Santosh is presenting

Santosh

sonalika

You

dep 33 others

Call, Video, Mute, More

36 KB/s 1:21 pm 76%

fbx-nezr-ufu

EXTRACTION METHODS

- Depends on type of organism/tissue/cells
- Animal cells-gentle methods/treatments
- Plants cells-harsh condition
- Bacterial cells-enzymatic means
- Fungal cells-chitinase

Manohar is presenting

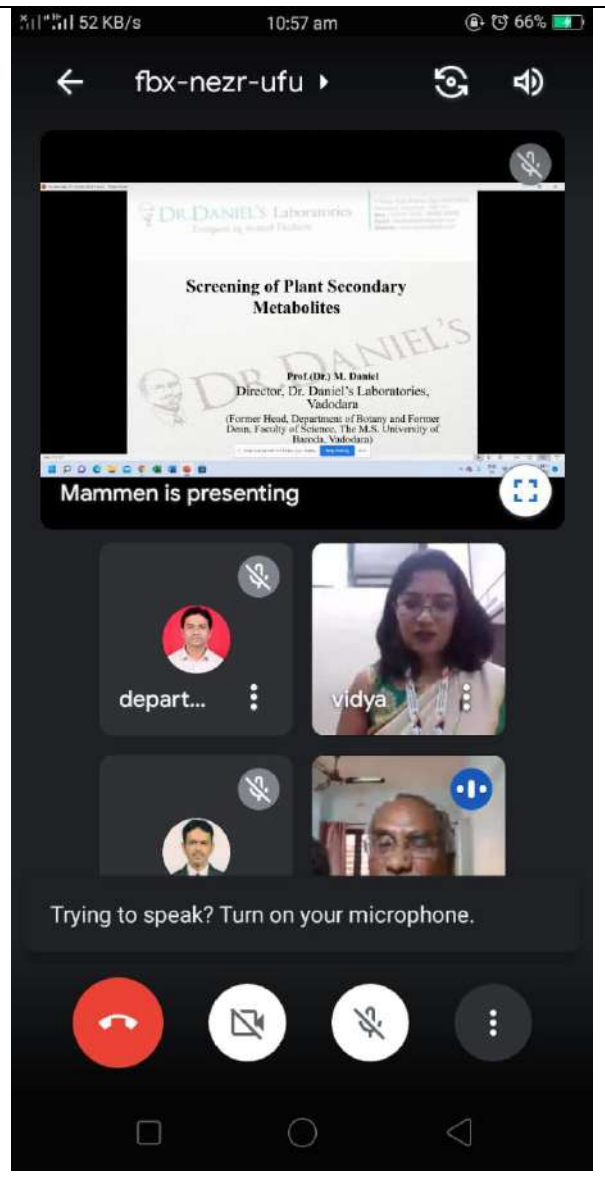
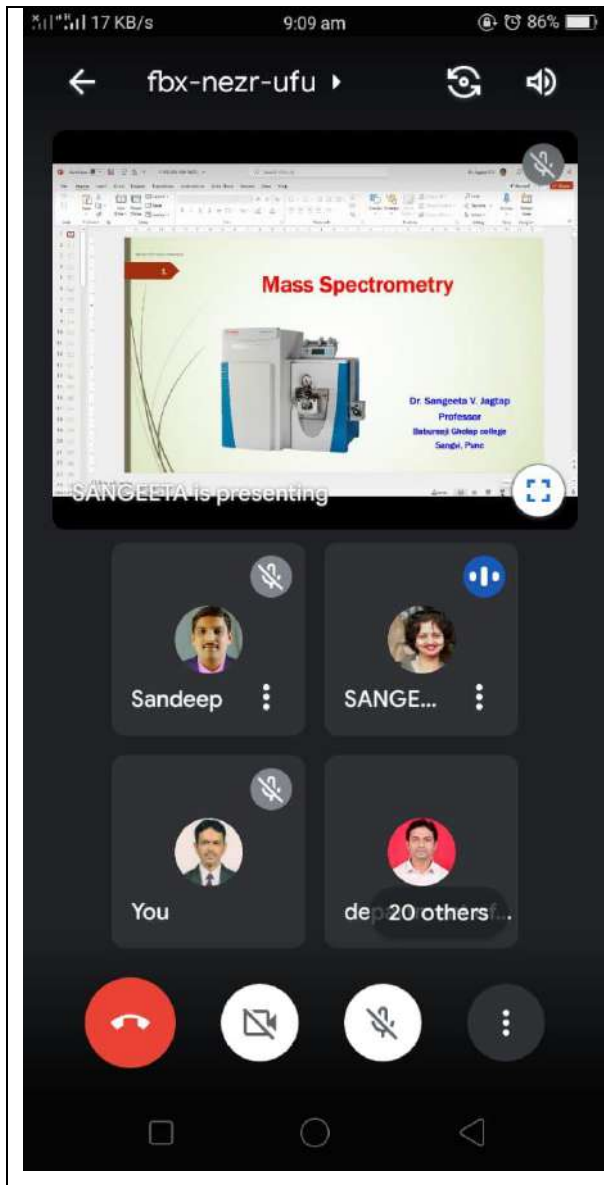
Kailas

satyen...

You

Man 28 others

Call, Video, Mute, More



List of Resource Person

Date	Time	Resource Person	Topic
10.02.2022	11:00 am to 12:30 pm	Dr. Deu Bhanke	Powder X-ray Diffraction Techniques for Material Characterization
	12:45 am to 2:15 pm	Dr. Sanjay Latthe	Scanning Electron Microscopy a tool for Material Characterization
11.02.2022	9:00 am to 10:30 am	Dr. S. K. Dhanmane	NMR Spectroscopy -I
	10:45 am to 12:15 pm	Dr. S. K. Dhanmane	NMR Spectroscopy -II
	12:45 pm to 2:15 pm	Dr. Sanjay Latthe	Transmission Electron Microscopy
12.02.2022	9:00 am to 10:30 am	Dr. V.D. Bobade	Mass Spectroscopy-I
	10:45 am to 12:15 pm	Dr. V.D. Bobade	Mass Spectroscopy -II
	12:45 pm to 2:15 pm	Dr. Trupesh M. Pethani	Screening of medicinal plants Secondary metabolites by LC-MS Techniques
13.02.2022	9:00 am to 10:30 am	Dr. Mahesh Kulkarni	LCMS techniques for Protein Isolation
	10:45 am to 12:15 pm	Dr. Satyanarayan Sirsani	UV-Visible Spectroscopy-I
	12:45 pm to 2:15 pm	Dr. Satyanarayan Sirsani	UV-Visible Spectroscopy-II
14.02.2022	9:00 am to 10:30 am	Dr. M.K. Lande	Fundamental Requirements of electronic spectroscopy for characterization of transition metal complexes
	10:45 am to 12:15 pm	Dr. S.D. Delekar	Electron Spin Resonance and Mössbauer spectroscopy for characterization transition metal complexes
	12:45 pm to 2:15 pm	Dr. Vitthal Barvakar	LCMS techniques for Biological Analysis
15.02.2022	9:00 am to 10:30 am	Dr. N.D. Satyanarayan	HPLC Techniques
	10:45 am to 12:15 pm	Dr. Haram S.K.	XRD Techniques
	12:45 pm to 2:15 pm	Dr. Padul M.V.	Characterization Techniques used in Extractions, Isolation and Purifications of Proteins
16.02.2022	9:00 am to 10:30 am	Dr. Sangeeta Jagtap	Mass spectrometry
	10:45 am to 12:15 pm	Prof. Dr. Mammen Daniel	Screening of Plant secondary metabolites

 <p>Pune District Education Association's Waghire College of Arts, Commerce & Science Saswad, Tal-Purandar, Pune-412301</p>		<p>Highlights of FDP Resource Persons and Topic Dr. Satyanarayana Sirasani UV-Visible Spectroscopy Dr. S. K. Dhanmane NMR Spectroscopy Dr. Sanjay Latthe SEM and TEM analysis Dr. V.D. Bobade Mass Spectroscopy Dr. Deu Bhange Powder-X-ray Diffraction Techniques Dr. Mahesh Kulkarni LCMS techniques for Protein Isolation Dr. Trupesh M. Pethani Screening of medicinal plants Secondary metabolites by LC-MS Techniques Dr. M.K. Lande Fundamental Requirement of Electronic Spectroscopy for interpretation of metal complexes Dr. S.D. Delekar Electron Spin Resonance and Mossbarr Spectroscopy for characterization transition metal complexes Dr. Vitthal Barvakar LCMS techniques for Biological Analysis Dr. N.D. Satyanarayan HPLC Techniques Dr. Haram S.K. XRD Techniques Dr. Padul M.V. Characterization Techniques used in Extractions, Isolation and Purifications of Proteins Dr. Rashinkar G.S. FT-IR Spectroscopy Prof. Dr. Mammen Daniel Screening of Plant secondary metabolites Dr. Sangeeta Jagtap Mass Spectrometry</p>	<p>Patrons Hon. Shri. Ajit Pawar Dy. Chief Minister Govt. Maharashtra President, PDEA, Pune Hon. Shri. Rajendra Ghadage Vice-President, PDEA, Pune Hon. Adv. Sandeep Kadam Hon. Secretary, PDEA, Pune Senate Member, SPPU, Pune Hon. Shri Mohanrao Deshmukh Treasurer, PDEA, Pune Hon. Shri. L.M. Pawar Dy. Secretary, PDEA, Pune Hon. Shri. A.M. Jadhav Joint-Secretary (Admin.), PDEA, Pune Dr. Manohar Chaskar Dean, Science Faculty, SPPU, Pune Dr. A.S. Kumbhar Chairman BOS in Chemistry, SPPU, Pune</p>
<p>Department of Chemistry Organizes Seven Day Online Faculty Development Programme On 'Characterization Techniques used in Chemical and Biological Sciences' Under DBT STAR COLLEGE SCHEME In Association with UGC-HRDC SPPU, PUNE From 10th February 2022 to 16th February 2022</p>		<p>Prof. Dr. Sanjeev Sonawane Director, Faculty Development Centre UGC-HRDC, SPPU, Pune</p>	
<p>About PDEA: PDEA is well known educational institution founded by a dedicated team of social reformers, led by late Shri Baburaoji Gholap, Former CEO of district local govt., Pune. PDEA has received the prestigious "Best Educational Institute Award" From Government of Maharashtra for remarkable Achievements in the field of education and social work on 5th September 2000. ABOUT College: PDEA's Waghire College of Arts, Commerce and Science, Saswad is permanently affiliated to Savitribai Phule Pune University and it is Government aided educational institute recognised under Section 2(f) 12(B) of the UGC act. The college has reaccredited by NAAC with "B++" grade in the third cycle. The college has well known for its academic excellence. At present college has offering UG degree programmes in Arts, Commerce and Science and PG courses in Arts faculty Marathi, Hindi, English, Political Science, Economics and Geography, in commerce faculty M.Com in costing, Business Administration, Banking and Finance and in Science faculty M.Sc. in Organic Chemistry, Analytical Chemistry, M.Sc. Microbiology.</p>		<p>Convener Principal Dr. Sushama Bhosale</p>	
<p>Who Should Participate? The Registration is open to all science teachers of University and Colleges. The seats are limited upto only 50 participants selection will be based on first-come-first-serve basis. After Registration join the what's app group: https://chat.whatsapp.com/HXUSDLMvBaIq0CTKIRxle</p>		<p>Co-convener Dr. S.D. Jagdale (Vice –Principal) Dr. S.S. Wavhal (Vice –Principal) Dr. Jagtap M.M. (HOD & Associate Professor, 9960041812) Dr. S.H. Zagade (IQAC Co-ordinator)</p>	
<p>❖ For Registration Fill the Online Form: ❖ https://forms.gle/YbfuHpKGEgmwGBuQA ❖ Attending all sessions and Submission of assignments are mandatory ❖ Participant should submit Reliving Order ❖ Certificate is applicable for CAS Promotion ❖ Last Date of Registration: 9th February 2022</p>		<p>Co-ordinator Dr. S.B. Rathod, Assistant Professor Contact No.: 8623895455 Email: wcsfdp22@gmail.com Co-ordinator, DBT-STAR Dr. Vidya Patankar, Assistant Professor</p>	
		<p>Organizing Committee Prof. Kamble N.R. (Assistant Professor) Prof. Ahivale G.M. (Assistant Professor) Dr. Shinde B.L. (Associate Professor)</p>	

Time Table of the online program

Sr. No.	Date	Timing of the session (From – To)	Title of the session	Resource Person	Contact duration covered (In minutes)
1	10.02.2022	10:30 am to 11:00 am	Inaugural Session	Dr. Subhash Wavhal (Vice Principal, Waghire College, Saswad) Dr. M M Jagtap , Head Department of Chemistry	30 min
		11:00 am to 12:30 pm	Powder X-ray Diffraction for Materials Characterization	Dr. Deu Bhange Assistant Professor Department of Chemistry Shivaji University,	90 min

				Kolhapur	
		12:45 pm to 2:15 pm	Scanning Electron Microscopy a Tool for surface morphology	Dr. Sanjay Latthe Assistant Professor Department of Physics, Raje Ramrao College, Jath, Dist: Sangli, Maharashtra, India.	90 min
2	11.02.2022	9:00 am to 10:30am	NMR Spectroscopy-I	Dr. S. K. Dhanmane Associate Professor Department of Chemistry Fergusson College, Pune	90 min
		10:45 am To 12:15pm	NMR Spectroscopy-II	Dr. S. K. Dhanmane Associate Professor Department of Chemistry Fergusson College, Pune	90 min
		12:45 pm to 2:15 pm	Transmission Electron Microscopy (TEM)	Dr. Sanjay Latthe Assistant Professor Department of Physics, Raje Ramrao College, Jath, Dist: Sangli, Maharashtra,	90 min
3	12.02.2022	9:00 am to 10:30am	Session –I Mass Spectroscopy -I	Dr. V.D. Bobade Professor Department of Chemistry HPT and RYK College of Arts, Commerce and Science, Nashik	90min
		10:45 am To 12:15pm	Session - II Mass Spectroscopy -II	Dr. V.D. Bobade Professor Department of Chemistry HPT and RYK College of Arts, Commerce and Science, Nashik	90 min
		12:45 pm to 2:15 pm	Session-III Screening of medicinal plants Secondary metabolites by LC-MS Techniques	Dr. Trupesh M. Pethani Associate Professor Department of Pharmaceutical Sciences , Saurashtra University, Rajkot,	90 min

				Gujrat, India	
4	13.02.2022	9:00 am to 10:30am	LCMS techniques for Protein Isolation	Dr. Mahesh Kulkarni Scientist Division of Biochemical Sciences CSIR- National Chemical Laboratory , Pune	90 min
		10:45 am To 12:15pm	UV-Visible Spectroscopy-I	Dr. Satyanarayana Sirasani Former Vice Chnacellor Osmania University, Hyderabd	90 min
		12:45 pm to 2:15 pm	UV-Visible Spectroscopy-II	Dr. Satyanarayana Sirasani Former Vice Chnacellor Osmania University, Hyderabd	90 min
5	14.02.2022	9:00 am to 10:30am	Fundamental Requirement of Electronic Spectroscopy for interpretation of metal complexes	Dr. M.K. Lande Professor and Head Department of Chemistry Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	90 min
		10:45 am To 12:15pm	Electron Spin Resonance and Mossborr Spectroscopy for characterization transition metal complexes	Dr. S.D. Delekar Professor Department of Chemistry Shivaji University Kolhapur	90 min
		12:45 pm to 2:15 pm	LCMS techniques for Biological Analysis	Dr. Vitthal Barvakar Assistant Professor Department of Botany SPPU, Pune	90 min
		9:00 am to 10:30am	HPLC Techniques	Dr. N.D. Satyanarayan Professor Department of Studies & Research in pharmaceutical Chemistry School of Chemical Sciences PG Centre,	90 min

6	15.02.2022			Kuvempu University, Kadur, Karnataka State, India	
		10:45 am To 12:15pm	XRD Techniques	Dr. Haram S.K. Professor Department of Chemistry Savitribai Phule Pune , University, Pune	90 min
		12:45 pm to 2:15 pm	Characterization Techniques used in Extractions, Isolation and Purifications of Proteins	Dr. Padul M.V. Assistant Professor Department of Biochemistry Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, Maharashtra	90 min
7	16.02.2022	9:00 am to 10:30am	Mass Spectrometry	Dr. Sangeeta Jagtap Professor, B.G. College, Sangavi Pune	90 min
		10:45 am to 12:15 pm	Screening of Plant secondary metabolites	Prof. Dr. Mammen Daniel Managing Director, Dr. Daniel's Laboratories, Baroda	90 min
		12:30 pm To 1: 00 pm	Valedictory	Dr. A.S. Kumbhar Chairman, BOS Chemistry, SPPU, Pune Dr. Subhash Wavhal Vice-Principal, Waghire College, Saswad Dr. M M Jagtap Head Department of Chemistry Dr. S B Rathod Co-ordinator, CTCBS-FEB2022 Dr. Vidya Patankar DBT Co-Ordinator	30 min



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This is to Certify that

Dr. Bhalshankar Chhaya Kondiram, Assistant Professor at New Arts, Commerce and Science College Shergaon, Dist- Ahmednagar, affiliated to Savitribai Phule University, Pune has participated in Online Short Term Faculty Development Program on Characterisation Techniques Used in Chemical and Biological Sciences (Botany/ Plant Physiology) of Seven Days (30 contact hours) duration conducted at the P.D.C. A's Waghire College of Arts, Commerce & Science, Saswad, Dist. Pune 412301, from 10/02/2022 to 16/02/2022 under the auspices of Faculty Development Centre, UGC-Human Resource Development Centre, SPPU (PMMMNATT), on Self Financed basis.

m a t o s
COORDINATOR

[Signature]
PRINCIPAL

[Signature]
DIRECTOR

[Signature]
REGISTRAR