

A Report on 3 Day Virtual International Conference on Materials Chemistry for Energy & Environmental Applications (MCEEA - 2023) Organized byDepartment of Chemistry

07.08.2023 - 09.08.2023



Submitted by :	Dr. P. Amaladass, Asst. Prof. & Research Head, Dept. of Chemistry, MITS.
Convened by :	Dr. P. Amaladass, Asst. Prof. & Research Head, Dept. of Chemistry, MITS
	Dr. Renjith Bhaskaran, Asst. Prof. & HoD, Dept. of Chemistry, MITS.
Invited Speakers :	18 speakers have been invited to the 3-day virtual international conference.
Attendees :	More than 200 participants registered (National & International). 42 poster presentations.
	18 invited speakers from India and abroad.

Report Received on 02.09.2023 Day-1 (07/08/2023)

The Department of Chemistry at Madanapalle Institute of Technology & Science, Madanapalle organized a Three Day Virtual International Conference entitled "Materials Chemistry for Energy & Environmental Applications 2023" during 7th-9th August 2023. The programme Inauguration was started at 10:00 AM by Dr. Lipeeka Rout (Asst. Prof. Dept. of Chemistry, MITS) who invited the convener Dr. P. Amaladass to give welcome address to the respected dignitaries, distinguished delegates and all the participants. Then, Dr. P. Amaladass gave Inaugural welcome address to all the dignitaries, delegates, and participants. In addition, Dr. Renjith Bhaskaran (HoD-Chemistry, MITS, Madanapalle) also given the inaugural address to the gathering virtually.



Further, Vice Principal Administration Dr. C. Kamal Basha of MITS officially inaugurated the Programme and thanked all the invited speakers for accepting the invitation through an online platform.



First session of Day-1 talk was started at 10.30 AM chaired by Dr. Arunbabu Dhamodaran (Asst. Prof., Dept. of Chemistry, MITS) who introduced the resource person of plenary lecture-I Prof. C. P. Rao (Professor, Indian Institute of Technology, Tirupati), to the participants and thanked him for accepting the invitation. Further, the academic profile of Prof. C.P. Rao was being introduced to the gatherings by the chair through virtual mode.



Prof. C. P. Rao has begun the lecture by sincerely thanking the audience, the organizers, the HOD Chemistry, the Principal, the Vice Principal, and the Management of MITS Madanapalle for providing him with the chance to share his expertise in chemical science research and related fields. His title of the talk was "Protein Anchored/covalently attached to inorganic matrix (or) metallic surface". He discussed how inorganic matrix is highly important to attach the protein type of macromolecules covalently. He primarily explored protein modification by introducing metal ion (Protein based gel) and their multi-dimensions. He explained protein-based gel preparation and how it can be acts as good materials. Finally, he answered all the questions raised from the audience's side.



The second talk of the session-I was began at 11.15 AM and the resource person was introduced by Dr. Arunbabu Dhamodaran who gave brief introduction about the resource person Dr. Debapratim Das (Professor, Department of Chemistry, Indian Institute of Technology Guwahati). Prof. Das's academic profile was being introduced to the participants by the session chair.

In his opening remarks, Prof. Debapratim Das expressed his gratitude to the audience, the lecture's organizers, the HOD Chemistry, the Principal, the Vice Principal, and the Management of MITS Madanapalle for giving him the opportunity to share his knowledge of chemical science research and associated subjects. His title of the talk was "Unusual assemblies of KC peptides: New avenue to create functional biomaterials". In the course of his talk, he spoke about the current study being done by his research team, who are particularly interested in the safe administration of anticancer medications in order to prevent any adverse effects, also known as the targeted drug delivery system in chemotherapy. Snapshots from their experiment are used to demonstrate how well the molecule they created, PyKC, worked to treat mice with breast cancer. He also talked about the value of wearing devices for keeping an eye on drug administration. He described the innovative method for creating fresh biomaterials. He left the audience with the message that current science is interdisciplinary, and that one can always learn something new to improve the quality of life for the average person.



Dr. Rahul Pal, assistant professor of chemistry at MITS, presided over the first talk of the second session (Day-I). On Day-I, the first talk of the session-II was begun at 12.15 AM. He welcomed the keynote lecture's speaker, Prof. K. Y. Sandhya of the Indian Institute of Space Science and Technology, Thiruvanathapuram, and thanked her for accepting the invitation. Additionally, Dr. Rahul Pal introduced Prof. K. Y. Sandhya's academic background to the participants.



In his opening remarks, Professor K. Y. Sandhya expressed his gratitude to the audience, the lecture's planners, the HOD Chemistry, the Principal, the Vice Principal, and the Administration of MITS Madanapalle for giving her the opportunity to impart his knowledge in chemical science research and associated fields. His title of the talk was "Two Dimensional Nano structures and its potential in water". She discussed about Nanostructures of different dimensional and its potential in water remediation applications. Finally, she addressed the participant's questions.



The second talk of Session II (Day-I) was begun at 12.50 AM and the resource person was introduced by the session chair who gave brief introduction about the resource person Prof. S. Nagarajan (Professor, Department of Chemistry, National Institute of Technology, Warangal). Dr. Rahul Pal introduced Prof. S. Nagarajan academic background to the participants through virtually.

Prof. S. Nagarajan thanked everyone for the opportunity to speak about chemical science research and related topics, including the audience, the lecture's organizers, the HOD Chemistry, the Principal, the Vice Principal, and the Management of MITS Madanapalle. His title of the talk was "Self-assembled Organic Materials for Electronic and Energy Harvesting Applications". He discussed the current study being conducted by his research team during his presentation, which focused on the synthesis of various organic materials for electrical and energy Applications. He provided a thorough explanation of the many organic compounds that self-assemble and their applications in the fields of energy and electronics.



The opening presentation of the third session (Day-I) was led by Dr. K. Chandramohan (Asst. Prof, Dept. of chemistry, MITS) at 2.30 PM. Dr. Sumit Kumar (Research Assistant Professor) from the Ulsan National Institute of Science & Technology in South Korea was requested to deliver his talk, and he was welcomed and thanks for accepting our invitation. The participants were also given an overview of Dr. Sumit Kumar's academic history by Dr. K. Chandramohan.



Dr. Sumit Kumar thanked the audience, the organizers of the lecture, the head of the department of chemistry, the principal, the vice principal, and the administration of MITS Madanapalle for allowing him the chance to share his expertise in chemical science research and related fields. "Exosome: A Journey from Garbage Bags to Life-Saving Case" was the title of his speech. He talked about the usefulness of Exosome synthesis. He also went into great depth about how Exosomes get from waste material to life-saving cases. He answered the participant's queries in the end.



The resource person of the second talk of Session III (Day-I) was introduced by Dr. K. Chandramohan who gave brief introduction about the resource person Dr. Bishnu Prasad Biswal (Asst. Prof. National Institute of Science Education and Research, Bhubaneswar). The session began at 3.10 PM. Dr. K. Chandramohan introduced Dr. Bishnu Prasad Biswal academic background to the participants through Microsoft Teams.

Dr. Bishnu Prasad Biswal thanked everyone for the opportunity to speak about chemical science research and related topics, including the audience, the lecture's organizers, the HOD Chemistry, the Principal, the Vice Principal, and the Management of MITS Madanapalle. His title of the talk was "Porous Reticular Materials for Energy and Environmental Applications". He discussed the current study being conducted by his research team during his presentation, which focused on the synthesis of various Porous materials for energy and environmental studies. He provided a thorough explanation of the many porous materials and its significance towards environmental applications.



At the end of day-I, the virtual poster presentation was conducted which began at 4.00 PM. There were totally Eight participants presented their posters on Day-I. Each participant presented their poster around 7 mins duration and judges asked question around 3 mins to evaluate best posters. Poster presentation was completed around 5.15 PM. First day of the conference concluded at 5.20 PM with few announcements made by convener Dr. P. Amaladass.



Day-2 (08/08/2023)

Convener Dr. P. Amaladass began the programme on Day 2 at 9.55 AM by welcoming the participants with a few announcements about the MCEEA-23 conference. The first session of the Day-II talk began at 10:00 AM, and Dr. Rajaram, an assistant professor of chemistry at MITS, presided. He welcomed the attendees and thanked Dr. J. Mathiyarasu (Chief Scientist, CISR-Central Electro Chemical Research Institute) the keynote speaker for Keynote Lecture-III, for accepting the invitation. Dr. Rajaram also used virtual presentations to introduce the academic background of Dr. J. Mathiyarasu to the participants.



In his opening remarks, Prof. Dr. J. Mathiyarasu expressed his gratitude to the audience, the lecture's organizers, the HOD Chemistry, the Principal, the Vice Principal, and the Management of MITS Madanapalle for giving him the opportunity to impart his knowledge in chemical science research and associated fields. He delivered talk on "Electrochemical Sensors and environmental remediation" where the importance of the saving the environment, Causes, and consequences of various pollutions have been discussed in a detailed way. The lecture addressed the role of electrochemical as well as spectrophotometric measurements towards the determination of heavy metals. The advantages of modified electrodes, electro-catalysts, and the electro-analytical techniques in this regard have been clearly discussed. Finally, he addressed the participants' queries.



The second talk of session I started at 10.40 AM. Dr. Amit Kumar, a research assistant professor in the department of chemistry at Pohang University of Science & Technology in South Korea, was introduced by Dr. Rajaram as the resource person. Dr. Rajaram used virtual reality to introduce Dr. Amit Kumar's academic background to the participants.

For the opportunity to talk chemical science research and related topics, Dr. Amit Kumar thanked the audience, the lecture's organizers, the HOD Chemistry, the Principal, the Vice Principal, and the Management of MITS Madanapalle. The topic of the presentation was "Designer Materials synthesis within NanoSpace for catalysis.". He delivered talk about optimizing nano-/atomic/molecular-scale chemistry: controlling their sizes, shapes, surface chemistry, and self-assemblies with high precision. Additionally, he also explained about catalytic chemistry through plasmonic/magnetic coupling for biomedical applications: nano-bio interaction with living cells/bacteria, biological assays, bioimaging, on demand drug-delivery, pro-drug design/activation, diagnosis, bio-conjugation & bio-orthogonal chemistry. At end of his talk, he answered the questions of the participants.

The opening lecture of the second session (Day-II) was presided over by Dr. Imran.K, an assistant professor of chemistry at MITS. The first talk of the second session of Day II began at 11.40 AM. Prof. Rama Ranjan Bhattacharjee of the Sister Nivedita University, Associate professor, Kolkata, who had been invited to speak, was welcomed and thanked for accepting the invitation. Dr. Imran also gave the participants an overview of Prof. Rama Ranjan Bhattacharjee's academic background.



Prof. Rama Ranjan Bhattacharjee thanked the MITS Madanapalle administration, the audience, the lecture's organizers, the HOD Chemistry, the Principal, and the Vice Principal for the opportunity to share his expertise in chemical science research and related fields. "Carbon Quantum dots-based Nano-ionic liquids" was the topic of his talk. He spoke on the topic of Nano-Ionic Liquids and their uses. He gave a thorough explanation of how carbon dots (Cdots) functionalized with ionic liquids was synthesized. These Cdots are used as new organic/inorganic hybrid separators as well as fascinating as electrolytes. He answered the participant's queries in the end



The second talk of Session II (Day-II) was begun at 12.20 AM and the resource person was introduced by Dr. Imran. K who gave brief introduction about the resource person Prof. Senthil Kumar (Professor, Department of Chemistry, Vellore Institute of Technology, Vellore). Dr. Imran. K introduced Prof. Senthil Kumar academic background to the participants through virtual reality.

For the chance to discuss chemical science research and related topics, Prof. Senthil Kumar expressed his gratitude to the audience, the lecture's organizers, the HOD Chemistry, the Principal, the Vice Principal, and the Management of MITS Madanapalle. His talk was titled "Task specific ionic liquids for multifaced electrochemical applications." He discussed the physicochemical properties of task-specific ionic liquids (ILs) carrying various functional groups, and their unique electrochemical applications. He provided a thorough explanation of the Major types of task-specific ILs include ether/thioether- and hydroxyl/thiol-functionalized, carboxylate-functionalized, amine-functionalized, zwitterionic type, polymerized, other cation-functionalized, and anion-functionalized ILs and deep eutectic solvents (DES). At the end of the session, he addressed the participant's questions.



The opening presentation of the third session (Day-II) was led by Dr. Ashok Kumar Das (Asst. Prof, Dept. of chemistry, MITS) at 2.00 PM. Dr. Andres Henao (Data Scientist) from the Dribia Data Research in Spain was requested to deliver his talk, and he was welcomed and thanks for accepting our invitation. The participants were also given an overview of Dr. Andres Henao academic history by Dr. Ashok Kumar Das.



Dr. Andres Henao expressed his gratitude to the audience, the lecture's organizers, the head of the chemistry department, the principal, the vice principal, and the MITS Madanapalle administration for giving him the opportunity to share his knowledge of chemical science research and associated subjects. His talk was titled "Efficient and Accurate Density Functional Tight Binding Calculations to unravel On-Water Catalysis." He gave a brief introduction to Born-Oppenheimer approximation and its relevance to both the classical & quantum molecular dynamical calculations. He discussed Lyapunov Instability, role of hydrogen bonds for On-water catalysis calculations, dependence of number of cores in tight & loose linear scaling DFTB etc. In addition, he also explained the role of machine learning in computational chemistry calculations. He answered the participant's queries at the end.

The resource person of the second talk of Session III (Day-II) was introduced by Dr. Ashok Kumar Das who gave brief introduction about the resource person Dr. Suban Kumar Sahoo (Asst. Prof. Sardar Vallabhbhai National Institute of Technology, SVNIT.). The session was begun at 2.40 PM. Dr. Ashok Kumar Das introduced Suban Kumar Sahoo academic background to the participants through online mode.

Dr. Suban Kumar Sahoo thanked everyone for the opportunity to speak about chemical science research and related topics, including the audience, the lecture's organizers, the HOD of Chemistry, the Principal, the Vice Principal, and the Management of MITS Madanapalle. His title of the talk was "Sensing and Bio-sensing with Vitamin B6 cofactors decorate fluorescent Nano-Materials". He discussed the synthesis of novel fluorescent probes for the instantaneous detection of biogenic histamine. He provided a thorough explanation of the various fluorescent probes to detect one of the most important biogenic amines (Histamine) which is considered as food hazard. Finally, he explained in detail for the quarries of the participants.



The virtual poster presentation started at 3.30 PM, which was held at the end of day II. On Day II, twelve contestants in all displayed their posters. Each competitor gave a presentation of their poster for around seven minutes, and then the judges took questions for 3 mins to determine best posters. Around 5,30 PM, the poster presentation was finished. At 5.30 PM, the conference second day came to an end with a few announcements from organizer, Dr. P. Amaladass.





Day-3 (09/08/2023)

On Day 3, at 9.55 AM, Convener Dr. P. Amaladass welcomed the participants and made a few announcements regarding the MCCA conference. At 10.00AM in the morning, Dr. Lipeeka Rout, an assistant professor of chemistry at MITS, presided over the opening session of the Day-III discussion. She greeted the audience and expressed gratitude to Dr. C. Suresh (Principal Scientist, CSIR-Central Electro Chemical Research Institute), who was the invited speaker for Keynote Lecture-IV. Dr. Lipeeka Rout also provided the audience with an overview of Dr. C. Suresh's academic background through virtual presentations.

In his opening remarks, Prof. Dr. C. Suresh expressed his gratitude to the audience, the lecture's organizers, the HOD Chemistry, the Principal, the Vice Principal, and the Management of MITS Madanapalle for giving him the opportunity to impart his knowledge in chemical science research and associated fields. He delivered talk on "Electrocatalytic reduction of carbondioxide: An Overview" where the importance of the saving the environment, Causes, and consequences of various pollutions have been discussed in a detailed way. The lecture addressed the role of CO_2 in environment and its consequence and the need to reduce. The applications and the efficiency of the catalysts were clearly discussed. Finally, he addressed the participant's queries.

The second talk of session I started at 10.40 AM. Dr. Lipeeka Rout introduced the invited speaker Dr. G. Yoganandan, post-doctoral fellow in the division of Material Science and Engineering at Hokkaido University, Japan & gave a brief account of his academic accomplishments to the participants.

For the opportunity to talk chemical science research and related topics, Dr. G. yoganandan thanked the audience, the lecture's organizers, the HOD Chemistry, the Principal, the Vice Principal, and the Management of MITS Madanapalle. The topic of the presentation was "Role of carbon and metal oxide materials in energy storage applications." He delivered talk about Transition metal oxides (TMOs), a redox active material in energy storage applications, showing high specific capacitance (100–2000 F/g) than the electrical double-layer capacitor (EDLC) material. Additionally, he also explained about the limitations of TMO-based electrode material includes low electrical conductivity, ion mobility, and low energy density. Finally, he answered the questions of the participants.

The opening lecture of the second session (Day-III) was presided over by Dr. Tulasi Barik, Assistant professor of chemistry at MITS. The session began at 11.40 AM by Dr. Ramya K.R (Scientist at Dyson, Singapore), the invited speaker who was being welcomed and thanked for accepting the invitation by the session chair. The chair also gave the academic background of the speaker to the participants.



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Dr. Ramya K.R expressed his gratitude to the MITS Madanapalle administration, the attendees, the lecture's organizers, the HOD Chemistry, the Principal, and the Vice Principal for the chance to present his knowledge in chemical science research and associated fields. Her session was titled "Multiscale modelling of Energy storage Materials." He discussed multiscale modelling approaches for a range of energy-related applications, including solar cells, photo-catalysis, energy storage, and atmospheric chemistry. He provided a full explanation of how to use molecular dynamics simulations, adaptive kinetic Monte Carlo simulations, and ML approaches to create interatomic potentials based on neural networks. In the end, he responded to the participants' questions.



The second talk of Session II (Day-III) began at 12.20 AM and the resource person was introduced by Dr. Tulasi Barik who gave brief introduction about the resource person Prof. J. Wilson (Associate Professor, Department of Bioelectronics and Biosensors). Dr. Tulasi Barik introduced Prof. Wilson's academic background to the participants through virtual mode.

For the chance to discuss chemical science research and related topics, Prof. J. Wilson expressed his gratitude to the audience, the lecture organizers, the HOD Chemistry, the Principal, the Vice Principal, and the Management of MITS Madanapalle. His talk was titled "Conducting polymers-based composites for Biosensors Applications." He discussed the synthesize new type of nanomaterials includes Metal Organic frameworks conducting polymers, metal oxides, and carbon-based materials for biosensor and energy storage applications." He also explained how the nano-materials utilized to detect the biomolecules such as dopamine, ascorbic acid, uric acid, glutathione, glucose etc. in the range of Pico molar to mille molar with high sensitivity and detailed explanation about the nano-materials to develop super capacitors for energy storage applications. At the end of the session, he addressed the participant's questions.



The opening presentation of the third session (Day-II) was led by Dr. Sanoop (Asst. Prof, Dept. of chemistry, MITS) at 2.00 PM. Dr. Bama Prasad Bag (Senior scientist, CSIR - Institute of Minerals and Materials Technology) was requested to deliver his talk, and he was welcomed and thanks for accepting our invitation. The participants were also given an overview of Dr. Bag's academic history by Dr. Sanoop.

Dr. Bama Prasad Bag expressed his gratitude to the audience, the lecture organizers, the head of the chemistry department, the principal, the vice principal, and the MITS Madanapalle administration for giving him the opportunity to share his knowledge of chemical science research and associated subjects. His talk was titled " Selective OP Detection: Luminescent molecular probe approach to device development." He discussed various chemosensory probes, especially xanthene, In addition, he also explained acute OP poisoning the common and serious physiological emergencies. He answered the participant's queries at the end.

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The resource person of the second talk of Session III (Day-III) was introduced by Dr. Sanoop who gave brief introduction about the resource person Prof. Maiyalagan. T (Associate Professor, SRM Institute of Science & Technology, Chennai.). The session was begun at 2.40 PM. Dr. Sanoop introduced Prof. Maiyalagan. T academic background to the participants through online.

Prof. Maiyalagan. T thanked everyone for the opportunity to speak about chemical science research and related topics, including the audience, the lecture organizers, the HOD Chemistry, the Principal, the Vice Principal, and the Management of MITS Madanapalle. His title of the talk was "Metal –Air Batteries: A sustainable Pathway to Energy Storage." He discussed about design an innovative and efficient modern electro-chemical storage system, combine with resource abundance, eco-efficient industrial methods, and life-cycle analysis. He provided a thorough explanation of the significance of Metal Air Batteries and its applications. Finally, he explained in detail for the quarries of the participants.



The virtual poster session on Day III began at 9.30 AM, concurrently in the morning in a different window. Twenty-one contestants in all displayed their posters. Each competitor gave a presentation of their poster for around seven minutes, and then the judges took questions for 3 mins to determine which posters were the best. Around 2.00 PM, the poster presentation was finished. At end of the session, Judges finalized the six best posters.

At 3.30 PM, we began the farewell celebration. The convener gave a few conference-related announcements. Our beloved principal Dr. C. Yuvaraj was invited by Dr. P. Amaladass to say a few words and declare the best poster winners of the virtual poster presentation sessions.

In his brief remarks, the principal expressed his gratitude to all the faculty members, participants, and invited speakers. Among the 42 posters displayed in the poster section throughout India and internationally, he declared the best poster winners.



Then, our co-convener gave a brief vote of thanks to every invited speaker, dignitaries, supporting staffs of MITS, all the attendees and all the faculty members of Dept. of Chemistry.

Finally, Convener Dr. P. Amaladass formally declared the conference closed at 4:15 PM.