



UGC - Human Resource Development Centre
Pt. Ravishankar Shukla University, Raipur



Organized

Online Multidisciplinary Refresher Course in Chemistry

July 11 to 23, 2022

Report

Name of Course/Program:	Online Multidisciplinary Refresher Course in Chemistry
Name of Contact person from HRDC:	Dr. Arvind Agarwal
Date of Course/Program:	11.07.2022 to 23.07.2022
Name of Course Coordinator:	Prof. Shamsh Pervez, Professor SoS in Chemistry, Pt. Ravishankar Shukla University, Raipur
Theme of Course/Program:	Multidisciplinary Refresher Course - Chemistry
Number of Participants:	40
State wise number of participants:	C.G. – 28, Madhya Pradesh – 03, Uttarakhand – 01, J & K – 01, Maharashtra – 05, West Bengal – 02
Gender wise number of participants:	Male – 21, Female - 19
Number of Resource Persons	
Name and Signature of Course Coordinator	
Prof. Shamsh Pervez, Professor SoS in Chemistry, Pt. Ravishankar Shukla University, Raipur	Dr. Arvind Agrawal Assistant Professor HRDC, Pt. RSU, Raipur (C.G.)

Multidisciplinary Refresher Course in Chemistry (11.07.2022-23.07.2022)

A Multidisciplinary Refresher Course on “Chemistry” was organized by Human Resource Development Centre, Pt. Ravishankar Shukla University Raipur, in collaboration with School of Studies in Chemistry, Pt. Ravishankar Shukla University, Raipur from 11th -23rd, July 2022. The course was attended by forty registered participants from across the country. 12 outstation and 28 local participants attended the same. 37 resource persons delivered lectures.

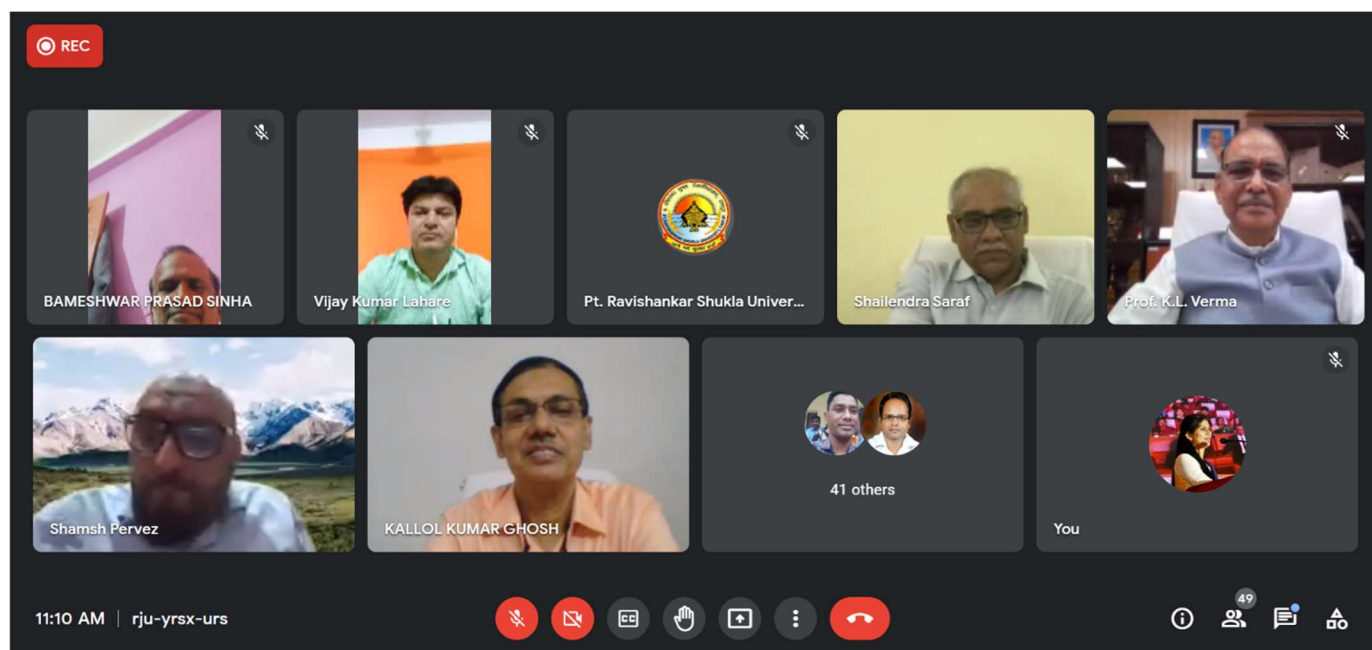
DAY 1

Session I (10.30-12.00) Inaugural Function

The Programme commenced with the Inaugural Function at 10.30 a.m. with **Chief guest as Hon’ble Vice Chancellor Prof. Keshari Lal Verma, Pt Ravishankar Shukla University, Raipur.** With Director - **Prof. Shailendra Saraf, Director, Human Recourse Development Center, Pt Ravishankar Shukla University, Raipur** and Course Co-Ordinators – **Prof. Shams Pervez, Professor, S.o.S. in Chemistry, Pt Ravishankar Shukla University, Raipur** the Programme commenced by welcoming them, which was followed by Introduction of the Participants, Introduction about the course by Course Co-Ordinator and Address by the Director HRDC- Pt RSU.

Inaugural Address was given by Hon’ble Vice Chancellor who focused on the developments in Chemistry and how updated the Professors must be by using such useful courses. Finally, Vote of Thanks was given by the

Course Co-Ordinator.



Session II (12:15 to 13:45)



Prof. Tarasankar Pal, University of Johannesburg, South Africa; Former Prof. IIT, Kharagpur delivered the lecture on “**Surface Enhanced Raman Spectroscopy**” in under the sub theme Sensational application of Raman Spectroscopy and he has given the idea about Nobel prize. He also introduced of Chemistry, Analytical Chemistry, flame test and principle of Raman spectroscopy. The session chaired by Dr. Shilpi Shrivastava Professor & Head Department of Chemistry & Applied Science Kalinga University Naya Raipur. Such a very informative session for all the participants.

Session III (14.15 to 15.45)



Prof. Chittaranjan Sinha, Department of Chemistry, Jadavpur University, Kolkata 700 032, India delivered lecture about “Aggregation Induced Emission - Design of molecules and their applications”. From his talk we learnt about various electronic transitions that happened in processes like fluorescence, phosphorescence, chemiluminescence and his lecture also emphasise about aggregation induced emissions and its applications by designing molecules. This session was chaired by Dr. Bidyut Debnath, Assistant Professor of Chemistry, Basirhat College, WB. All of the participants are enjoyed and enriched from the lecture.

Session IV (16.00 to 17.30)



Dr. Rajendra Singh Thakur CSIR CSMCRI, Bhavnagar, Gujrat delivered lecture about “principles of NMR spectroscopy and salient applications” On the basis of the elements present in the periodic table, he gave a simple and intuitive lecture to all the participants, giving a fully illustrated description of NMR spectroscopy and applications, which is inspiring for all of us. This session is started by introducing by the chairperson Dr. Pramod Yadaw, Asst. Prof. Chemistry, from Gurukul College Pathalgaon, Jashpur (C.G.).

DAY 2

Session I (10.30-12.00)



Prof. Chhitaranjan Sinha, Department of Chemistry, Jadavpur University, Kolkata on the topic “Towards design of conductor to superconductor frameworks”. In his lecture Prof. Sinha explained the structure of super conductors and supramolecule interaction. He discussed about superconductors, Noble laureates in the field, super capacitors and their types, organic - inorganic hybrid materials, metal organic frameworks and its application and ferro and antiferro magnetic coupling in monoatomic bridged complexes. Through his lecture participants learn about the future of superconductors.

Session II (12.15-13.45)



Prof. M. K. Deb, SOS in Chemistry, Pt. Ravishankar Shukla University, Raipur on the topic “Analytical aspects of atmospheric chemistry”. In his lecture, he describes the status and future of Analytical Chemistry in India, monitoring of air pollutants, source monitoring instruments, types of ambient monitoring stations, meteorological parameters, aerosol sampling, gravimetric and chemical analysis, ion & gas chromatography and atomic absorption spectrometry. Through his lecture participants learn about the type of air pollutants and method of their determination.

Session III (14:15 to 15:45) & Session IV (16.00 to 17.30)



Prof. Tarasankar Pal, in this lecture Professor Pal, Distinguished Visiting Professor, University of Johannesburg, South Africa, Former Prof. IIT, Kharagpur, presented the second part of his continuing lecture of yesterday on “Surface Enhanced Raman Spectroscopy”. From his talk me and all the participants of this refresher course could learn pin point

details of the Surface Enhanced Raman Spectroscopy, its technical and practical insights. Professor Pal explained in detail about the single molecule detection phenomena using Surface Enhanced Raman spectroscopy. In my opinion all the participants of this refresher course became enriched in knowledge about the Surface Enhanced Raman spectroscopy and its application which can be propagated amongst our students while we will teach them in our College and/or University. He very nicely explained the preparation and stability of Metal and Metal Oxide nanoparticles, he also explained the preparation of nonpolar nanoparticles in detail. The method he used for the preparation of “Metal Oxide nanoparticles” is really unprecedented. In the question answer session most of us interacted with Professor Pal and enjoyed each and every explanation of all the questions raised by us in both the session.

Day 3

Session I (10.30-12.00)



Dr. K.S. Lokesh, Department of Studies in Chemistry, Vijayanagara Sri Krishnadevaraya University Ballari, Karnataka on Insights into Electrochemistry for Sustainable Development. Lecture was very informative and interesting. Sir had started lecture with basic information about electrochemistry such as oxidation and reduction reaction followed by oxidative agent and reducing agents. Then he explained principle and process of electrochemistry. Then he talked about capacitor and its properties and uses. During lecture he actively interacted with participants.

Session II (12.15-13.45) & Session III (14:15 to 15:45)



Dr. Kamlesh Shrivastava, SOS in Chemistry delivered his lecture on Mass Spectrometry which was started with brief general introduction of analytical techniques and mass spectrometry. Then he explained principle of Mass Spectrometry. For the determination of compounds different ionization techniques are used such as EI, FAB, Electrospray Ionization and MALDI. Sir had explained all

methods very impressively by taking many examples. He interacted with participants by given them problems and discussed their solutions. He ended lecture with the explanation of mass spectra of various compounds containing different functional groups. Overall that session was excellent. He told about the Mass spectrum of different functional groups and compounds like-Alcohol, Aldehyde, Ketone, Ester, Ether and Alkane etc. He has also given the idea about Fragmentation Pattern, Molecular ion peak, Base peak and also told about Application of Mass Spectroscopy (GC-MS, LC-MS, E SI-MS, MALDI-MS, MS-MS etc). It was a very informative session for the participants.

Session IV (16:00 to 17:30)



Dr. Rajendra Singh Thakur, Senior Scientist (CSIR-CSMCRI), Assistant Professor (AcSIR) Bhavnagar, Gujrat, delivered the lecture on “**Principles of NMR Spectroscopy and salient Application**” under which he told about Principle and Instrumentation of NMR, and also discussed about various Application of NMR (2D NMR, COSY, NOEDIF, HSQC etc.). It was valuable lecture for all the participants.

Day 4

Session I (10.30-12.00)



Prof. V. Rajeshwar Rao, Professor and Dean, Research & consultancy delivered his presentation on Infrared Spectroscopy. He started his lecture by introducing the importance of IR spectroscopy in chemistry. He said that the IR Spectroscopy is equally important for both Organic and Inorganic Chemists. Infrared Spectroscopy is used for the identification of organic compounds. It is also used for the identification of structural atoms in fingerprint further he talked about the functional groups and fingerprint regions, characteristics IR absorption of the functional group and groups, various types of molecular vibrations such as stretching and bending. He also explains to determine the no. of fundamental vibrations. He explained that a diatomic molecule makes a transition from one

vibrational energy state to another by absorbing or emitting electromagnetic radiations when the conditions $E=h\nu$ is satisfied, termed as harmonic and anharmonic molecular vibrations. His presentation included calculation of vibrational frequencies, and Instrumentation of an Infrared Spectrometer. At last, he concluded with the applications of IR Spectroscopy including structure elucidations of organic compounds, structure identification, identification of impurities etc.

Session II (12.15-13.45)



Prof. K. S Lokesh, Department of studies on Chemistry, Vijayanagara Sri Krishnadevaraya University, Ballari, Karnataka. He delivered his presentation on Electrochemistry. He started with the words that the “heart of Electrochemistry is the redox reaction”. He also speaks about the balancing redox reactions etc. During his presentation he told some fields and applications of electrochemistry which includes energy storage and conversion system, Medicine, Industry, Sensors, Corrosion inhibitions etc. Further he discussed about the Global energy demand. In this he discussed about the fuel cell and the need for fuel cell. While discussing the fuel cell he talked about hydrogen, which can be a substitute for energy sources in future. It includes sources of hydrogen and hydrogen production to fulfill the energy sources.

Session III (14:15 to 15:45)



Dr. Neetu Bhatnagar, Registrar & Professor, Manipal University, Jaipur delivered the lecture on “Recent trends in Teaching and Learning Process in Chemsitry”. She talked about how we can prepare for class, how we can make an effective teaching and interactive class. What types of changes required to change the teaching pattern she has explained traditional and modern approach. Session was very informative and most important given lots of method and idea to improve teaching method and students can take interest in class.

Session IV (16:00 to 17:30)



Prof K.V.S. Ranganath, Professor in Banaras Hindu University, Varanasi delivered the lecture on “Biofuels Additives Using Catalysis” in under the sub theme application and importance of Biofuels on the basis of energy density of different element. Best biofuels is depending on the octane no, higher the octane no.

higher the performance of fuels. At present scenario population has increasing day by day so peoples using excessive consumption of fuels that why biofuels is better option because its eco-friendly.

Day 5

Session I (10.30-12.00)



Dr. Prof. Shahid Nayeem, Department of Chemistry Aligarh Muslim University, Aligarh. He gave his lecture on “Basic Quantum Chemistry to Molecular Simulations”. It was a very informative lecture and the session was very interactive. He explained quantum mechanics in very simple and interesting

way. At last Dr. Shilpi Shrivastava present the vote of thanks on behalf of Refresher course team. Total 42 persons are present.

Session II (12.15-13.45)

Microteaching

In the second session Micro teaching of **Group A**. Total 13 participants were present in group A. The session was chaired by Dr. Awanish Patel and & resource person was **Prof. D.P. Kuity**, Professor of Geology (Retd.), Pt. Ravishankar Shukla University, Raipur. At last Prof. Kuity gave his valuable suggestion about the teaching.

Session III (14:15 to 15:45)



Prof Ravin M. Jugade, Professor in RTM Nagpur University, Nagpur delivered the lecture on “Atomic Absorption Spectroscopy” in under the sub theme classification of analytical techniques, application their importance. He has given brief idea of working principle and instrumentation of AAS. He has given the knowledge advantages of AAS are relatively expensive and easy to use, while still offering high throughput, quantitative analysis of the metal content of solids or liquids. This makes it suitable for use in a wide range of applications.

Session IV (16:00 to 17:30)



Dr. Nita Bhatnagar, Registrar & Professor, Manipal University, Jaipur delivered the lecture on “Need for Interdisciplinary Research”. She talked about development of high-performance polymeric composites for automotive and aerospace applications, Physico-chemical and biological studies Yasada (Zinc) Bhasma with its special reference to its method of preparations and also discuss about development of based agent against multi drug resistant bacteria. Whole session was very informative.

Day 6



Session I (10.30-12.00)

Prof. Tarasankar Pal an alumnus of the university of Burdwan was introduced by Dr Vilas Mahire. Professor Tarashankar Pal delivered lecture on "metal and metal oxide nanoparticles". The topic was very nicely presented. He beautifully introduced the work of Berzillius and fritz haber then he told the formation of urea in lab without the help of living organisms and how lycurgus cup changes colour green to red by the use of gold nanoparticles. After introducing

nanoparticles he gave the importance of 1. grinding mixing protocol 2. Catalyst as a foreign particle.3. Catalyst changes path of reaction. Then he told about important property -on changing size nanoparticles change their catalytic properties. After that conversion of 4 nitro phenol into 4 amino phenol is explained. How silver nanoparticles play important role in this reaction. At the end vote of thanks was given by Bharat Lal Yadav.

Session II (12.15-13.45)



Dr. Mohammed Shahid Nayeem, Professor department of chemistry AMU Aligarh UP India was welcomed by doctor Vilas Mahire. He delivered lecture on "Quantum mechanics and molecular simulation". His talk comprises of simple harmonic oscillator, equation for rigid rotator, separation of variables, approximation method, variation method, empirical method. He mainly focused on application of Quantum mechanics. At the end vote of thanks was given by myself Bharat Lal Yadav.

Session III (14:15 to 15:45)



Prof Ravin M. Jugade, Professor in RTM Nagpur University, Nagpur delivered the lecture on "Waste water treatment technology" in under the sub theme was types if waste water treatment their importance. He has given brief idea about how to design major units operations and processes for treating wastewater. He has also explained veryb well about what are the significance of waste water treatment. Waste water can be reused to improve the scarce supply of fresh water and hold off future investments in water treatment plants.

Session IV (16:00 to 17:30)

Microteaching

Chair person was Professor D.P. Kuity, Professor of Geology (Retd), Pt. Ravi Shankar Shukla University, Raipur. In his presence and with presence of other dignitaries' participants of Group B deliver their topics like stereochemistry, NMR,

Electrochemistry, AES etc. Almost ten participants deliver their lecture. Basically, this practice (Microteaching) helps teachers to practice their skills with a small group of students before teaching bigger group as well as it focuses on sharpening and developing specific teaching skills and eliminating errors.

Day 7

Session I (10.30-12.00)

Prof. (Dr.) Gufran Beig, Founder Project Director SAFAR, IITM, Ministry of earth science govt. of India, NIAS IISC Bangalore. Sir gave their lecture on “Predicting the air you breath: SAFAR-System”. Sir described in detail air and pollutant, composition of air, factor that influence the air pollutant, SAFAR, objectives of SAFAR, SAFAR framework, air quality monitoring station and automatic weather station, air quality index, SAFAR communication framework, SAFAR operational desk toward air quality forecast, SAFAR air mobile app. Mr. Vishal Thawara Rathod Sir present the vote of thanks on behalf of refresher course team.

Session II (12.15-13.45)

Dr. Noor Afshan Khan, Senior Scientist, CSIR NEERI, Delhi Centre. Dr. Noor Afshan Khan Medam gave their lecture on “Sampling Protocol: An Important Aspect in Environmental Analysis”. Dr. Noor Afshan Khan Medam explained the sampling process in very simple way and described in detail the objectives of sampling, steps involve in sampling, selection of site, deciding the number of samples, types of sampling, factor affecting samples characteristics, sample preservation and storage and error associated with sampling.

Session III (14.15-15.45)



Dr. Dipanjali Majumdar, senior scientist CSIR-NEERI, Kolkata Zonal centre. She delivered her presentation on measurement of trace environmental contaminants analytical chemist perspective. She started her lecture by trace analysis of environmental contaminants. The SDG Framework has a total 17

goals, 169 targets and 244 indicators 93 of which are environment related. After that discussed trace analysis which involves determination of specified components in the sample in a very minute. She explained relation with method of analysis to Matrix, Nature of target species from the sample and the process of data. She also discussed how trace metal isolate from the sample and in this process main three steps are involved Nature of target contaminance, extraction method, separation and detection. While discussing the solid phase micro extraction basics on the Needle pierces the septum to a sample. She also discussed the sample types [GC analysis] and three case study first is VOCS in waste water, second is carbonyl's in a air and third is polychlorobipenyls in water and soil. She briefed us analytical procedure for analysis of PCBs collection of soil and water samples, analysis on GC and data processing and interpretations. She also shared about serial dilution from liquid standards and GC for environmental measurement. Lastly, she started question answer session participants ask questions to resource person and she gave all the answer of participants. All the participants were satisfied.

Session IV (16:00 to 17:30)



Prof. Gufran Beig, Founder project director SAFAR, IIM Ministry of earth, NIAS, IISC Bangalore. He delivered his presentation on Atmospheric chemistry " Air Pollution, Climate change and Human Health." Firstly, he started his lecture to linkages between climate, weather, air pollution and health.

After that he discussed the connectivity with environmental, physical and local conditions then he described the key role of atmospheric chemistry in chemical transformations and discuss Nation within a air pollution and a burden of disease. After that he highlighted about pollutants and sources of air pollutants, disease burden highlights mortality and morbidity. He briefed about impact of air pollution on human system like Respiratory System, Central Nervous System, Circulatory System, Reproductive System, Hepatic System, Skin and Metabolic disorders. He also shared knowledge about Diagnostic test like Spirometry, Serological, Urine test, Imaging, Biopsy, Diagnostic biomarks, Problem and gaps. Finally told us How SAFAR advance information can help early detection of large outbreaks and

immediate goal, immediate phase pilots cities sustainable transport to reduce air pollution and provides health benefits

Day 8

Session I (10.30-12.00)



Dr. Deepanjali Majumdar, Senior Scientist CSIR -NEERI Kolkata Central Zone was the resource person of first session (10:30am- 12:00pm). Ma'am had delivered wonderful lecture on "Applications of GC-MS". During lecture Ma'am had explained the instrumentation, working principle, applications and the possible error in GC-MS. To explain the GC-MS, She had given a case study which was based on "Hydrocarbon in Groundwater". During Analysis monoatomic hydrocarbon, aliphatic hydrocarbon and polyatomic hydrocarbon was taken. She interacted with the participants and cleared their different queries related with GC-MS.

Session II (12.15-13.45)



Dr. Noor A Khan, Senior Scientist CSIR NEERI, Delhi center delivered lecture on "Role of Sophisticated Instruments in Environmental Analysis". During lecture she covered various topics like instrumental techniques for analysis classification of contamination, analytical instruments for specific analysis. She had also mentioned that some of the pharmaceutical and personal care products are considered as contaminants. At the last of the session Ma'am had solve the questions asked by the participants regarding with sophisticated techniques.

At the end of the session Course coordinator Professor Shamsh Pervez encouraged the participants that their teaching should be research oriented. We should prepare the student in such a manner that they can clear different

competitive exams like NET, SET, GATE and also explained the importance of Maths in research and cross disciplinary education.

Session III (14.15-15.45)



Dr. Ajay Taneja, in his deliberation of the lecture he told that not only the outside air is polluted but pollution is found in the air inside our house which is more dangerous. In research it is found that women who work in the home have a 54 percent higher death rate from cancer than women work in outside and not only women but children are also affected. Indoor air pollution is 2 to 5 times more polluted than outside air. He told that typical biomass cook stoves convert 6-20% of the fuel carbon to toxic substance. To prevent these substances by dilution with fresh air. Ventilation is an efficient method of reducing airborne. He further gave stress on how dangerous is the indoor air pollution in our country. Time to time govt. take initiatives to prevent indoor air pollution, we should also contribute our personal effort to overcome this problem. At last he told various method used to control indoor air pollution.

Session IV (16.00-17.30)

Microteaching

In this session **Prof. D P Kuity** Prof. of Geology (retd.) Pt. Ravishankar Shukla University Raipur was the resource person. Participants and their topic are as follows:

Name of the Participants	Topic
Mr. Manoj Jangde	Hybridization
Dr. Vijay K Lahare	Polymer
Smt. Saraswati Seth	Photoelectric Effect
Shilpa Yadav	Aldol Condensation

Mrs. Priti Khursail	Plastic
Dr. Vilas Mahire	Nucleophilic Substitution Ret.
Dr. Nitin Vilayatkar	Colloids
Dr. Harishankar Dewangan	Ionization Potential
Mrs. Aarati Sao	Thermodynamic System
Dr. Shreni Diwakar	Heterocyclic Compounds
Dr. Neena Rai	Hybridization
Dr. Indrapal Karbhal	Chemistry Ground to Apex

Day 9

Session I (10.30-12.00)



Dr. Sabyashachi Mishra, IIT Kharagpur, Quantum Chemistry -

Start lecture with the introduction of quantum mechanics, degree of freedom of molecules, dipole moment and modes of vibration in simple harmonic oscillator and Hamiltonian operator. Explanation of hermite polynomial wave function and mechanical anharmonicity. Graphical presentation of energy spacing

between vibrational energy level, energy of Morse and zero-point energy. Explanation of population/intensity varies with temperature.

Session II (12.15-13.45)



Prof. Paromita Chakraborty, SRM Institute of Science and

Technology, Kattankulathur, Polyurethane foam disk passive air samplers: A cost-effective monitoring device for persistent organic pollutants-What are Persistent organic pollutants, adverse effect of

POPs in human health, wild life and environment too. What are the source of POPs. National and international scenarios on why monitor POPs in atmosphere. How to evaluate the effectiveness of convention. What are the requirement for global monitoring of POPs and its sampling techniques and

identification of hot-spot. What are active and passive sample data. Discussion about ongoing project on POPs.

Session III (14.15-15.45) & Session IV (16.00-17.30)

The session started under the chairperson Dr. Nitin Devidas Vilayatkar with the reporter Dr. Shreni Diwakar. The resource person for the seminar session was **Prof. Kallol Kumar Ghosh**. Brief report of participants and their presentation in the seminar is as follows –

S. No.	Group A	Topic	Details
1.	Dr. Meena Chakraborty	High Flouride concentration in groundwater in parts of India – A Review	Ground water purest form but contamination in contact with the due to fluoride. Health issues concerned with fluoride. Skeletal fluorosis consists of Clinical phase – 1 and phase – 2. Fluoride in ground water is National and International Problem. India and China is worsely affected. Statistical analysis of fluoride with special reference to Chhattisgarh.
2.	Mrs. Mousami Lahare	Chemical Equilibrium in Ideal Gases and Fugacity	Introduction, importance of Law of mass action for equilibrium. Explain the concept of Fugacity for real gases and its physical significance.
3.	Kundan Anand	Interstitial Compounds	Introduction of Interstitial compound is described its Structure formation physical and chemical properties with uses and application.
4.	Dr. Awanish Kumar Patel	Biodiversity Manendragarh Division, Chhattisgarh, INDIA, With reference of Plants.	Introduced the area in korea district, with special reference to its diverse flora specially medicinal plants. Geographical location and Methodology used during the investigation. Most prominent family monocot in the area. Percentage of Trees, herbs and shrubs are also discussed in the area. Impact of pollution in the biodiversity.

5.	Sadiya Patel	Green Chemistry an Approach for Healthy Environment	Discussed the Importance of green chemistry, its uses and application. Need, origin and principles of Green Chemistry. Solution to environmental threats. How can we deal with green chemistry with practical life?
6.	Bharat Lal Yadaw	Acidic Character of Terminal Alkynes	Introduction of Acidic character in Terminal Alkynes, Factors affecting like Electronegativity, Stability of anion and Hybridization,
7.	Dr. Pramod Yadaw	Phytochemical study of Madhuka Longfolica Plant found in Jashpur district, Chhattisgarh.	Introduction of Area and plants. Primary and secondary constituents found in the plant. Briefly explained its commercial importance. Chemical analysis - Methodology for physicochemical analysis and its report investigation for extractive values for different layers. Discussion of preliminary phytochemical screening.
8.	Dr. Saroj Sharma	Orgel Diagram and its applications.	Introduction of Orgel diagram, correlation diagram. Relative energies of electronic terms in transition metal complexes. Hole formalism Rule. Excitation of electrons in different octahedral and tetrahedral complexes.

S. No.	GROUP B	Topic	Details
1.	Jyotsna Meghwal	Stereochemistry	Classification, isomers – Constitutional and Conformational, Stereoisomers,

			Characteristic feature of Enantiomers, Diastereomers. Meso compounds, Racemic Mixture.
2.	Dr. Toyaj Shukla	Infrared Spectroscopy	Electromagnetic radiation – Types and interaction with atoms and molecules. Range of IR radiation and wave number. Types of molecular vibration, IR active bonds, vibrational frequency and factors affecting it. Advantages, disadvantages and application of IR spectroscopy.
3.	Dr. Gautam Patil	Green Chemistry	Significance of Green Chemistry and 12 principles involving it. Alternative route to Ibuprofen, Source of energy – renewable and non – renewable, Global change etc.
4.	Dr. Rama Sarojinee	Hot Lime – Soda Process	Introduction of lime – soda process, Hard and soft water, Hardness removal – External and Internal Process. Principle and method used in hardness removal in lime – soda process.
5.	Dr. Bidyut Debnath	Biodegradable Polymers – Chemistry Degradation and Application	Introduction – Definition, Classification – Natural and Synthetic polymers. Medical application, PHA, Mechanism of degradation and methods of analysis, Types of bioerosion.
6.	Dr. Purak Das	Why Gemstones are Coloured?	Introduction – Gemstones gain their colour through trace transition metal ions. Ligand metal interaction – Crystal field theory. Relation between metal complexes and metal ion through Crystal field theory. Tetrahedral and octahedral field splitting, high and low spin complexes.
7.	Dharna Thakur	Flame Photometry	Introduction – Principle, advantages/Disadvantages

			and application. Instrumentation of flame photometer. Analysis of alkali and alkaline earth metals.
8.	Mr. Vishal Thawara Rathod	Aromatic Electrophilic Substitution Reaction	Introduction of Substitution reaction using electrophiles in aromatics. Application in Nitration, Sulphonation, Halogenation, Fridel Craft reaction.
9.	Satyendra Singh Gautam	Purification of Municipal Water	Introduction – Method of Water Purification – Physical, Biological and Chemical Process.
10.	Mrs. Hemlata Sahu	Photochemistry of Vision	Briefly explained the chemistry of vision and effect of light, Photoreceptors, Eye, Cells rods and cones etc. Colour vision.

Day 10

Session I (10.30-12.00)



Dr. Sabyashachi Mishra, IIT Kharagpur, Quantum Chemistry –

In this session, his main focus was on the importance of applications of quantum chemistry. He explained that the applications of quantum chemistry are routinely found in research in all branches of chemistry. Therefore, quantum chemistry has become an integral part of any modern undergraduate and postgraduate chemistry curriculum. The main contents of the lecture included concepts of wave function, operators, properties of special operators, popular notations in quantum chemistry He also discussed the challenges in solving Schrödinger equation and approximate methods in quantum chemistry. It was overall a very interesting, informative and interactive session.

Session II (12.15-13.45)



Prof. Paromita Chakraborty, SRM Institute of Science and Technology, Kattankulathur delivered her lecture on “**Chemicals and plastics: an emerging concern**”. Her main focus was to draw the participants attention towards the evolving environmental threats i.e., chemicals and plastics. She talked about sources of chemicals associated with micro and macro plastic litter, problems related with plastic waste during COVID-19 pandemic, emission of POPs from the hotspots, major factors of POPs release, plastic additives in food samples, spectroscopic identification of microplastic-dominant polymers and microplastic-POPs interlinkages. She also discussed about the Indian scenario of the chemicals and plastics. At the ending of session, she interacted with the participants and resolved their queries. Also, she encouraged them to work in this field and consider the issue of chemicals and plastics seriously, thereby trying the minimize their use and regulate their disposal.

Session III (14.15-15.45) & Session IV (16.00-17.30)

Sr. No.	GROUP C	Topic	Details
1.	Manoj Kumar Jangde	Quantum Number	Quantum numbers are the set of numbers used to describe the position and energy of an electron in an atom. There are four types of quantum numbers: principal, azimuthal, magnetic, and spin. Quantum numbers are important because they can be used to determine the electron configuration of an atom and the probable location of the atom's electrons.
2.	Vijay Kumar Lahare	Pinacol-Pincolone Rearrangement	Introduction, Mechanism, Features and Applications of Pinacol-Pincolone Rearrangement.
3.	Smt. Saraswati Seth	Surfactant	Surfactant or surfaceactive agents have amphiphilic structure consisting of hydrophobic and hydrophilic part. This special structure cause their surface active properties like reduction of the

			<p>surface tension and formation of micelle in bulk solution. Therefore widely used in formation of washing agents, wetting agents, emulsifying agent.</p>
4.	Shilpa Yadav	Silicones and their application	<p>Silicones are a diverse family of specialty, high-performance materials that includes reactive silanes, silicone fluids and silicone polymers, which are widely used in a variety of consumer and industrial products. These materials provide essential benefits in key segments of our economy, including health care, aerospace, personal care, electronics, transportation and construction.</p>
5.	Yasmeen Fatima Pervez	Corrosion and its control	<p>Corrosion is a process of gradual deterioration of Metal from its surface.</p> <p>It's reverse of metallurgy and is challenging to metallurgy. Thus to totally protect metals from corrosion is impossible, however it can be minimized by some preventive measures like alloying, anodic protection, cathodic protection etc.</p>
6.	Mrs. Priti Khursail	Coordination Compound	<p>Coordination compound, any of a class of substances with chemical structures in which a central metal atom is surrounded by nonmetal atoms or groups of atoms, called ligands, joined to it by chemical bonds. Difference between double salt and coordination compound, werners theory and its limitations.</p>
7.	Dr. Vilas Nana Mahire	NMR Spectroscopy	<p>The principle behind NMR is that many nuclei have spin and all nuclei are electrically charged. If an external magnetic field is applied, an energy transfer is possible between the base energy to a higher energy level.</p> <p>The energy transfer takes place at a wavelength that corresponds to radio frequencies and when the spin returns to its base level,</p>

			energy is emitted at the same frequency.
8.	Dr. Nitin Devidas Vilayatkar	Chemical Kinetics	Need of chemical kinetics, definition of chemical kinetics, rate of chemical reactions factor affects of rate of chemical reactions like concentration of reactants, temperature, nature of reactants and products, catalyst, pressure and surface area of substrate
9.	Dr. Harishankar Dewangan	VSEPR Theory	The valence shell electron pair repulsion (VSEPR) theory is used to predict 3-D molecular geometry based on the number of valence shell electron bond pairs among the atoms in a molecule or ion. The main postulates of VSEPR theory are as follows i The shape of a molecule depends upon the number of valence shell electron pairs around the central atom. ii Pairs of electrons in the valence shell repel one another since their electron clouds are negatively charged.
10.	Mrs. Aarati Sao	Crystal Field Theory	CFT was given to describe the bonding between metal and ligand in transition metal complex and this theory gives the idea about stability, reactivity, stability and color of complexes it has some drawbacks but yet it is very useful for transition metals complexes.
11.	Dr. Shreni Diwakar	Crystal Structure	Discussed Crystal Structure, Unit Cell and Lattice, Types of Unit Cell, Bravies Lattice.
12.	Dr. Neena Rai	Nanotechnology & Its Applications	Nanotechnology, Nano Scale, Nanotechnology Size Comparisons, Evolution of Nanotechnology, Nanoparticles, Production of Nanoparticles-Top Down Production Processes and Bottom-Up Production

			Processes. Applications of Nanotechnology in -Textiles, Sports, Information Technology, Electronics, Agriculture and Allied Sciences. Nanotechnology helps to understand the world around us and will provide inspiration and drive for many generations of scientists.
13.	Dr. Indrapal Karbhal	Pericyclic Reaction: A New Window for Smart Nanomaterial Synthesis and Application	Pericyclic Reaction are basically the game of p-orbitals. In this reactions bond formation and breaking take place at the periphery of the system. About characteristics and classification of Pericyclic Reaction. Smart Nanomaterial Synthesis and Applications -Sensor, Finger Print, Batteries, Catlysis, Drug and Medicinal Chemistry.

Group - A

Sr. No.	GROUP A	Topic	Details
1.	Dr. Shilpi Shrivastava	Addition Reactions	In organic chemistry, an addition reaction is an organic reaction in which two or more molecules combine to generate a bigger one (the adduct). Molecules with carbon—hetero double bonds, such as carbonyl (C=O) or imine (C=N) groups, can be added because they have double-bond character as well. Different Types of Addition Reaction Nucleophilic addition reaction. Electrophilic addition reaction. Free radical addition reaction.
2.	Bameshwar Prasad Sinha	UV-Vis Spectroscopy	The Principle of UV-Visible Spectroscopy is based on the absorption of ultraviolet light or visible light by chemical compounds, which results in the production of distinct spectra. Spectroscopy is based on the interaction between light and matter. It is used in

			analytical chemistry for the quantitative determination of analytes, such as transition metal ions, highly conjugated organic compounds, and biological macromolecules. UV-visible is used to determine the size and concentration of NPs.
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Group - B

Sr. No.	GROUP A	Topic	Details
1.	Preeti Pandey	Electrochemical Method	It's a simple, inexpensive equipment's for study and analysis. Fabrication of new sensors based on nano metal oxides and carbon nano material and their use for the development of analytical method which is simple, rapid and more sensitive.
2.	Priyanka Gupta	Secondary Pollutants	Secondary Pollutants are formed in the lower atmosphere by chemical reactions. The two examples are ozone and secondary organic aerosol (haze). Secondary pollutants are harder to control because they have different ways of synthesizing and the formation are not well understood. The effects of Secondary Pollutants are breathing problems, coughing, and irritation to the eyes, nose, and throat. Ground-level ozone causes aggravated symptoms to people with asthma, bronchitis, emphysema when they were exposed to that.

ONLINE EXAMINATION-

An online test was conducted for the participants through Google Form. There were 30 MCQs and time given was 1.5 hrs. The scores were made available immediately after the submission of the test. There was smooth conduction of the exam without any obstacles and all the credit goes to the organizer of the Refresher Course.

Day 11

Session I (10.30-12.00)



Prof. Gautam Kumar Patra, (Prof. & Head, Department of Chemistry Guru Ghasidas Central University, Bilaspur) delivered their lecture on Supramolecular Chemistry & Their Application. He started with basics and discussed in detail about supramolecular chemistry. The session started by introduction of the resource person by Dr. Avinash Patel (Assistant Professor Govt. Naveen College Janakpur, Korea (Cg)). It was a very informative and interactive lecture.

Session II (12.15-13.45)



Prof. A.K Singh, (Prof. of Department of Chemistry Govt. V.Y.T PG Autonomous College, Durg) delivered their lecture on Advanced Oxidation Process for Wastewater treatment role of nanomaterial. Dr. Avinash Patel (Assistant Professor Govt. Naveen College Janakpur, Korea (C.G) introduced Prof. Singh in the beginning of the session. It was a very interactive lecture.

Session III (14.15-15.45) & Session IV (16.00-17.30)

In the third and fourth session of the day chairperson Dr. Priti Pandey introduced the resource person Prof. M. K Deb and project presentation of group A and B were held. He listened carefully to all the projects presented by the participants after observing all the project presented. He pointed out the shortcomings and gave valuable suggestion for further improvement in project work .

The following participants presented their assigned project :

Name of participants	Topics
1. Dr. Meena Chakraborty 2. Mrs. Mausami Lahre 3. Kundan Anand	Air pollution and device development

4.Dr. Awanish Patel	
1.Dr. Shabir Hussain Lone 2.Sadiya Patel 3.Bameshwar Sinha 4.Dr. Shilpi Shrivastava	Water quality monitoring and device development
1.Bharat Yadav 2. Dr. Pramod Yadav 3.Dr. Saroj Sharma 4.Jyotsna Meghwal	Nanomaterial design and application
1.Dr. Toyaj Shukla 2.Dr. Gautam Patil 3.Dr. Rama Sarojinee 4.Dr. Bidyut Debnath	Energy storage device based on nanomaterials
1.Dr. Purak Das 2.Dharna Thakur 3.Dr. Preeti Pandey 4.Priyanka gupta	Hydrogen energy as alternative source of energy
1.Mr. Gaurav Tamrakar 2.Mr. Vishal Rathor 3.Mr. Satyendra Gautam 4.Mrs.Hemlata Sahu	Electrochemical/colorimetric sensor and catalysis

Day 12

Session I (10.30-12.00)



Prof. Kallol K. Ghosh, SOS in Chemistry, Pt. RSU, Raipur on the topic “**How to Teach and not only on what to Teach**”. In his lecture he said that a teacher should make the topic interesting so that it becomes easier to grasp by the students and learners. He also explained the Genesis and Development of Chemical Kinetics and Reaction Dynamics by giving different examples. He

also explained about the negative values of activation energy.

Session II (12.15-13.45)



Prof. S. Krishnamoorthy, Institute of Science, Banaras Hindu University, Varanasi. The topic was “**Polymers in Our Life.**” He initially started with the basics and later gave information about the different aspects of polymer such as properties, preparation, mechanism of preparation, uses etc. and especially about the

conducting polymers. The lecture was very informative.

Session III (14.15-15.45)

Prof. M. K. Deb, S.o.S. in chemistry, Pandit Ravishankar Shukla University Raipur was the Resource person of 3rd session. During session, three team from group C had presented their project on different topics. Each team had presented their project under following points- objective, origin of project, review of status of research in National and International level, importance of the proposed project in the contest of current status, methodology, expected outcomes and conclusions.

- First team had presented their project on “Development of Biofertilizers and application”. Group members were – Mr. Manoj Kumar Jangde, Mr. Vijay Kumar Lahare, Mrs. Saraswati Seth, Shilpa Yadav. The main objectives of this project were to develop

Biofertilizers to replace chemical fertilizer, to organize awareness program for farmers regarding Biofertilizer.

- Second team had presented their project on “Greener Approach: Synthesis of Biologically active newer Benzimidazole Compounds”. Team member were – Dr. Yasmeen Fatima Pervez, Mrs. Priti Khursail, Dr. Vilas Nana Mahire, Dr. Nitin Devidas Vilayatkar.
- Third team had presented their project on “Carbon quantum dots and applications”. Team members were – Dr. Harishankar Dewangan, Mrs. Aarati Sao, Dr. Shreni Diwakar, Dr. Neena Rai, Dr. Indrapal Karbhal.

Prof. M.K. Deb had given very important suggestions regarding project and inspired each of the participants to prepare a good project proposal.

Session IV (16.00-17.30) – Valedictory

In this function, **Prof K L Verma**, Hon'ble Vice-Chancellor of Pt. Ravishankar Shukla University, Raipur, was the **Chief Guest**, **Prof Shailendra Saraf**, Director, HRDC, Pt. Ravishankar Shukla University, Raipur, was the **Chairperson**, and **Prof Shams Pervez**, School of Studies in Biotechnology, Pt. Ravishankar Shukla University, Raipur, was present as **Course Coordinator**. Initially, Prof. Shams Pervez gave the overall report of this refresher course. Thereafter, opportunity was given to all the participants for providing their feedback and then all the participants shared their wonderful experiences Honorable V.C. Prof. K. L. Verma Sir blessed all the participants with his valuable words and congratulated all for completing online refresher course successfully. In the last, Prof Shailendra Saraf Sir was gave vote of thanks to the guests and everyone for their participation.



Organizing Team

 <p>Prof. K. L. Verma Vice Chancellor Pt. RSU, Raipur (C.G.)</p>	 <p>Dr. Shailendra Saraf Director HRDC, Pt. RSU, Raipur (C.G.)</p>
 <p>Prof. Shamsh Pervez S.o.S. in Chemistry, Pt. RSU, Raipur (C.G.)</p>	 <p>Dr. Arvind Agrawal Assistant Professor HRDC, Pt. RSU, Raipur (C.G.)</p>

UGC - HRDC, PRSU, Raipur

Tentative Time Table: Refresher Course CHEMISTRY (Two Week)

(11 July 2022 to 23 July 2022)

Course Coordinator: Prof. Shams Pervez (9425242455)/ Dr. Arvind Agrawal, HRDC (9754233057)

	Session -I (10:30 to 12:00)		Session -II (12:15 to 13:45)		Session -III (14:15 to 15:45)		Session -IV (16:00 to 17:30)
First Week							
11th July, Monday	Registration, Inauguration & Induction	T E A	Lecture 1 “Surface Enhanced Raman Spectroscopy” Prof. Tarasankar Pal Distinguished Visiting Professor, University of Johannesburg, South Africa; Former Prof. IIT, Kharagpur tarasankar.pal@gmail.com 8436797435/9434342349	L U N C H	Lecture 2 “Aggregation Induced Emission - Design of molecules and their applications” Prof. Chittaranjan Sinha Department of Chemistry, Jadhavpur University, Kolkata, crsjuchem@gmail.com 7044231277	T E A	Lecture 3 “Principles of NMR spectroscopy and salient applications” Dr. Rajendra Singh Thakur CSIR CSMCRI, Bhavnagar, Gujarat rthakur@csmcri.res.in 9574874234
12th July, Tuesday	Lecture 4 “Towards design of conducting to superconducting frameworks” Prof. Chittaranjan Sinha Department of Chemistry, Jadhavpur University, Kolkata, crsjuchem@gmail.com 7044231277		Lecture 5 “Analytical aspects of atmospheric chemistry” Prof. M. K. Deb SOS in Chemistry, Pt. Ravishankar Shukla University, Raipur debmanas@yahoo.com 9425503750		Lecture 6 “Surface Enhanced Raman Spectroscopy” Prof. Tarasankar Pal Distinguished Visiting Professor, University of Johannesburg, South Africa, Former Prof. IIT, Kharagpur, tarasankar.pal@gmail.com 8436797435/9434342349		Lecture 7 “Metal and Metal Oxide nanoparticles” Prof. Tarasankar Pal Distinguished Visiting Professor, University of Johannesburg, South Africa; Former Prof. IIT, Kharagpur tarasankar.pal@gmail.com 8436797435/9434342349

<p>13rd July, Wednesd ay</p>	<p style="text-align: center;"><u>Lecture 8</u> “Electrochemistry”</p> <p>Prof. K.S. Lokesh Department of Studies in Chemistry, Vijayanagara Sri Krishnadevaraya University Ballari, Karnataka, lokeshsk@gmail.com kslokesh@vskub.ac.in 9035500208</p>	<p style="text-align: center;"><u>Lecture 9</u> “Mass Spectrometry”</p> <p>Dr. Kamlesh K Shrivass School of Studies in Chemistry, Pt. Ravishankar Shukla University, Raipur (C.G.) kshrivas@gmail.com</p>	<p style="text-align: center;"><u>Lecture 10</u> “ “Mass Spectrometry”</p> <p>Dr. Kamlesh K Shrivass School of Studies in Chemistry, Pt. Ravishankar Shukla University, Raipur (C.G.) kshrivas@gmail.com</p>	<p style="text-align: center;"><u>Lecture 11</u> “Principles of NMR spectroscopy and salient applications”</p> <p>Dr. Rajendra Singh Thakur CSIR CSMCRI, Bhavnagar, Gujarat rthakur@csmcri.res.in 9574874234</p>
<p>14th July, Thrusday</p>	<p style="text-align: center;"><u>Lecture 12</u> “Infrared Spectroscopy”</p> <p>Dr. V. Rajeswar Rao Dean, National Institute of Technology, IT, Warangal dean_rc@nitw.ac.in 9490165364</p>	<p style="text-align: center;"><u>Lecture 13</u> “Electrochemistry”</p> <p>Prof. K.S. Lokesh Department of Studies in Chemistry, Vijayanagara Sri Krishnadevaraya University Ballari, Karnataka, lokeshsk@gmail.com kslokesh@vskub.ac.in 9035500208</p>	<p style="text-align: center;"><u>Lecture 14</u> “Recent Trends in Teaching and Learning Processes in Chemistry”</p> <p>Dr. Nitu Bhatnagar Registrar Manipal University Jaipur Dehmi Kalan, Off Jaipur-Ajmer Expressway, Jaipur - Rajasthan, nitu.bhatnagar@jaipur.manipal.edu 8769526411</p>	<p style="text-align: center;"><u>Lecture 15</u> “Biofuel Additives Using Catalysis”</p> <p>Prof. K. V. S. Ranganath Department of Chemistry, Institute of Science, Banaras Hindu University, Varanasi ranganath.chem@bhu.ac.in rangakvs@gmail.com 9685458916</p>
<p>15th July, Friday</p>	<p style="text-align: center;"><u>Lecture 16</u> “Basic Quantum Chemistry to Molecular Simulations”</p> <p>Prof. Shahid Nayeem Department of Chemistry Aligarh Muslim University, Aligarh msnayeem@gmail.com</p>	<p style="text-align: center;"><u>Micro Teaching</u> (Group A)</p> <p>Prof. D. P. Kuity Professor of Geology (Retd.) Pt. Ravishankar Shukla University, Raipur kuitydurgapada3@gmail.com 9926249929</p>	<p style="text-align: center;"><u>Lecture 17</u> “Atomic Absorption Spectroscopy”</p> <p>Prof. Ravin Jugade Department of Chemistry Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur ravinj2001@yahoo.co.in 09420254377</p>	<p style="text-align: center;"><u>Lecture 18</u> “Recent Trends in Teaching and Learning Processes in Chemistry”</p> <p>Dr. Nitu Bhatnagar Registrar Manipal University Jaipur Dehmi Kalan, Off Jaipur-Ajmer Expressway, Jaipur - Rajasthan, nitu.bhatnagar@jaipur.manipal.edu</p>

16th July, Saturday	<p align="center"><u>Lecture 19</u> “Metal and Metal Oxide nanoparticles”</p> <p>Prof. Tarasankar Pal Distinguished Visiting Professor, University of Johannesburg, South Africa. Former Prof. IIT, Kharagpur tarasankar.pal@gmail.com 8436797435/9434342349</p>	<p align="center"><u>Lecture 20</u> “Basic Quantum Chemistry to Molecular Simulations”</p> <p>Prof. Shahid Nayeem Department of Chemistry Aligarh Muslim University, Aligarh msnayeem@gmail.com 9412527078</p>	<p align="center"><u>Lecture 21</u> “Waste water treatment technology”</p> <p>Prof. Ravin Jugade Department of Chemistry Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur ravinj2001@yahoo.co.in 09420254377</p>	<p align="center"><u>Micro Teaching (Group B)</u></p> <p>Prof. D. P. Kuity Professor of Geology (Retd.) Pt. Ravishankar Shukla University, Raipur kuitydurgapada3@gmail.com 9926249929</p>
Second Week				
17th July, Monday	<p align="center"><u>Lecture 22</u> “Predicting the Air you breathe: SAFAR-System”</p> <p>Prof. Gufran Beig Founder Project Director, SAFAR, (@IITM, Ministry of Earth Sciences) National Institute of Advanced Studies (NIAS), Indian Institute of Science (IISc) BANGALORE gufranbeig@gmail.com 9423018580</p>	<p align="center"><u>Lecture 23</u> “Sampling protocol: An important aspect in environmental analysis”</p> <p>Dr. Noor A. Khan Senior Scientist & Asst. Prof AcSIR, NEERI, New Delhi, na_khan@neeri.res.in 9911004027</p>	<p align="center"><u>Lecture 24</u> “Trace analysis of environmental contaminants”</p> <p>Dr. Dipanjali Majumdar Senior Scientist, CSIR-NEERI, Kolkata Zonal Centre dipanjalisom@gmail.com 9831262133</p>	<p align="center"><u>Lecture 25</u> “Climate Change, Air Quality and Health”</p> <p>Prof. Gufran Beig Founder Project Director, SAFAR, (@IITM, Ministry of Earth Sciences) National Institute of Advanced Studies (NIAS), Indian Institute of Science (IISc) BANGALORE gufranbeig@gmail.com 9423018580</p>

<p>19th July, Tuesday</p>	<p align="center"><u>Lecture 26</u> “Application of GC-MS”</p> <p>Dr. Dipanjali Majumdar Senior Scientist, CSIR-NEERI, Kolkata Zonal Centre dipanjalisom@gmail.com 9831262133 Email: dipanjalisom@gmail.com</p>	<p align="center"><u>Lecture 27</u> “Role of sophisticated instruments in environmental analysis”</p> <p>Dr. Noor A. Khan Senior Scientist & Asst. Prof AcSIR, NEERI, New Delhi, na_khan@neeri.res.in</p>	<p align="center"><u>Lecture 28</u> “Indoor Air Pollution”</p> <p>Dr. Ajay Taneja Professor and Head, Dean of Science, Pro Vice-Chancellor Department of Chemistry, Khandari campus Dr B R Ambedkar University, Agra ataneja5@hotmail.com 9897476288, 7906520198</p>	<p align="center"><u>Microteaching</u> (Group C)</p> <p>Prof. D. P. Kuity Professor of Geology (Retd.) Pt. Ravishankar Shukla University, Raipur kuitydurgapada3@gmail.com 9926249929</p>
<p>20th July, Wednesd ay</p>	<p align="center"><u>Lecture 29</u> “Quantum chemistry”</p> <p>Dr. Sabyashachi Mishra Indian Institute of Technology, Kharagpur mishra@chem.iitkgp.ac.in Mob: 9475373920</p>	<p align="center"><u>Lecture 30</u> “Polyurethane foam disk passive air samplers: A cost-effective monitoring device for persistent organic pollutants”</p> <p>Prof. Paromita Chakraborty, Dept. of Chemical Engineering, SRM Institute of Science and Technology, Kattankulathur parochakraborty@gmail.com 8122567071</p>	<p align="center"><u>Seminar</u> (Group A)</p> <p>Prof. Kallol K Ghosh SOS in Chemistry, Pt. Ravishankar Shukla University, Raipur kallolkghosh@gmail.com 9770074881</p>	<p align="center"><u>Seminar</u> (Group B)</p> <p>Prof. Kallol K Ghosh SOS in Chemistry, Pt. Ravishankar Shukla University, Raipur kallolkghosh@gmail.com 9770074881</p>




<p>21st July, Thrusday</p>	<p align="center"><u>Lecture 31</u> “Quantum chemistry”</p> <p>Dr. Sabyashachi Mishra Indian Institute of Technology, Kharagpur mishra@chem.iitkgp.ac.in Mob: 9475373920</p>	<p align="center"><u>Lecture 32</u> “Chemicals and plastics: an emerging concern”</p> <p>Prof. Paromita Chakraborty, Dept. of Chemical Engineering, SRM Institute of Science and Technology, Kattankulathur Tamil Nadu, parochakraborty@gmail.com 8122567071</p>	<p align="center">Seminar (Group C)</p> <p>Prof. M. K. Rai SOS in Chemistry, Pt. Ravishankar Shukla University, Raipur raiprsu@gmail.com 7999707207/9425520298</p>	<p align="center"><u>Ending Test</u></p>
<p>2nd July, Friday</p>	<p align="center"><u>Lecture 33</u> “Supramolecular Chemistry”</p> <p>Prof. Goutam Kumar Patra Professor and Head Department of Chemistry, Guru Ghasidas Central University, Bilaspur patra29in@yahoo.co.in 9433378801,7587312992</p>	<p align="center"><u>Lecture 34</u> “Advanced Oxidation Processes for Wastewater Treatment: Role of Nanomaterials”</p> <p>Prof. A. K. Singh Professor of Chemistry, Govt.V.Y.T.PG.Autonomous College, Durg ajayksinghau@gmail.com 919406207572</p>	<p align="center">Project Presentation (Group A)</p> <p>Prof. M. K. Deb SOS in Chemistry, Pt. Ravishankar Shukla University, Raipur debmanas@yahoo.com 9425503750</p>	<p align="center">Project Presentation (Group B)</p> <p>Prof. M. K. Deb SOS in Chemistry, Pt. Ravishankar Shukla University, Raipur debmanas@yahoo.com 9425503750</p>
<p>Saturday</p>	<p align="center"><u>Lecture 35</u> “Genesis and Development of Chemical Kinetics and Reaction Dynamics”</p> <p>Prof. Kallol K. Ghosh, SOS in Chemistry, Pt. Ravishankar Shukla University, Raipur kallolkghosh@gmail.com 9770074881</p>	<p align="center"><u>Lecture 36</u> “Selected Electroanalytical Techniques”</p> <p>Prof. V. Ganesan Department of Chemistry, Institute of Science, Banaras Hindu University, Varanasi velganesh@yahoo.com 919452072138</p>	<p align="center">Project presentation (Group C)</p> <p>Prof. M. K. Deb SOS in Chemistry, Pt. Ravishankar Shukla University, Raipur debmanas@yahoo.com 9425503750</p>	<p align="center">Valedictory & Concluding Session</p>

List of Participants

Sr. No.	Name of Participants	Email Address	Mobile No.	Designation	Name of College/Institution	Affiliated University	Photo
01.	Dr. Sanjay Kumar Shriwas	sanjucvr39@gmail.com	9407614095	Assistant Professor	Mahant Shri Ramjanki Sharan Das Vaishnav Govt. Snatak College, Pipariya, Dist-Kabirdham, (CG)	Hemchand Yadav University, Durg, (CG)	
02.	Dr. Meena Chakraborty	chakrabortymeeena@gmail.com	9826772191	Assistant Professor	Govt. Naveen College, Bori, Durg, (CG)	Hemchand Yadav University, Durg, (CG)	
03.	Mrs. Mousami Lahare	jangde.mousami@gmail.com	9770173008	Assistant Professor	Govt. G.N.A.P.G. College, Bhatapara (C.G.)	Pt. Ravishankar Shukla University, Raipur, (CG)	
04.	Kundan Anand	kundan.anand21@gmail.com	9406144996	Assistant professor	Govt. E.V.P.G. College, Korba, (CG)	Atal Bihari Vajpayee University, Bilaspur, (CG)	
05.	Dr. Awanish Kumar Patel	drawanishpatel@gmail.com	9993889272	Assistant Professor	Govt. Naveen College Janakpur, Korea, (CG)	Sant Gahira Guru University, Sarguja, Ambikapur, (CG)	
06.	Dr. Shabir Hussain Lone	chemshabir@gmail.com	9596484654	Assistant Professor	Govt. Degree College, Pampore, J&K	University of Kashmir, Srinagar, J&K	
07.	Dr. Girish S. Deshmukh	girish.deshmukh2@gmail.com	9404671731	Assistant Professor	Shankarlal Agrawal Science College, Salekasa, Dist-Gondia (MH)	Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur, (MH)	
08.	Dr. Umesh Balaji Kosurkar	ukosurkar@gmail.com	7038605569	Assistant Professor	Shankarlal Agrawal Science College, Salekasa, Dist-Gondia (MH)	Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur, (MH)	
09.	Sadiya Patel	sadiya1707@gmail.com	9424419901	Assistant Professor	Govt. College, Timarni, Dist-Harda, (MP)	Barkatullah University, Bhopal, (MP)	
10.	Bameshwar Prasad Sinha	drbpsinha55@gmail.com	9458997626	Assistant Professor	Sardar Bhagat Singh Govt. P.G. College, Rudrapur, Uttarakhand	Kumaun University, Nainital, Uttarakhand	
11.	Dr. Shilpi Shrivastava	shilpi.srivastava@kalingauniversity.ac.in	8878101537	Professor & Head	Kalinga University, Raipur, (CG)		
12.	Bharat Lal Yadaw	blyadu5@gmail.com	8818802765	Assistant Professor	Babu Pandhari Rao Kridatt Govt. College, Dhamtari, (CG)	Pt. Ravishankar Shukla University, Raipur, (CG)	

13.	Dr. Pramod Yadaw	pramodyadaw23@gmail.com	9584737371	Assistant Professor	Gurukul College, Pathalgaon, Dist-Jashpur, (CG)	Sant Gahira Guru University, Sarguja, Ambikapur, (CG)	
14.	Dr. Saroj Sharma	ssharmagr8@gmail.com	9685153536	Assistant Professor	Govt. N.P.G. College of Science, Raipur, (CG)	Pt. Ravishankar Shukla University, Raipur, (CG)	
15.	Jyotsna Meghwal	jyotsnameghwal@gmail.com	7470686772	Assistant Professor	Govt. P.G. College, Sheopur, (MP)	Jiwaji University, Gwalior, (MP)	
16.	Dr. Toyaj Shukla	toyajshukla280@gmail.com	8896726149	Assistant professor	Govt. Rani Durgawati College, Wadrafanagar, Dist-Balrampur, (CG.)	Sant Gahira Guru University, Sarguja, Ambikapur, (CG)	
17.	Dr. Gautam Patil	gautamchem23@gmail.com	9329762703	Assistant Professor	Govt. College, Bichhua, Dist-Chhindwara, (MP)	Raja Shankar Shah University, Chhindwara, (MP)	
18.	Dr. Rama Sarojinee	rama.sarojinee@gmail.com	9617660383	Assistant Professor	Govt. D.B. Girls' P.G. College, Raipur, (CG)	Pt. Ravishankar Shukla University, Raipur, (CG)	
19.	Dr. Bidyut Debnath	bidyutjts@gmail.com	9593866881	Assistant Professor	Basirhat College, Basirhat, North 24 Parganas, (WB)	West Bengal State University, Kolkata, (WB)	
20.	Dr. Purak Das	purakdas@gmail.com	9563189407	Assistant Professor	Rishi Bankim Chandra College for Women, North 24 Parganas, (WB)	West Bengal State University, Kolkata, (WB)	
21.	Dharna Thakur	dharna.thakur98@gmail.com	8085172200	Assistant Professor	Govt. Danteshwari P.G. College, Dantewada, (CG)	Shahid Mahendra Karma Bastar Vishwavidyalaya, Jagdalpur, (CG)	
22.	Dr. Preeti Pandey	preeti.pandey@kalingauniversity.ac.in	9425712252	Assistant Professor	Kalinga University, Raipur, (CG)		
23.	Priyanka Gupta	priyanka.gupta@kalingauniversity.ac.in	9669000252	Assistant Professor	Kalinga University, Raipur, (CG)		
24.	Mr. Gaurav Tamrakar	gaurav.tamrakar@kalingauniversity.ac.in	8109450431	Assistant Professor (Mechanical)	Kalinga University, Raipur, (CG)		
25.	Mr. Vishal Thawara Rathod	vishutrathod@gmail.com	7083984166	Assistant Professor	Bhawabhuti College, Amgaon, Dist-Gondia, (MH)	Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur, (MH)	

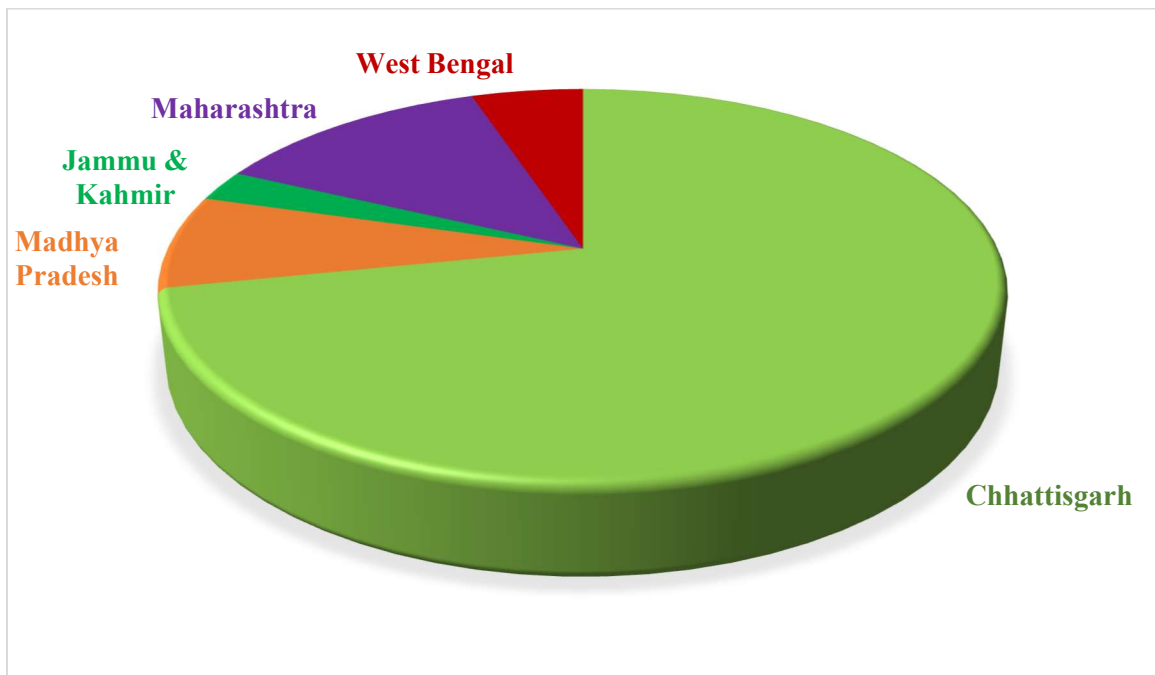
26.	Satyendra Singh Gautam	gautam.satyeindra83@gmail.com	9179255997	Assistant Professor	Dr. B.S. Porte Govt. College, Pendra, Dist-Bilaspur, (CG)	Atal Bihari Vajpayee University, Bilaspur, (CG)	
27.	Mrs. Hemlata Sahu	hemlata@dbgirls.org	9981192970	Assistant Professor	Govt. D.B. Girls' P.G. College, Raipur, (CG)	Pt. Ravishankar Shukla University, Raipur, (CG)	
28.	Manoj Kumar Jangde	manojjangde1982@gmail.com	9424268611	Assistant Professor	Sahid Nandkumar Patel Govt.College, Birgaon, Raipur, (CG)	Pt. Ravishankar Shukla University, Raipur, (CG)	
29.	Vijay Kumar Lahare	vijay.lahare1977@gmail.com	9753106864	Assistant Professor	Govt. Lahiri P.G. College, Chirmiri, Dist-Koriya, (CG)	Sant Gahira Guru University, Sarguja, Ambikapur, (CG)	
30.	Smt. Saraswati Seth	sethsaraswati72@gmail.com	9589646298	Assistant Professor	Govt. Mahaprabhu Vallabhacharya P.G. College, Mahasamund, (CG)	Pt. Ravishankar Shukla University, Raipur, (CG)	
31.	Shilpa Yadav	shilpayadav23j@gmail.com	7987943371	Assistant Professor	Govt. Mahamaya College, Ratanpur, Dist-Bilaspur, (CG)	Atal Bihari Vajpayee University, Bilaspur, (CG)	
32.	Yasmeen Fatima Pervez	dr.ypervez@gmail.com	9425564220	Assistant Professor	Govt. Eklavya College, DondiLohara, Dist-Balod, (CG)	Hemchand Yadav University, Durg, (CG)	
33.	Mrs. Priti Khursail	pritimadhuma43@gmail.com	7898280604	Assistant Professor	Govt. Rani Avanti Bai Lodhi College, Ghumka, Dist-Rajnandgaon, (CG)	Hemchand Yadav University, Durg, (CG)	
34.	Dr. Vilas Nana Mahire	vilas.mahire23@gmail.com	7620509955	Assistant Professor	Bhusawal Arts, Science & P. O. Nahata Commerce College, Bhusawal, (MH)	Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon, (MH)	
35.	Dr. Nitin Devidas Vilayatkar	vilayatkar.nitin@gmail.com	9028631242	Assistant Professor	Shivprasad Sadanand Jaiswal College, Arjuni/Morgaon, Dist-Gondia, (MH)	Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur, (MH)	
36.	Dr. Harishankar Dewangan	harishankardewangan70@gmail.com	9926113571	Assistant Professor	Dr. Bhimrao Ambedkar Govt. College, Baloda, (CG)	Shahid Nandkumar University, Raigarh, (CG)	
37.	Mrs. AaratiSao	aartiasao89@gmail.com	9669892955	Assistant Professor	Late Shri Jaidev Satpathi Govt. College, Basna, (CG)	Pt. Ravishankar Shukla University, Raipur, (CG)	

38.	Dr. Shreni Diwakar	shrenidiwakar@gmail.com	9827914020	Assistant Professor	Govt. Minimata Girls College, Korba, (CG)	Atal Bihari Vajpayee University, Bilaspur, (CG)	
39.	Dr. Neena Rai	neena.rai@rediffmail.com	08839994088	Assistant Professor	Government Naveen College, Bhairamgarh	Shaheed Mahendra Karma Vishwavidyalaya, Bastar, Jagdalpur	
40.	Dr. Indrapal Karbhal	ikarbhal@gmail.com	8605985169	Assistant Professor	School of Studies in Chemistry, Pt. Ravishankar Shukla University - Raipur (C.G.)	Pt. Ravishankar Shukla University - Raipur (C.G.)	

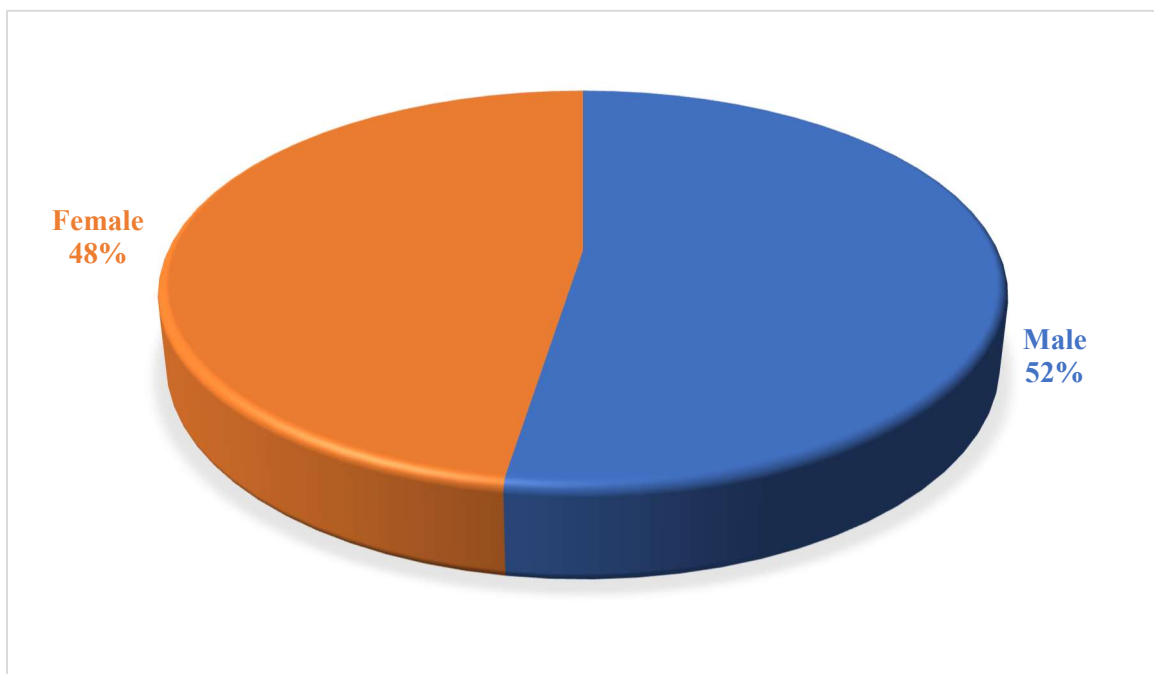
Chairperson and Reporter List

Date	Chairperson	Reporter	Chairperson	Reporter
	1st Half		2nd Half	
11.07.2022	Dr. Sanjay Kumar Shriwas	Dr. Girish S. Deshmukh	Dr. Pramod Yadaw	Dr. Bidyut Debnath
12.07.2022	Dr. Meena Chakraborty	Dr. Umesh Balaji Kosurkar	Dr. Saroj Sharma	Dr. Purak Das
13.07.2022	Mrs. Mousami Lahare	Sadiya Patel	Jyotsna Meghwal	Dharna Thakur
14.07.2022	Kundan Anand	Bameshwar Prasad Sinha	Dr. Toyaj Shukla	Dr. Preeti Pandey
15.07.2022	Dr. Awanish Kumar Patel	Dr. Shilpi Shrivastava	Dr. Gautam Patil	Priyanka Gupta
16.07.2022	Dr. Vilas Nana Mahire	Bharat Lal Yadaw	Dr. Rama Sarojinee	Mr. Gaurav Tamrakar
17.07.2022	Sunday			
18.07.2022	Mr. Vishal Thawara Rathod	Vijay Kumar Lahare	Mrs. Priti Khursail	Dr. Harishankar Dewangan
19.07.2022	Satyendra Singh Gautam	Smt. Saraswati Seth	Dr. Vilas Nana Mahire	Mrs. Aarati Sao
20.07.2022	Mrs. Hemlata Sahu	Shilpa Yadav	Dr. Nitin Devidas Vilayatkar	Dr. Shreni Diwakar
21.07.2022	Manoj Kumar Jangde	Dr. Indrapal Karbhal	Sadiya Patel	Dr. Neena Rai
22.07.2022	Dr. Awanish Kumar Patel	Dr. Toyaj Shukla	Dr. Preeti Pandey	Mrs. Aarati Sao
23.07.2022	Priyanka Gupta	Dr. Rama Sarojinee	Smt. Saraswati Seth	Yasmeen Fatima Pervez

State Wise Participants



Gender Wise Participants



Marks and Grading pattern

Assessment Criterion and Marking:

Multiple-choice objective tests:	30
Seminars / participant presentation:	15
Project / survey / others:	20
Micro-teaching / participation:	10
Holistic response:	25
Total:	100

Grading pattern (based on Marks)

A+ : 85 percent and above
A : 70 percent to less than or equal to 84 percent
B : 60 percent to less than or equal to 69 percent
C : 50 percent to less than or equal to 59 percent
F : Below 49 percent

Those teacher participants who score F grade are required to repeat the program after a gap of one year without financial commitment to UGC-HRDC.

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