

**DEPARTMENT OF CHEMISTRY
UNIVERSITY COLLEGE FOR WOMEN, Koti, Hyderabad-095**

Two Day Virtual International Conference on “**Currents Research Trends in Chemical Sciences (CRTCS-2020)**”
Dates: 10th and 11th September 2020

REPORT

Day – 1

Date: 10th September 2020

The Conference began with the Welcome Address by **Dr. G. Vijaya Lakshmi**, Coordinator of CRTCS-2020 and Incharge Head, Department of Chemistry, UCW followed by digital Lighting of the lamp and prayer song. The significance of the Conference was given by the Coordinator of the Conference. **Prof. A. Roja Rani madam**, Chief Patron and Principal of the College, in her address mentioned that Chemistry is a vast subject and provides many possibilities and opportunities. In the present situation, it is very important to understand the effects of chemical substances on environment and focus more on the usage of environment friendly benign solvents. **Dr. M. Kavitha madam**, Patron and Vice-Principal of the College, in her address mentioned that the current pandemic situation is effectively and very efficiently being used for conducting the events virtually. The theme of the Conference is apt which focusses on the recent advances and future trends in research in the field of Chemical Sciences. The conference has brought the academicians, students and research scholars together on one platform where we can discuss about the role of chemistry in tackling Covid-19 situation, disposal of chemicals, etc.

The Honourable Guest of Honour **Prof. P. Veerasomaiah** Sir, Head, Department of Chemistry, UCS, OU in his address opined that all the Universities have been engaging in conducting several academic programs like webinars, FDP programs, etc to upgrade the faculty and students. The eminent academicians and renowned scientists of the Conference will surely make the participants not only enjoy the sessions but also will be able to interact with them and clarify their queries and enhance their scientific temper.

The Honourable Chief Guest **Dr. S. Chandrashekhara**, Director, CSIR-IICT, Hyderabad in his address mentioned that Covid-19 situation has taught us many lessons recently. Chemistry being a youngest science subject is considered as a Life Saving subject. Chemists although have some limitations in this emergency situation, are working hard to provide solutions through scientific research. Chemists also contribute to clean and green energy and solve energy and environment related issues. The conference shall provide a platform for discussion where such issues can be addressed.

The Coordinator of the Technical Session – I **Dr. K. Premalatha** madam began the session with welcoming the invited speakers to the session and conducted the session. The Keynote Speaker **Prof. Yu Tai-Tao**, Institute of Chemistry, Academia Sinica, Taipei, Taiwan spoke on the topic **Recent Progress in Organic Transistor Materials and Devices**. Sir discussed about the surface chemistry and material chemistry. Sir briefed about the different types of transistors, the three-charge transport hopping mechanism by which the molecules can transport charge, principle of linear aromatic fused molecules. Sir also enlightened the participants on poly-fused aromatic derivatives, non-linear consorted polyfused aromatics

also. Further, Sir spoke on effect of unsymmetrical substitutions on packing of materials effect of silylation of silica surfaces, removal of surface roughness for better performance and various surface treatment techniques. Sir also spoke on measurements of spin coated samples by polarisable optical microscope and UV-Vis measurements, grazing incidence by RX-ray diffraction, enhancing of performance of transistor by diacetylene moieties, evidences of polymer chain formation, Kelvin probe force Microscope measurements for such studies.

The second speaker of the Technical Session – I **Prof. L. Gomathi Devi**, Department of Chemistry, Bangalore University, Bangalore spoke on the topic '**The photocatalytic efficiency of the hemin anchored BaTiO₃: Synergistic effects of photosensitization, reactive singlet oxygen and redox reaction involving iron in II and III oxidation states**'. Madam explained about removal of pesticides and harmful chemicals at higher concentration levels, electron transfer using BaTiO₃ (BTO) binding, redox reactions taking place by trapping and de-trapping using hemin molecule. Using various characterisation and surface morphology techniques such as XRD studies, UV-Vis absorbance studies, TEM, etc, under different conditions indicated that HBTO surface is doubled than BTO. Madam also explained about XPS studies, Photoluminescence studies of BTO and HBTO and also their recombination reactions. Photoelectrochemical studies and photocatalytic experiments were also discussed in detail which lead to formation of harmless products such as 4-CP derivatives. Using hemin molecule, various redox reactions were discussed under the influence of H₂O₂.

The Coordinator of the Technical Session – II **Dr. V. Shashikala** conducted the second session. The first speaker of post lunch session is **Dr. Mahender Dewal**, Head of Research and Founding Member, Expansion Technologies Inc. Cambridge, Massachusetts, USA spoke on the topic **My Scientific Journey: Inorganic Chemistry to Chemical Biology**. Sir spoke on his PhD work on organo-porous Bi-urea macrocycles and their synthesis, crystal structure and characterization. Sir also discussed about the applications of these nanotubes includes selective synthesis of exoproduct during photodimerization of cyclohexanone. Also, use of these nanotubes in photoisomerization and photodimerization of coumarins. He explained in detail about the host and guest relationship between the nanotubes and reactants. About his post-doctoral research, Sir mentioned about SAR studies, De novo purine synthesis, mutations and further research related to N⁵-CAIR. He also worked on restricting the proliferation of HIV.

The last speaker of the day is **Prof. C. T. Aravind Kumar**, Professor, School of Environmental Sciences, Mahatma Gandhi University, Kerala spoke on the topic **Emerging contaminants in Environment: Their detection and Degradation strategy**. Sir discussed about **sustainability** which is a combination of three components – social, economic and environmental. He emphasized on water pollution covering both organic and inorganic pollutants. Emerging contaminants – how it started from History like oldest global contaminant i.e., lead (Pb), emergence of pesticides, diclofenac residues, how pharmaceuticals create pollution in the environment, sources and pathways in global environment. Sir also discussed about different MNCs are leading the pollution to various water bodies. The concern we are facing towards emerging pollutants. Finally, Sir elaborately discussed on MS analysis on pollutants.

Day – 2

Date: 11th September 2020

The Coordinator of the Technical Session – III, **Dr. A. Swaroopa Rani** madam began the session by welcoming all the participants and invited speakers. The first speaker for today **Dr. Santhosh Challa**, Principal Scientist, R&D Operations, CPKelco, Atlanta, Georgia State, USA spoke on the topic **Applications of Size Exclusion Chromatography in Food Sciences**. Sir discussed about the basic principles of size exclusion chromatography, how polymers cause change in viscosity of solution and various techniques of separation of molecules like proteins and polymers, based on their size, their detection to find out the molecular weight and its applications in the field of food science. Sir also explained about the light scattering based methodology to determine molecular weights of molecules. Sir also highlighted numerous health benefits offered by soluble fibers like pectin based on viscosity.

The second speaker for the today's technical session is **Dr. M. Vijjulatha**, Professor, Department of Chemistry, University College of Science, Osmania University, Hyderabad who discussed on the topic **In silico Design, Synthesis, Evaluation of 20-amino-4-anilino-6,7-dimethoxy quinazoline derivatives targeting VEGFR-2 as potential angiogenic and cancer inhibitors**. Madam has elaborately explained about the steps in CADD, how it has decreased cost and human efforts in the discovery of new drugs. Madam also explained about the strategies of CADD i.e., structure based drug design and De Novo drug designing, molecular modelling and different methods involved in it like quantum and molecular mechanics. Madam also explained about allosteric and non-allosteric inhibitions, antagonism and umbrella effect, docking which helps in finding the best matching, ligand and protein interactions, screening and identification of lead molecules and also about checking qualitative and quantitative analysis.

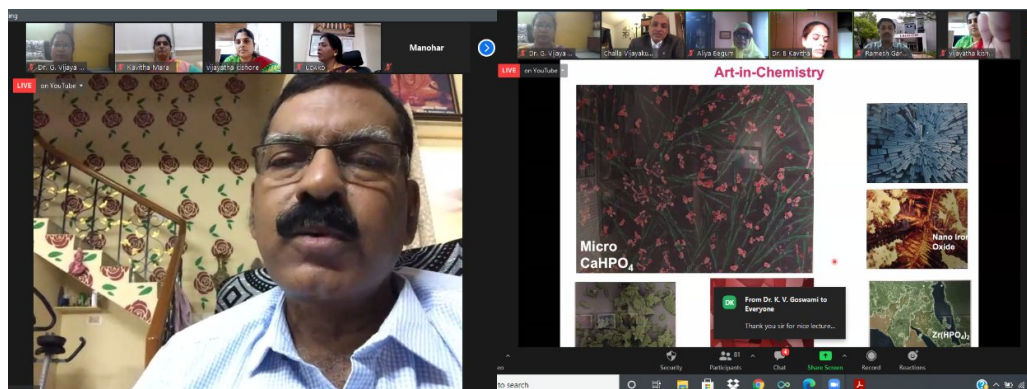
The third speaker is Prof. Lalitha Guruprasad, Professor, School of Chemistry, Hyderabad Central University (HCU), Hyderabad who discussed about the topic **Protein Sequence to Structure and Function correlation**. Madam started her lecture from the basic concepts of proteins and its structure and applications. She discussed about computational methods to bridge the gap and protein fold recognition. She also focussed on moon lighting proteins, crystalins, types of protein structure modelling methods and latest update on Covid-19 protein called as spike protein. Madam discussed about her work on mycobacterium tuberculosis proteins and that 10% of proteome has PE and PPE proteins and also about functional domains in PE and PPE proteins.

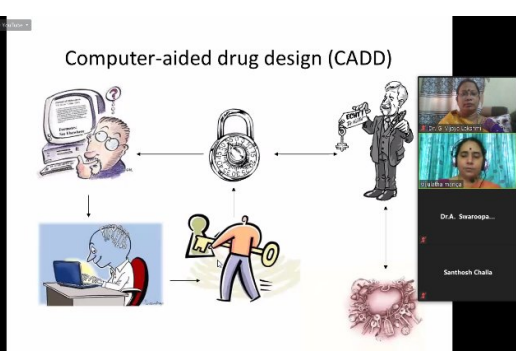
The post lunch session began with warm welcome of the participants and the speakers by the Coordinator **Dr. Aliya Begum**. The first speaker in the afternoon session is **Dr. Ramesh L. Gardas**, Professor, Department of Chemistry, IIT-Madras who spoke on the topic **Environmentally benign solvents for sustainable developments**. Sir started his lecture with sustainability where there is use of less chemicals with maximum yield. Sir explained about a potential to replace volatile organic compounds with ionic liquids and compared organic solvents with ionic liquids in combination with aqueous solutions. Sir focussed on measuring high polarity liquids by Hammett-Taft plot parameters by thumb rule. Sir also presented an overview on measurement of thermophysical properties.

The second speaker of the afternoon session is **Dr. Challa V. Kumar**, Professor, Department of Chemistry, University of Connecticut, Connecticut, USA who spoke on the topic **Protein-based materials for practical applications from Imaging Biophosphors, vaccine delivery to frequency up conversion.** Sir has started his lecture on global warming which is caused by plastic. He explained the synthesis of novel biological materials which are protein based, how protein nanoparticles can replace quantum dots, methods to prepare the nanoparticles – top down method and bottom up methods. He gave clear picture to synthesize the nanoparticles using the covalent approach i.e., salicylic acid + carbamide which results to give an amide which is hydrolysed by nature. Binding of protein to dimolecules making of nanoparticles using single protein, applications of white light emitting protein nanoparticles for cell entry and as pH sensors.

The **Valedictory Session** of the Conference began at 2.45 PM in the august presence of the Invited Speakers, dignitaries, participants, senior teachers of Department of Chemistry, OU, staff and students. The report of the Conference was given by **Dr. G. Vijaya Lakshmi**, Coordinator of CRTCS-2020 and Incharge Head, Department of Chemistry, UCW. **Prof. A. Roja Rani madam**, Principal and Chief Patron and **Dr. M. Kavitha madam**, Vice-Principal and Patron in their address inspired and encouraged the participants and the Organizers for their active participation in the Conference. The Chief Guest of the Valedictory Session is Prof. Battu Satyanarayana, President, TSFUTA and Executive Council Member of HCU and The Guest of Honor Prof. B. Manohar, President, OUTA and Senior Professor, Department of Chemistry, Osmania University have graced the occasion. The final Vote of thanks was proposed by **Dr. G. Vijaya Lakshmi**, Coordinator of CRTCS-2020 formally.

SOME OF THE PHOTOS COVERED DURING THE CONFERENCE:





My Scientific Journey: Inorganic Chemistry to Chemical Biology

Mahender Dewal Ph. D., Founding Member, Head of Research & Development
Expansion Technologies Inc. (EXTBIO) Cambridge, MA.

UNIVERSITY COLLEGE FOR WOMEN
(Autonomous) Kotha, Hyd 95
A Constituent and Autonomous College of Osmania University, UAC accredited with 'B' Grade
DEPARTMENT OF CHEMISTRY



A Zoom meeting window showing a desktop screen. The desktop has a blue background with a 'PKelco' logo and various icons. The Zoom control bar at the bottom shows icons for mute, video, chat, and other functions. The top of the window shows a grid of participants and the name 'Dr. C. Vikas...'. The desktop background includes a 'PKelco' logo and text: 'PKelco User Name: Dr. C. Vikas, P Address: ...' and 'Free Space: ...'.