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RECENT TRENDS IN GREEN ASPECTS OF SCIENCE AND TECHNOLOGY

RTGAST - 2021

12 February, 2021

Prof. Rakesh Kr. Dwivedi
Conference General Chair

Dr Varun K Singh
Convenor

Dr Souvik Sur
Co-Convenor

Dr. Asim Ahmad
Organizing Secretary

Supported by

TEERTHANKER MAHAVEER UNIVERSITY, MORADABAD
DEPARTMENT OF CHEMISTRY
Faculty of Engineering & Computing Sciences
Conference Email: rtgast2021@gmail.com

Teerthanker Mahaveer University

The **Teerthanker Mahaveer University** has been established by an 'Act' (No. 30) of 2008 of the Government of Uttar Pradesh and is approved by the University Grants Commission (UGC) vide letter No. F. 9-31/2008(CPP-1) dated October, 2008. The University is located on National Highway-24, barely 144 Km from New Delhi. The University stands committed to the ideals of Lord Mahaveer-Right Philosophy, Right Knowledge, and Right Conduct – in all the spheres of activity and aspire to be recognized as the ultimate destination for world class education. The multi-disciplinary University offers career oriented courses at all levels, i.e., UG, PG and Doctoral degrees across diverse streams, namely, Medical, Dental, Pharmacy, Nursing, Paramedical Sciences, Physiotherapy, Hospital Administration, Education, Physical Education, Engineering, Architecture, Polytechnic, Management, Law, Journalism, Fine Arts, Jain Studies, and Agriculture Science to meet rising aspirations of the youth. The University provides a unique environment for students to grow under the guidance of experienced academicians. The highly committed team facilitates all round development of students to help them acquire the ability of lifelong learning and to make them competent professionals as well as good human being.

Faculty of Engineering & Computing Sciences (FOE & CS)

Established in 2008, the College of Engineering & Computing Sciences has emerged as a hub for academic excellence in engineering & science. The college contributes to quality education in all major disciplines of engineering & science and meets the needs of industry for trained technical manpower with practical experience and sound theoretical knowledge.

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The College has nine operational academic departments with more than a hundred full time faculty members. The college offers programs at bachelor, post-graduate and doctoral level, covering major branches of engineering science and technology. Experts from various areas are invited for interaction with the students. The college has entered into partnerships with leading universities and industries in India and abroad. These partnerships foster product oriented Research and Development and technology incubation, and provide a platform for the industry to conduct training and internships for students.

Department of Chemistry

Department of Chemistry are the leading departments of TMU which provide excellent opportunities to the students for pursuing undergraduate and post graduate programme in B. Sc. (H) Chemistry & M. Sc. Chemistry. We are one of the most active and vibrant educational units in Faculty of Engineering, TMU. The Department has quali□ed team of teaching faculties with promising academic curriculum to a high level of achievements. Always striving to provide the best possible opportunities to students, our faculty focus on providing the most rewarding and educational environment to help students to achieve their goals.

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About Conference

During the last two decades, anthropogenic pressure on environment has increased at a much greater pace. Human influences are much on natural environmental condition as per their own need. For instance, discharge of untreated industrial waste & use of chemical fertilizers/pesticides are badly affecting the quality of water & soil. Similarly vehicular exhaust is creating air environment poisonous. Poor quality of water, air & soil in turn has adverse effect on human health & environment.

There is an urgent need to understand the mutual relationship between environment & society. Green Science and technology refers its use to make products and processes more eco-friendly. Overall, green technology aims at contributing to renewable sustainability. It mainly concerns the processes for producing chemicals commercially, as well as the redesign of existing materials so that their disposal at the end of their lifetime will not adversely affect the environment. Research & Teaching in the area of green technology emphasize that the human relationship to the environment can be biological, economical, political, physical, cultural, chemical & social. Also there is a need to ensure that all national infrastructural works and technological development should be undertaken in environmentally sustainable manner so that the imagination of green environment can be fulfilled.

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Shri Suresh Jain
Chancellor, TMU, Moradabad

I am extremely glad and feeling Inner happiness for organizing the conference on Feb 12, 2021. This is a national conference and the Department of Chemistry is organizing under the guidance of Professor R. K. Dwivedi, Director and Principal, Faculty of Engineering and Computing Sciences, Teerthanker University,Moradabad. I say that the World is growing very fast and creative research has changed the entire Technology in the field of Engineering, Medical Sciences, Computing Sciences and a variety of industrial products. No doubt that research in any discipline is not a one day job but it needs consistent and continuous efforts to do constructive work for the benefit of mankind. The earlier Scientists/Researchers have proved that huge infrastructure is not required to find out the results of their experiments. They were struggling to develop models/apparatus themselves and results were verified through a series of repeated experiments. After getting scientific values the research was published in the form of hypothesis/theory /research article etc. The work done by one Scientist was verified again by other researchers and finally theory was implemented to get outcomes and applications to develop useful tools. In the present Scenario the scientists all over the world have achieved wonderful Technology to make impossible tasks possible through research only .Just see the Defense technology, In medical the robotic surgery, In Engineering heavy duty working Machines , variety of Batteries, IOT, Fuels etc. The dream of this University was completed in the year 2008 and since that day the teaching /research standard is getting advanced. I am ambitious to enhance research interest amongst the faculty members to grow vertically and horizontally for bright and successful endeavor in all Departments. This is true that any institution is recognized by research work, quality publications and Patents which are usable by industries and not by colossal and huge towers. The faculty members may spare one /two hours per day for research. Everyone must have determination, confidence and research interest to produce quality research work. Now I express my happiness for such a conference. I am sure that readers of this message will take it very positive to move ahead among the best researchers. I trust that FoE&CS will surely bring revolution through quality research work to give a good name and fame to Teerthanker Mahaveer University in India and abroad as a prestigious institute in academics and research. Heartiest congratulations to Professor R. K. Dwivedi, & organizing team of Department of Chemistry for this fabulous achievement!

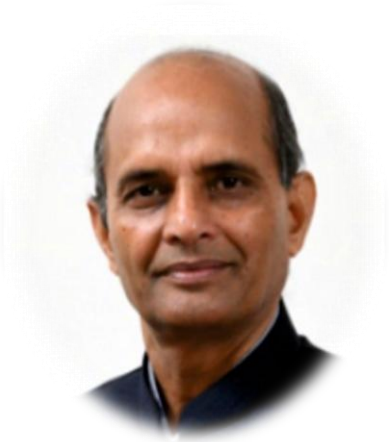
Shri Manish Jain
Group Vice Chairman TMU

I take this opportunity to rejoice along with faculty members and students, Faculty of engineering and Computing sciences for the smooth and efficient functioning of the college under the vigilant supervision of Professor R.K. Dwivedi , Director and principal, FoECS TMU, Moradabad. I am feeling immense pleasure that the department of Chemistry is organizing a conference on Feb 12, 2021 to boost the research environment in the college. I advise the learned faculty members that develop addiction to perform research activities in your respective field. You may feel that it is a difficult task but this will add in your profile as an excellent researcher. This will be beneficial for the students also to show them the right path for their professional and prosperous life in endeavor. Keep it up in doing constructive work to elevate the academic and research standard of this prestigious, Teerthanker Mahahaveer University, Moradabad. Though this university is young in years, Second to none in this area as the most popular interdisciplinary University. I am sure that the fragrance of quality education, research potential, variety of courses offered, is spreading through cooperation and perseverance. The growth of any University & institution depends upon the quality research work and innovation. Research organizations and Universities are leveraging Government support, industry, academic partnership and international collaborations to drive innovation. This is essential to produce applied research work and to produce useful technology and making an impact by patenting their inventions.

Shri Akshat Jain
Esteemed Member of TMU Society

I personally feel that hard work never goes astray. The conferences, webinars and seminars, special talks play an important role in creating a congenial research environment in the department and ultimately in the University. It gives reflection of learned faculty serving in the department. I am highly excited to congratulate the organizing team of the department of Chemistry , versatile and eminent scholar Professor R. K. Dwivedi ,Director and Principal , Faculty of Engineering and Computing Sciences, TMU, for the "NATIONAL CONFERENCE ON RECENT TRENDS IN GREEN ASPECTS OF SCIENCE AND TECHNOLOGY (RTGAST-2021)," on dated FEB 12, 2020. This is a challenging topic for all the researchers to accept the demand of the present scenario of environmental pollution. In my opinion the conference will provide a National platform for academicians, researchers and scientists coming from various National Institutes/ Universities and Research Laboratories to present breakthrough facts , research findings and innovations in the field of Green Chemistry. I am sure that this conference shall bring valuable exchange of ideas among participants. I would like to express my appreciation to the organizing team for their hard work and restless efforts.

I extend my best wishes for the grand success of this conference on FEB., 12, 2021.



Prof. Raghuvir Singh
Vice Chancellor, TMU

I believe that conferences build up scientific attitude among the faculty members and students. Conferences are the promoters of academic excellence and curiosity for knowing the facts. Knowing others is intelligence ;Knowing yourself is true Wisdom ;Mastering others is strength ; and mastering yourself is true power .Happiness cannot be expressed in words but it is realized by feelings and inner sense. As a Vice Chancellor, Teerthanker Mahaveer university and Patron, I congratulate Department of Chemistry and the organizing team for organizing conference on the latest topic "Recent Trends in Green aspects of Science and Technology." I advise the students and faculty members to strengthen the quality of research reviews, research papers. Congratulations to Professor R.K. Dwivedi, Director and Principal, for inculcating research environment in FOE & CS. Think high to soar great heights and think deep to delve what you want. The word impossible is not in my dictionary, erase it from yours too.

Dr Aditya Sharma
Registrar

No doubt proper guidance brings changes in the academic environment of the Institution under the vigilant supervision of the Director and Principal. My heartiest Congratulations to Professor R. K. Dwivedi, Director and Principal, FOE & CS, TMU, for such a conference! Such an academic environment will boost the energy and will cultivate new talent amongst learners. I am sure that the conference would bring laurels and good fame to far destinations. This will be a learning platform for the Students, academicians, researchers to get proper solutions to save the beautiful Earth. This will bring awareness among the people to produce the chemicals in a safe way. I am confident that the conference would pave the way of scientific involvement to the fields of scientific creativity.

Wishing all the best!

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Prof. R. K. Dwivedi
Director & Principal
FOE & CS

I take this opportunity to share my views for the smooth functioning of the college, Faculty of Engineering & Technology, Teerthanker Mahaveer University, Moradabad. Firstly I congratulate the team for organizing a fabulous conference on "Recent Trends in Green Aspects of Science and Technology". This is an excellent effort by the Department of Chemistry to have such a burning topic for discussion to attain positive results among the researchers. I always say, nature does not thrust potentials and accomplishments upon mankind. We are endowed with incipient powers and latent forces. This is our duty to develop them so as to master oneself. To my mind, the Faculty of Engineering & Computing Sciences is not just a building made of bricks , mortar and concrete , but It is a noble centre of education that helps in building character, empowering minds and imparting rich and rewarding experience that lasts lifetime. Ultimately this leads to realization of all cherished dreams. Try to know your potential yourself otherwise you will not value your time. My aim in life is, live with enthusiasm to go higher and higher and contribute to the welfare of society. I express my inner happiness , gratitude and thanks to His eminence Shri Suresh Jain , Chancellor, Shri Manish Jain, group vice chairman, most respected Vice Chancellor, Professor Raghuvir Singh, heartfelt congratulations to Organizing secretary, Professor Asim Ahmad, Conveners Dr Varun K Singh and Dr Souvik Sur and members of organizing committee.

Dr. Varun Kumar Singh
Head
Department of Chemistry
(FOE & CS)
Convenor, RTGAST-2021

This is my immense pleasure to announce that Department of Chemistry is organizing NATIONAL CONFERENCE ON "RECENT TRENDS IN GREEN ASPECTS OF SCIENCE AND TECHNOLOGY (RTGAST-2021)" on dated FEB., 12, 2021.This conference has great importance to attract the young scientists, Researchers and Academicians to do fruitful innovation on the Recent Trends of Green aspects. My colleagues are engaged in finding the best Hospitality to all the guests. M.Sc Students are also involved in writing Review papers and abstract on this burning topic. I assure that this conference will bring valuable outcomes, beneficial discussions to ignite the young talent in the field of Research. The Department Of Chemistry is highly obliged for the continuous support and motivation, received from the Professor R.K. Dwivedi , Director and Principal for every possible support to make this conference a grand success in endeavor. I am highly thankful to Dr Asim Ahmad (Organizing Secretary), Dr Souvik Sur (Co-Convenor), Dr K.A.Gupta, Dr Navneet Kumar, Dr Ashok Kumar, Dr A. D. Tripathi, Dr Nitin Sharma, for every possible support.

Dr. Souvik Sur
Co-Convenor
RTGAST-2021
Research and Development Center, TMU

I welcome the participants to RTGAST-2021. The main goal of organizing this national conference is to share and to enhance the knowledge of each and every individual. We feel immense pleasure in providing a good opportunity to those who have a thirst to know the present technological developments and also to share their ideas. Furthermore, this conference will also facilitate the participants to expose and share various novel ideas. The conference aims to bridge the researchers working in academia and other professionals through research presentations and keynote addresses. You will get ample opportunities to widen your knowledge and network. I thank the conference committee for extending their valuable time in organizing the program and to all the authors for presenting their research works and other contributors for their sparkling efforts and their belief in the excellence of RTGAST-2021.

Dr. Asim Ahmad
Organizing Secretary
RTGAST-2021

The seminars, and conferences are the backbone of Research development in any organization, where new ideas are generated through discussions and presentations .No doubt time has come to be a positive thinker to have new ideas to change in the fruitful innovations. The successful efforts have been accelerated to perform this conference as a memorable event. This conference will definitely change the Young minds of the students, young scientists and academicians. This is my suggestion to all the students to be a thinker and start working on innovation. The growth of any university and institution depends upon the quality research work and innovation. Research Organizations and Universities are leveraging Government support, Industry and academic partnership and international collaborations to derive Innovations. This is essential to produce original research and to create useful technology and making an impact by patenting their inventions. I am sure that this conference will bring change in the awareness of safe productions.

Prof. K. A. Gupta
Senior Faculty
Department of Chemistry
FOE & CS

I personally express my happiness that the Department of Chemistry has fixed the conference on 12th February, 2021. This is a very important step to promote Research talent among the Faculty and M.Sc students. Now time has changed and only the innovations, new ideas, patents have become the necessity of the growing world. The countries which are spending more money on Research are ruling in the field of Science and Technology and bringing revolution. I say this conference shall be beneficial to exchange ideas in the field of Green Aspects and definitely will change the young minds for fruitful outcomes.

My heartiest congratulations to the entire Department of Chemistry for organizing this conference.

Dr. Navneet Kumar
CRC, Coordinator

I would like to congratulate to Department of Chemistry, FOE & CS for organizing the National Conference on "RECENT TRENDS IN GREEN ASPECTS OF SCIENCE AND TECHNOLOGY (RTGAST-2021)" on dated FEB., 12, 2021. The aim of this conference is to connect the Researchers, Industry, Scientists and academicians coming from various destinations. I am optimistic that this conference will bring positive aptitude to think about the universal problem of Environmental pollution globally. No doubt this will help to exchange scientific ideas to perform innovation to reduce increasing hazardous Wastes from the Environment through Green Aspects and Technology. I would like to express my happiness for organizing such a conference in the Department of Chemistry. I am with the efforts of the energetic team of Dr Varun Kumar Singh, Dr Asim Ahmad and Dr Souvik Sur.

Dr. A. D. Tripathi
Editor-in-Chief
TMU Journal of Applied and Basic Chemistry

I am very glad that this would be an outstanding conference on the topic to involve students, Faculty members and Scientists. This conference will open the ways for further innovations. This conference will bring Researchers, Scientists and academicians on the united platform for open discussion on this burning issue of Green Aspects of Chemistry. The Industries must follow safe ways for the manufacturing of a variety of chemical products. This practice will be advantageous to reduce pollution globally. My best wishes to the Department of Chemistry and organizers to choose such a topic of common interest, beneficial for everyone on this Beautiful planet. Save this Environment and take a cool breath for a healthy Life.

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12th Febuary 2021, FRIDAY					
Timings (IST)	**EVENTS**				**Total Time**
Zoom Meeting Link: https://zoom.us/j/94450165690?pwd=YXhnSnFscHdkK00rbUY3U05hV0tuUT09 **Meeting ID: 944 5016 5690** **Passcode: TMU**					
Inaugural Function **(10:00 to 11:20AM)**					
10:00 - 10:05 AM	**Lighting the lamp Ceremony** **(Saraswati Vandana)**				05 min
10:05 - 10:15 AM	**Welcome Address and Conference Theme Elaboration** **Prof. R.K. Dwivedi** Director, FOE & CS				10 min
10:15 - 10:25 AM	**Address: Prof. Raghuvir Singh** Vice-Chancellor-TMU, Moradabad				10 min
10:25 - 10:30 AM	**Briefing of TMU Vision and Mission** **Dr. Aditya Sharma,** Registrar, TMU, Moradabad				05 min
10:30 - 10:40 AM	**Conference Address :** **Prof. Asim Ahmad,** Organizing Secretary, RTGAST-2021				10 min
10:40 - 10:50 AM	**Chief Guest : Prof. R K Dey** Vice Chancellor, CUJ, Ranchi				10 min
10:50 - 11:20 AM	**Guest of Honor : Dr. T C Shami** and **Prof. M G H Zaidi** **Plenary Talk** by **Prof. M G H Zaidi,** G.B Pant University of Agriculture and Technology, Uttarakhand				30 min
TEA BREAK **(11:20AM – 11:35AM)**					
Parallel Session (11:35AM – 01:30PM)			**Parallel Session (11:35AM – 01:30PM)**		
Session Chair: Prof. K A Gupta and Shri Raghvendra Singh			**Session Chair: Prof. S P Pandey and Dr. Navneet Kumar**		
11:35 AM- 12:20 PM	**Plenary Talk-2** **Prof. Vibha Tandon**, JNU, New Delhi		**Plenary Talk-3** **Dr. T C Shami,** DRDO Kanpur		
12:20 – 01:30 PM	https://zoom.us/j/91599807917?pwd=ZWYwSm83RlJSZUp3TWdteEcrRzMvZz09 **Meeting ID: 915 9980 7917** **Passcode: TMUFOE**		https://zoom.us/j/94450165690?pwd=YXhnSnFscHdkK00rbUY3U05hV0tuUT09 **Meeting ID: 944 5016 5690** **Passcode: TMU**		
	12:20-12:30 PM	OP-1	12:20-12:30 PM	OP-2	10 min
	12:30-12:40 PM	OP-3	12:30-12:40 PM	OP-4	10 min
	12:40-12:50 PM	OP-5	12:40-12:50 PM	OP-6	10 min
	12:50-01:00 PM	OP-7	12:50-01:00 PM	OP-8	10 min
	01:00-01:10 PM	OP-9	01:00-01:10 PM	OP-10	10 min
	01:10-01:20 PM	OP-11	01:10-01:20 PM	OP-12	10 min
	01:20-01:30 PM	OP-13	General Discussion		10 min
LUNCH and Poster Presentation **(1:30PM – 3:00PM)**					
Session-II (03:00PM – 4:00PM)					
(Session Chair: Prof. M G H Zaidi **)**					
03:00 – 03:45 PM	**Plenary Talk-4** **Prof. A K Bajpai,** Govt. Autonomous Science College, Jabalpur, MP				45 min
03:45– 04:00 PM	**Inauguration of In-house Journal** **TMU Journal of Basic and Applied Chemistry**				15 min
Valedictory Function (4:00PM – 4:30PM) **Vote of Thanks & A brief report on Conference** **(Presented By Conference Organizing Team)**					

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Detail of Presentations

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Plenary Talk-1

Polymerization and Polymer Modification in Supercritical Fluids

Prof. M. G. H. Zaidi
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G.B.Pant University of Agriculture & Technology, Pantnagar, Uttarakhand-253145, India
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Supercritical fluids (SCFs) are the transient states of matter produced through operating the fluids above their critical point. Applications of SCFs as an alternative media in food processing , chromatography, energy production and drug development was recognized till beginning of 19th century, has now well accepted in processing of materials[1-2]. The most preferred SCFs are the supercritical carbon dioxide (SCC) and supercritical water (SCW).SCFs offers a series of unique methods of particle sizing, development of polymer composites, blends[1-4], dispersion of layered silicates [3], inorganic[4], graphitic[5] and magnetic fillers[6] into solvents, monomers and their infusion into polymer matrix at ambient temperatures. This leads to the formation of nanocomposites for civilian, naval and aerospace applications[1-6].Polymer functionalized nanostructurd polyelectrolytes for photovoltaic and energy storage applications are successfully synthesized under supercritically controlled conditions[7-9]. Chemical oxidative polymerization and copolymerization are viably conducted in SCC[10]. Highly sensitive functional nanomaterials for antibacterial applications [11] sensor [12] and target delivery of drugs are conveniently synthesized in SCC[13-15].

The present talk, shall deliver the salient features of SCFs and their applications in particle fabrication, polymerization, preparation of nanocomposites, nanohybrids, nanomaterials for wood preservation, nanocomposites for development of durable composite structures, electroactive nanomaterials for sensing, energy storage, target delivery systems and nanoparticle mediated microbial degradation of commodity plastic materials. Concluding remarks will be presented on simplicity, diversity, and commercial viability of SCFs processing of polymer nanomaterials.

Keywords: Nanomaterials, Processing, Supercritical fluids

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Plenary Talk-2

Cu(II)-catalyzed sulfonylation of 7-azaindoles using DABSO as SO_2-Source and its mechanistic study

Prof. Vibha Tandon

Special Centre for Molecular Medicine, Jawaharlal Nehru University, New Delhi, 110067, India

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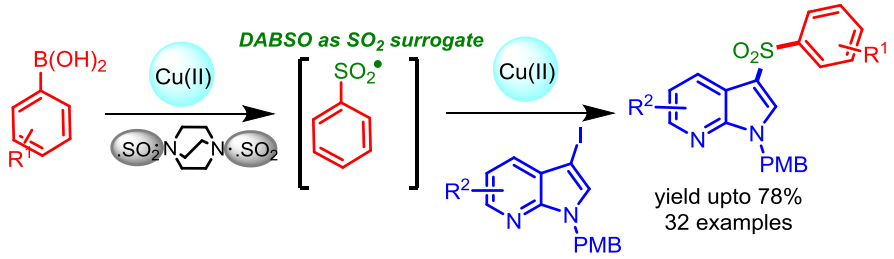
DABSO mediated sulfonylation of iodinated 7-azaindoles was achieved for the first time through sulfonylative Suzuki-Miyaura cross coupling (SMC) reaction under mild conditions giving good yields of sulfonylated 7-azaindole derivatives. Interestingly, control experiments suggest that present method involves *in-situ* generation of ArSO free radical followed by the key steps of SMC reaction. Scope of the reaction was explored with both electronically different and bulky group carrying boronic acids as coupling partner. The sulfonylation is scalable and occurred selectively at iodo group, irrespective of its position on azaindole. Moreover, the proposed mechanism has been supported by electron paramagnetic resonance (EPR) and density functional theory (DFT) calculations.



Key words: Sulfonylation, Arylsulfonation, Sulfinate

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Plenary Talk-3

Smart Materials for Strategic Applications

Dr. T C Shami

Directorate of Strategic Materials

Defence Materials and Stores Research and Development Establishment

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Camouflage and stealth – the technologies for delay or denial of detection of target, are the most important considerations in tactical planning, these are meant to protect strategic military manpower and equipment from the adversary over multispectral wavelength regions of EM spectrum (visible, near infrared, thermal infrared and microwaves). Basic crux of stealth technology is to manipulate the signature of the targets in such a way that the variety of sensors fail to detect, identify, and locate the target. DMSRDE has synthesized many novel materials and developed various camouflage/stealth products. The brief details of materials and products are described in the next section.

DMSRDE, Kanpur has synthesized many novel materials e.g. magnetic spinel ferrites Li0.4Mg0.6Fe2O4, nickel/zinc substituted strontium hexaferrite nano particles (SrNi2Fe10O19, SrFe11Zn0.5Ni0.5O19), super paramagnetic materials (SrFe11.2Zn0.8O19) using chemical co-precipitation and sol-gel technique. Various chiral monomers, micro and nano tubules of polyaniline have been synthesized.In continuation of above materials various carbon based materials e.g. carbon nano tubes (CNTs), carbon micro coils and coiled CNTs, have been synthesized in the large batch size. The synthesized materials were optimized for the fabrication of radar absorbing coatings and composites.

Plenary Talk-4

Intelligent Macromolecular Nanostructures in Healthcare

Prof. A. K. Bajpai
Bose Memorial Research Laboratory
Department of Chemistry
Government Autonomous Science College
Jabalpur (MP), India
akbajpailab@yahoo.co.in

The transformation of macromolecular materials to nanostructure materials has radically changed the prevailing scenario of medical and pharmaceutical sciences. The resulting nano-materials offer interesting and unusual biophysical characteristics and have been extensively investigated and found a great quantum of applications in biomedical fields including controlled and targeted drug delivery to treat complex physiological disorders. The present talk encompasses introduction to macromolecular nanostructures and their responsively to various external stimuli like pH, temperature, and magnetic field and their eventual applications in drug delivery technology. The talk also focuses on how these macromolecular nanostructures, also coined as intelligent or smart materials, could be utilized in designing various controlled and targeted drug delivery systems for treatment of diseases like cancers and tumors.

Oral Presentations

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OP-1

Revealing the mysterious nature of gamma-glutamyl phosphate reductase (ProA) through dynamics

Ankita Tripathi and Kshatresh Dutta Dubey*
Department of Chemistry, School of Natural Sciences
Shiv Nadar University, Gautam Buddha Nagar, Uttar Pradesh
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Modern enzymes are very efficient but they are very specific. However, it is supposed that they may have evolved from a common ancestral gene. Therefore, information of their evolutionary pathway has supreme importance in designing a bioengineered enzyme for our modern purpose. Previous studies have revealed that promiscuous functions in enzymes that are instigated by structural flexibility are, somehow, related to the evolutionary pathways. In the present study, we have focused the promiscuity in two very specific enzymes; ProA that catalyzes the biosynthesis of proline, and ArgC which catalyzes arginine biosynthesis. These two enzymes are very specific, catalyze their native substrate only, and do not show significant structural similarity, however, a single mutation of an active site residue E381A in ProA increases the ArgC activity by 12 folds but decreases the native activity by 2800 folds. Using molecular simulations of wild type and mutant enzymes we have uncovered the mechanism of promiscuity which might be responsible for their evolution pathways from a common ancestral.

Keywords: Natural evolution, promiscuity, Molecular dynamic simulation.

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OP-2

Effect of Humidity on Electrical Conductivity of Graphite Nanocomposite Based Electrodes: A Review

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We have reviewed recent progress on various types of humidity sensors as it is one of the most significant issues in various areas of sensing appliances such as instrumentation, charge storage automated systems, industries and agriculture. Various effective approaches have been discussed to develop ceramic, semiconducting and polymer based graphite sensors. It was found that graphite based nanocomposite materials have unique potential for detecting humidity due to specific structure, high electro thermal conductivities, good mechanical properties, low cost and ultrahigh surface area that increases applications in the field of energy storage devices.

Keywords: Humidity, Ceramic, Graphite electrodes

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OP-3

Protecting-group directed diastereoselective synthesis of tetrahydrocarbazoles

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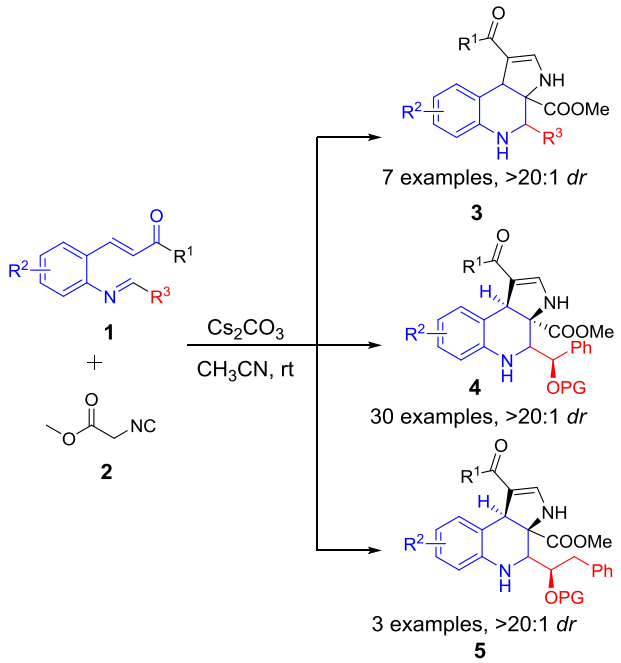
A highly diastereoselective Michael addition/Mannich reaction domino reaction with isocyanoacetate and chiral imines has been developed. The substituted tetrahydropyroloquinolines were obtained with excellent distereoselectivity (>20:1) under mild condition. The protecting groups of 2-iminochalcones directs the stereoselectivity of the products. Herein, we demonstrated the tetrahydropyrroloquinolins in a single operation and up to four contagious chiral centers. The reaction possesses diverse substrate scope under mild condition. The reaction mechanism was proposed by performing the control experiments.



Key words: Michael addition-Mannich cyclization, diastereoselective.

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OP-4

Nano scale Carbonaceous analogues Based Electrochemical Nanosensors for Nitrogeneous Biomolecules

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Electrochemical nanosensors with at least one of their sensing dimensions being up to100 nm, have become one of the most rapidly growing sensing devices for quantitative analysis of bioactive molecules. The development of more precise and accurate nanosensors that having high detection sensitivity is required in the field of biotechnology and biomedical engineering and it is well reported that the sensitivity and fast signal responding nature of electrochemical nanosensor to quantify nitrogenous biomolecules, depends on the surface characteristics of working electrodes (WE), since all electrochemical reactions during sensing of biomolecules is generally detected on the surface of, WE. Carbonaceous materials in nano scale (1-100 nm) such as engineered nanobiochar, carbon nanotube, graphene, graphite and graphene oxide are used in working electrode to construct the electrochemical nanobiosensors. The use of carbon or carbonaceous nanomaterials in working electrode offers many advantages including easy preparation, uniform distribution of the catalyst, reproducibility, stability, low ohmic resistance, and robustness in aqueous solutions. In electrochemical nanosensors, the electrochemical interaction of analyte with WE surface produces some redox reactions which are transformed These electrical signals are used to determine the sensitivity and limit of detection of a nanosensor by varying the potential and measuring the resulting current. into electrical signals (impedance, current, voltage, etc.) and displayed on a screen.

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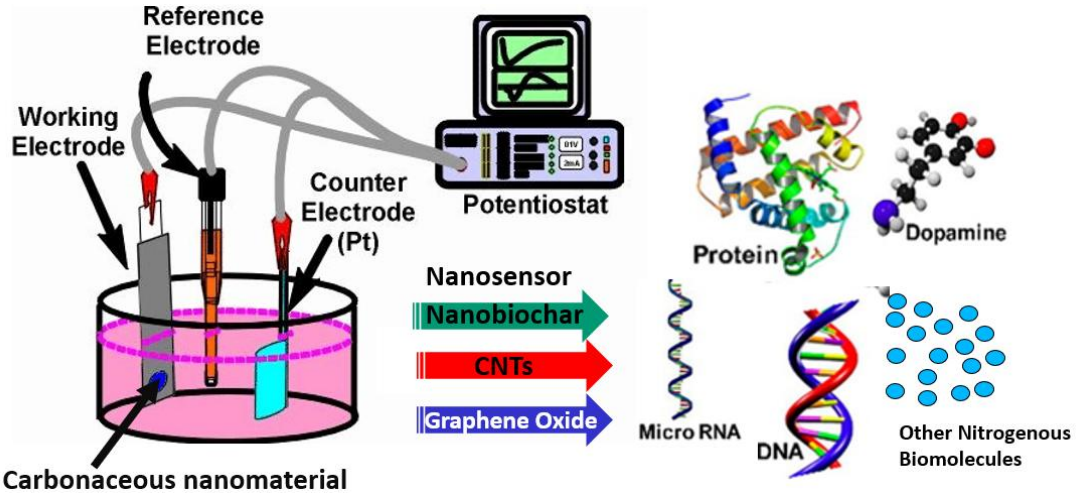

 ISBN:978-93-5406-254-4

OP-5

Biochemical Characterization of Iron Oxide Nanoparticles

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Iron oxide nanoparticles are synthesized using the flower extract of *Rhododendron arboretum* by the co-precipitation method and analyzed their anticancer activity. Synthesized FeO NPs were characterized by Fourier-Transform Infrared Spectroscopy (FTIR), Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM) and X-Ray Diffraction (XRD). SEM and TEM determine the shape and particle size of the synthesized FeO NPs. The synthesized nanoparticles were hexagonal in shape with average particle size is 40 nm. FeO NPs with 1 weight % of flower extract displayed anticancer activities (IC_{50} of 4.655) against L6 cell line. This research reveals the characterization of green synthesized FeO NPs used as anticancer against L6 cell line.

Keywords: Anticancer, TEM, nanoparticles.

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OP-6

Electroanalytical Methods in Detection of Trace Metals in Environmental Samples

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Heavy metals such as mercury, lead, cadmium, arsenic etc. have harmful effect on environment, that leads to development of techniques for detection of heavy metals in environmental samples. Different methods have been established for the detection of heavy metals, such as atomic absorption spectrometry (AAS), inductively coupled plasma mass spectrometry (ICPMS), flameless atomic absorption spectrophotometry, inductively coupled plasma optical emission spectrometry (ICP-OES), X-Ray fluorescence spectrometry and electrochemical sensing (EC). Out of which, some techniques often posses certain drawback like high cost, high power requirement, difficulty in the supplementary technical arrangements and long detection times. Among the various analytical methodologies, the EC approach for sensing has gained momentum due to their high selectivity, senstivity, low instrumentation cost and quick response time. The presence of heavy metal ion in water usually brings the change in electrical parameters like current, voltage, electrochemical impedance, charge and electroluminescence in the electrochemical setup. These techniques can be categorized into potentiometric, amperometry, voltametric, coulometric, impedance measurement and electro chemiluminescent techniques based on that electrical signal has been affected by the presence of heavy metal ions.

Key words: Voltammetry, Electrochemical sensing

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OP-7

Pd-Catalyzed Sequential Arylation of 7-Azaindoles and Aggregate Induced Emission Profiles of Tetra-aryl 7-azaindoles

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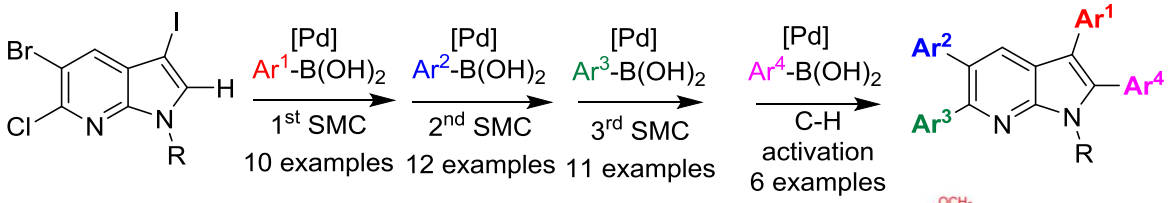
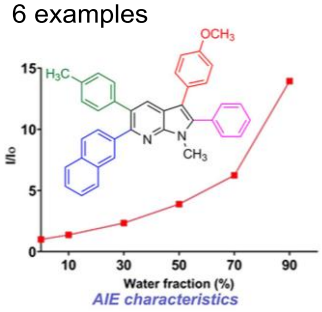
Pd-catalyzed sequential arylation of 5-bromo-6-chloro-3-iodo-1-methyl-1*H*-pyrrolo[2,3-*b*] pyridine is shown . Four diverse aryl groups are installed in a chemo-selective fashion providing a general method to synthesize sterically encumbered compounds and extended 7-azaindoles in 48–95% yields. C-3, C-5, and C-6 arylation via Suzuki–Miyaura cross-coupling followed by direct C-2 arylation using a Pd catalyst and AgOTf as an additive are highlights of the present work. The tetra-aryl 7-azaindoles also show aggregate induced emission profiles having potential in material sciences.



- Sequential arylation
- Site-selective arylation
- Aggregate induce emission active



Key words: Michael addition-Mannich cyclization, diastereoselective.

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2. Chaudhari, T. Y., Urvashi., Ginotra, S. K., Yadav, P., Kumar, G., Tandon, V. *Org. Biomol. Chem*., **2016**, 14, 9896-9906.
3. Chaudhari, T. Y., Ginotra. S. K., Tandon, V., *Org. Biomol. Chem*., **2017**, 15, 9319-9330

OP-8

Carbon Nanomaterials Based Electrodes for Electrochemical Sensing of Triazole Drugs

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Carbon derived nanomaterials have received growing interest in development of sensor materials due to their inherent electrical conductivity, chemical stability, strong adsorption capacity and good biocompatibility. These materials include carbon nanotubes (CNTs), fullerenes, carbon nano fibers, carbon black, etc. CNTs are one of the important carbonaceous nanomaterial and suitable for fabrication of electrodes as it displays excellent properties like high surface areas, and good electrical properties. Due to various properties they are associated to structure, functional and morphology which make CNTs powerful candidates for developing multi-functional polymer composites. CNTs based material used to produce hybrid biosensors, drug delivery and high performance composites for implants to identify pathogens, load/deliver drugs and antimicrobial performance of implants. Heterocyclic compounds containing triazole linkages are known for their potential anti fungal and anticancer properties. Structurally, triazole are consists of three conjugated nitrogen atoms that contribute electrochemical activity to triazoles in electrolytic media. Such electrochemical activity of triazole allows their sensitive, robust, reproducible quantification at fast rates without need of multiple steps of sample preparations. Selectivity and Portability of the electroanalytical techniques make the electrochemical sensors a favorite tool for the determination of drugs and compounds of clinical interest.

Key words: Triazole drug, Electrochemical sensing, CNTs

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OP-9

Synthesis and Charcterization of Iron oxide Nanoparticles using Plant Extracts

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Iron oxide nanoparticles are synthesized using the flower extract of *Rhododendron arboretum* and analyzed their anticancer activity. Synthesized FeO NPs were characterized by Fourier-Transform Infrared Spectroscopy (FTIR), Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM) and X-Ray Diffraction (XRD). SEM and TEM determine the shape and particle size of the synthesized FeO NPs. The synthesized nanoparticles were hexagonal in shape with average particle size is 40 nm.

Keywords: Nanoparticles, TEM, XRD, SEM, FTIR analysis.

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OP-10

Modification in Dimensional Stability of Epoxy Laminated Veneer Lumbers through Bentonite Reinforcement

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Presently, Poplar is used as fuel, and raw material for pulp & paper industries, fabrication of packaging articles, civil structures and ply boards. However, the physical and biodegradation under humidity, heat, mechanical stress and microbes makes poplar wood as inferior composite materials for high performance applications .Advancements in polymer science and engineering has made possible to enhance the durability of poplar and alike low grade wood for structural applications through reinforcing polymeric fillers and adhesives bonding of veneers. The present manuscript reports an exploratory approach on fabrication and characterization of dimensional stability of Laminated Veneer Lumbers (LVLs).The processes of LVLs fabrication was executed through implication of a series of adhesive formulations (AFs) involving epoxy resin supplemented with various weight fractions of bentonite under four ply arrangements of poplar wood veneers. LVLs were characterized through scanning electron microscopy, water absorption (WA) and thickness swelling (TS) tests. Study reveals that LVLs with 12 mm thickness has shown enhanced density, control over WA and TS. The study demonstrates a viable method of implication of BECs as adhesive for fabrication of LVLs with improved dimensional stability, making them suitable for possible outdoor applications.

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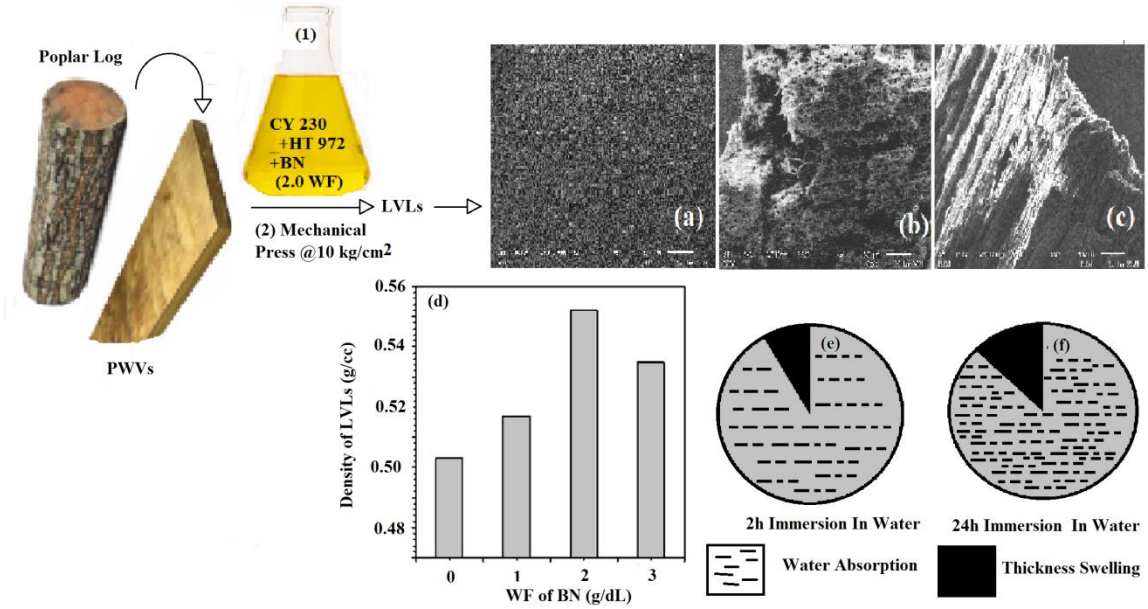

 ISBN:978-93-5406-254-4

PWVs=Poplar Wood Veneers, BN=Bentonite ,Scanning Electron Micrographs of BN (a), PWVs (b), LVLs (c),Effect of BN on Density of LVLs (d),Water Absorption & Thickness Swelling at 2h(e) and 24h (f)

OP-11

Assessment of premonsoon and monsoon seasonal variations in the surface water quality of Rivers Ramganga and Gangan at District Moradabad Uttar Pradesh

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The main objective of the study is to access the impact of urban and industrial activities on the water quality of Ramganga River and Gangan River at Moradabad U.P India. For this, Ramganga river and Gangan River water samples were collected from different locations along the route of Ramganga river main steamline and Gangan river at Moradabad and were analyzed for different physico-chemical parameters like temperature, pH, electrical conductivity (EC), turbidity, total solids, total dissolved solids (TDS),total suspended solids (TSS), dissolved oxygen (DO), biochemical oxygen demand (BOD), and chemical oxygen demand (COD) levels at pre-monsoon period and post-monsoon period following the standard methods of sampling and testing. The value of pH was 7.02- 7.10 at Ramganga and 7.3 to 7.5 at Gangan river, the turbidity was in the range of 28-28.9 (NTU) at ramganga while 25.9-31.5(NTU) at Gangan river. The electrical conductivity of Gangan river was found in the range of 118.09 to 119.45(µS/cm) while 100.04 to 105.06 (µS/cm) at Ramganga River. The heavy metal concentration like Pb, Cr, As, Hg and Cd were also recorded of both the selected study area by following standard procedures. The higher concentration of Pb is suggestive of surface water pollution of both the rivers.

Keywords: - Electrical Conductivity, Water Quality Parameters, Water Quality Index.

OP-12

Effect of 1-Pentanol Addition on Solubility and Fuel Properties of Diesel-Methanol Blends for CI Engine

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In the present study, the effect of 1-pentanol addition as a surfactant to immiscible methanol and diesel fuel were investigated. Due to immiscibility of lower chain alcohols (methanol and ethanol contains (-OH) group dominates the molecule making it polar) to conventional diesel, higher alcohols having non polar behavior provide better aid acting as emulsifier for immiscible methanol and diesel blending. The stability and the effect in fuel properties of the different proportions of blends were studied. The test fuels were diesel, PM5 (90% diesel, 5% 1-pentanol, 5% methanol by vol.), PM10 (80% diesel, 10% 1-pentanol, 10% methanol by vol.). The fuel properties such as density, heating value, latent heat of vaporization, cetane number, surface tension and viscosity were measured and compared with diesel fuel properties and also found that the properties lie within the range of ASTM standards specified for compression ignition engine.

Key words: Higher alcohols, Diesel engine

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OP-13

Green Technology: The need of time

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Green technology is now a new attraction among researchers of various sectors like engineering, manufacturing, material science, chemical science, environment science and energy. In last two decades, the areas related to the research of green technology have increased significantly. Engineering is also covering the green technology widely. Green technology has achieved the goal of green products, energy saving, energy generation, cradle to cradle design, green way manufacturing, waste reduction and sustainability. It has a number of advantages as compared to other innovations and environmentally related technology. A comprehensive analysis method is used to analyze the development of green technology & innovation in India in year 2000–2020. It can be concluded by the analysis, that during the period of 2000–2020, India's technology of innovation has made a great progress in the areas of water quality analysis, wastewater treatment, photovoltaic energy generation, bulk or fine product chemicals, pharmaceuticals, development of electric vehicles etc. Such technologies are closely related to environmental policies, such as climate change, green industry, industrial developments and Industrial transformation. On analyzing India's green development, it is found that, although green developments have made significant progress but the complete reliance on green technology is still far off.

Key words: 1. Engineering, Material science, Chemical science, Climate change, Green industry

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Poster Presentations

 ISBN:978-93-5406-254-4

PP-1 Evaluation of new Ibuprofen analogues as AMPK activators/Anti-Inflammatory Agents

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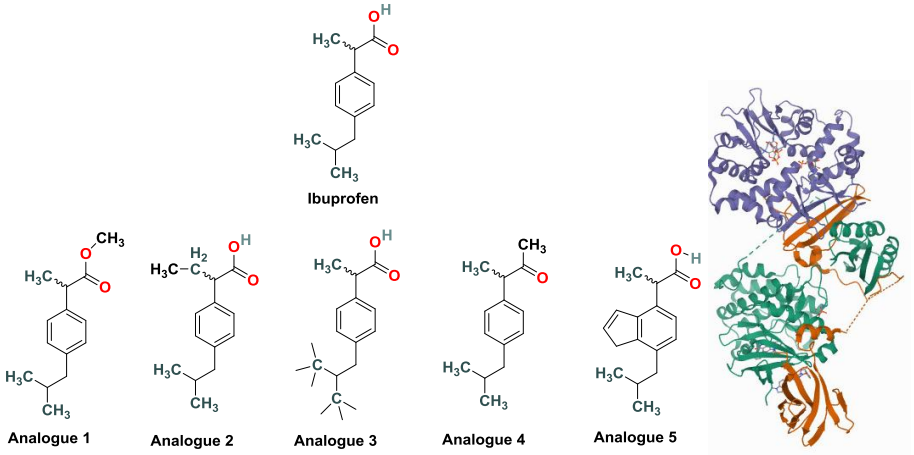
Many years before anti-inflammatory drugs has their origin from the plants extracts in the 19th and 20th century. Study of Ibuprofen analogues and their interactions with proteins will be undertaken. A detailed study of novel designed Ibuprofen analogues and its interactions with the proteins and uses of Ibuprofen will be studied in detail. Total 6 ligands including the parent analog Aspirin were docked successfully. Analogue 3 with the interactive amino acids like THR86, MET84, ASP89, SER178, ASN232, GLU230, PRO225 was displayed best docking score with 5022. Analogue 5 showed the next best docking result with 4446 which with interactive residues i.e. ILE149, ALA71, ARG151, ILE165, LYS148. And the lowest value of Docking score of 4064 is the lowest one in contact with Ibuprofen itself with ARG258, GLU230, PRO225, HIS249 and HIS297. We must reach in the conclusion that the Ibuprofen Analogue 3 is the best in terms of best docking score as well as number of amino acid residues participate in docking. We have successfully designed five chemical compounds which can act as pain-remover. A target based designing of new derivatives of a very well known drug was studied here in the present project which can be further informative and marketed if its biological significance stand out better than the marketed one.



Key words: Anti-inflammatory agent, Docking, AMPK

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Reference

Yan, Y., Zhou, X. E., Novick, S. J., Shaw, S. J., Li, Y., Brunzelle, J. S. & Melcher, K. (2019). Structures of AMP-activated protein kinase bound to novel pharmacological activators in phosphorylated, non-phosphorylated, and nucleotide-free states. *Journal of Biological Chemistry*, *294*(3), 953-967.

PP-2 Studies on pH, Alalinity and Hardness of Water Samples

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The pH , hardness ,alkalinity studies of various water samples have been carried out. To check the quality of various water samples collected from different places (hand pumps, wells Ponds, ditches etc). The pH scale is a major of hydrogen ions concentration. The pH scale Varies from 0—14. Below pH -7 is acidic and above pH -7 is considered basic. The pH -7 is considered neutral. The solubility of metals and non metals depends upon the pH of the Solution .The alkalinity is produced in water system due to the presence of alkaline salts .The alkalinity may be due to OH ions, or due to carbonate ions or bicarbonates ions. The alkalinity causes hazardous effect on the fauna and flora of the water system. The hardness of water is caused due the presence of calcium and magnesium sulfates, chlorides, bicarbonates. The slight hard water 60mg/l is almost soft water. The 60mg/l to 100mg/l , the water Becomes moderately hard water . 101mg/l to 180 mg/l , the water become hard water 180mg/l On ward the water becomes very hard. The studies showed that samples collected from Various sources showed hard water , 120mg/l and very hard water containing 185mg/l In most of the collected samples. The pH of the samples are showing objectionable pH range and it shows soluble metals. The metal hydroxides are present are also found in some water samples. It means the water samples are dangerous for drinking.

The alkalinity also showed variation in five samples. The Quality of various water samples has been found suitable for drinking. The studies are very usefull to explain the quality of water samples.

Key words: pH , Alkalinity and very hard water

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PP-3 Antibacterial activity of fennel against human pathogenic bacteria used in food processing

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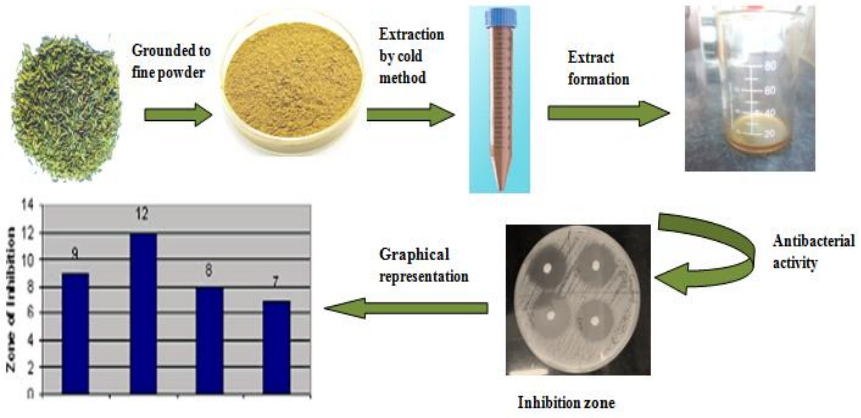
Green synthesis is the efficient method to synthesize various biologically active compounds. These biologically active compounds are future trends in various economical fields to sustain the environmental condition. Food poisoning is a severe hazardous condition due to some pathogenic bacteria. Biologically active compounds isolated from herbs and spices which prevent the food spoilage and inhibit the growth of food borne bacteria. Present study demonstrated the antibacterial potential of methanolic extract of fennel seeds. As the spices are rich source of nutrients these are used in food processing. Fennel seeds enhance the flavor and taste of foods. Antibacterial activity of fennel was determined against human pathogenic bacteria one gram positive (*Staphylococcus aureus)* and one gram negative (*Escherichia coli*) bacteria. Fennel exhibits higher antibacterial potential against *E.Coli* bacteria. Effective antibacterial activity was observed for fennel seeds. Results concluded that feenel seeds used in pharmacological industries for future apects.



Keywords: Fennel, *S. aureus*, *E. coli*

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PP-4

Analysis of River Water Quality

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Moradabad is known as "Peetal Nagri" as it is famous for brassware industries and comprising of four million populations. A WQI is a single indicator of the water quality determined through summarizing multiple parameters of water test results into simple terms for management and decision makers. The main goal of the present study was to access the impact of urban and industrial activities or the water quality of Ramganga River at Moradabad. For this, Ramganga river water samples were collected from four different locations along the route of Ramganga river main streamline and its branch and were analyzed for temperature, pH, Alkalinity, Sulphate (SO_4^{2-}), Fluoride ion (F) were determined by using standard classical and instrumental methods of analysis. The Dissolved oxygen (DO) and Chemical oxygen demand (COD) levels at pre-monsoon period and following standard methods of sampling and testing. World Health Organization (WHO) standard were adopted for calculation of water quality index (WQI). Comparison of observed and estimated values based on physio-chemical of parameters studies and water quality indices revealed that river water quality at almost all the locations were found to be contaminated for pre-monsoon as well as post-monsoon period. A comparison of data clearly indicates improvement in the river water quality in Water quality index provides an easy and rapid method of monitoring of water quality. It also becomes easier to compare the quality levels in different locations and to give priority for the required treatment to the location.

Key words: Water quality parameters; toxic pollutants; surface water.

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PP-5 Synthesis and characterization of Flyash Epoxy Composite

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A series of Fly ash epoxy composites (FECs) was synthesized through dispersion of selected weight fraction (WF, %wt.) of fly ash (FA) into epoxy resin (ER, 0.1mol) followed by curing of treated epoxy. Increase in weight fraction of fly ash to 0.3% has raised the mechanical durability and hardness of FECs with simultaneous reduction in their wear. This was associated with a marginal improvement in thermal stability of FECs over cured epoxy (CE). FECs processed through dispersion of 0.3 WF of FA into ER has shown increase in Rockwell hardness, impact strength, tensile strength, young moduli, compressive strength with simultaneous reduction in wear. Effect of WF of FA and voltage on DC conductivity of EFCs was also investigated. This study reveals a sustainable and green method of dispersion of FA as a filler modification of epoxy with moderate thermal stability, improved durability and electrical conductivity.

Key words: Fly ash, Epoxy resin, Curing agent

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PP-6

Complex Formation between KI and Crown Ethers in Methanol, Ethanol and 1-Butanol at Different Temperatures

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Formation of complexes of Potassium Iodide with crown ethers was investigated in methanol; ethanol and 1-butanol at 308.15 and 313.15 K. Stability constants of the resulting complexes were estimated by means of calorimetric methods. The results obtained have been discussed in the light of formation of inclusion complexes between crown ether and other compounds.

The results obtained have been discussed in the light of formation of inclusion complexes between crown ether and other compounds. From the results obtained from careful experiment above, it has been concluded that the values of stability constant is high in case of crown ether-ethanol complexation. The complex formed is inclusion complexes and the stronger solvation of potassium ion in ethanol results in the formation of strong complex.

An Inclusion compound is a complex compound in which one compound (the "host") has a pit into which "visitor" compound can be suited (1-2). The collaboration between the host and visitor includes only Van der Waals bonding. The meaning of inclusive complexes is wide, reaching out to divert framed between molecules in the crystal lattice in which visitor atoms can fit. Crown ether is the instance of formation of these complexes, which we have studied in the present work.

The values of mass m1 and m2, volume, v1 and v2 for different compounds, q, and ΔH have been collected in Table 1 to Table 4, for the complexation of crown ether with KI in different solvents i.e.CH_3OH, C_2H_5OH and butanol at different temperatures. The values of stability constants or equilibrium constants, K of crown ether with different solvents, the intercept, $\frac{1}{K\Delta H'}$ and the slope $\frac{1}{\Delta H}$ at different temperatures have also been collected at different temperatures.

From the results obtained from careful experiment above, it has been concluded that the values of stability constant is high in case of crown ether-ethanol complexation. The complex formed is inclusion complexes and the stronger solvation of potassium ion in ethanol results in the formation of strong complex.

Key words: Crown ethers, Methanol, Calorimetry, host–guest complex.

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PP-7 High Energy Heavy Ion Irradiated Metal/Semiconductor Devices

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Metal/Semiconductor (n-type & p-type) devices were irradiated with Au(7^+) and Si(8^+) ions of energy ~100MeV with different fluencies (10^{10} – 10^{13} ions/cm^2). Electronic properties have been studied from I-V and C-V characteristics of such devices before and after the irradiation. Hydrogenation of the irradiated devices has also been performed to investigate the hydrogen passivation effect of the irradiation induced defects. The irradiated and hydrogenated devices were annealed up to 400°C and consequently, Infrared spectroscopic studies have been carried out at each annealing temperatures to study the nature of irradiation induced defects. The result has been discussed in the realm of radiation hardness and the conductivity type change of the irradiated and after hydrogenated electronic devices.

Keywords: Swift heavy Ions, Irradiation, Radiation Induced Defects, Hydrogenation

PP-8 Green synthesis of Gold nano-particles by Using Tea extract

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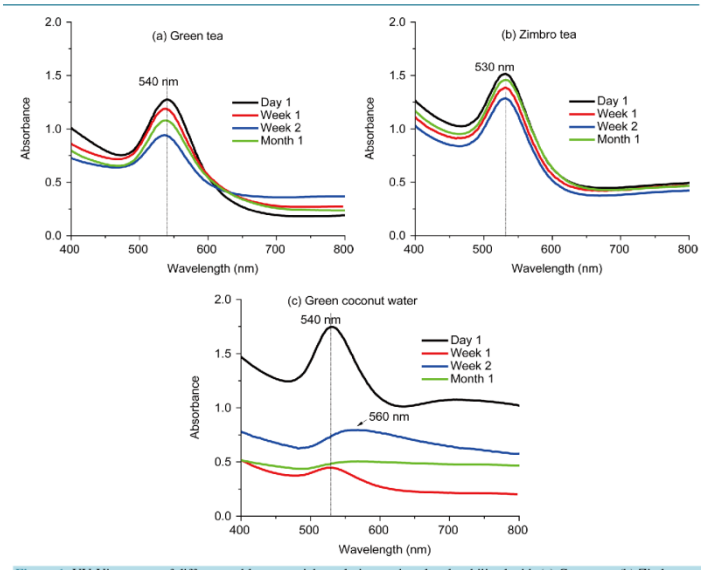
Green synthesis of gold nanoparticles provides much attention about the field of nanotechnology. It is a broad area of research and development activity that has explosively growth globally in the last few decades. Recently world evaluation of current innovation shows much demand of the field of nanotechnology because nanoparticles are used in the catalysis, anticancer, antibacterial, drug delivery and mechanical applications. There are many traditional techniques have been employed in the synthesis of gold nanoparticles such as microwave irradiation, solid state reaction, spray pyrolysis, laser ablation, ultrasound and so on. Recently researchers focused on the green synthesis of Gold Nanoparticles (GNPs) for various applications which requires new approaches for the synthesis and assembling of gold nanoparticles in the large number with size. We record the UV spectra of Gold Nanoparticles using tea extract at from 480 nm to 800 nm.



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PP-9

Design and Study of novel Aspirin analogues

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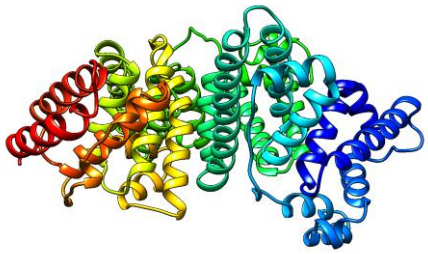
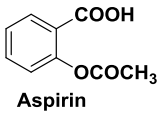
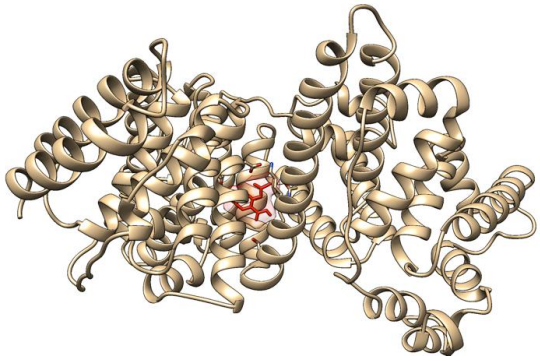
Aspirin and its analogues recognize and interact with macromolecules i.e. proteins, enzymes, DNA/RNA etc. is of great importance in pharmaceutical as well as enrichment of medicinal chemistry. Molecular docking is one kind of bioinformatics tool in which the interaction of one/two or more small molecules to produce the stable complex when those molecules docked in to macromolecules. Binding properties of the ligand and target predicts the 3D-structure of the complex. The whole docking study generates all the possible adducts depending upon the molecular docking software which is also produces score based ranking among the adducts which can be grouped depending upon the algorithm of the software used. In the present program, study of Aspirin analogues and their interactions with proteins has been undertaken. A detailed study of Aspirin analogues and its interactions with the proteins and uses of Aspirin have been studied in detail. We have successfully designed ten chemical compounds as Non-steroidal anti-inflammatory agents. There are 2-3 molecules out of ten molecules are found to interact with protein firmly, and that can be further studied for their anti-inflammatory properties. Aspirin 9 analogue had the highest docking score 4428 and compound 6 had the lowest docking score of 3486. The overall project showed a target based drug design can found to be productive to design small anti-inflammatory agents, and can be used for drug discovery.





Aspirin



Key words: Aspirin, Analogues, anti-inflammatory agent, Docking score.

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PP-10 Developments and Applications of Biochar/Polypyrrole Composites: A Review

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Biochar (BC) is a low-cost carbon-rich material derived from a wide range of agricultural waste and used as promising green energy resource with good efficiency and high durability. BC has dragged its attention in recent years due to high surface area and stable structure. The surface characteristics of BC can be modified by treatment with acid or alkali under optimized conditions. This review focuses on the modification of BC with polypyrrole (PPy) to develop BC/PPy composites. BC/PPy composites are mainly formed by $FeCl_3$ assisted chemical oxidation method. Modified BC gets enriched with many functional groups that increase the surface area, which helps in interaction and adsorption of variety of molecules for application in impurity removal. Other use of BC/PPy is in energy storage field for making supercapacitor electrode and development of modified working electrodes for electrochemical sensing. BC/PPY also composites exhibit an effective, economically viable, environmentally friendly material with good potential to work as for future conducting materials. The present review may provide some useful guidelines for designing of modified BC composites for various potential applications.

Key words: Biochar, Polypyrrole, Biochar Composite

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PP-11 Antimicrobial Assay on Leaves of *Ficus auriculata* Collected From Hills of Almora

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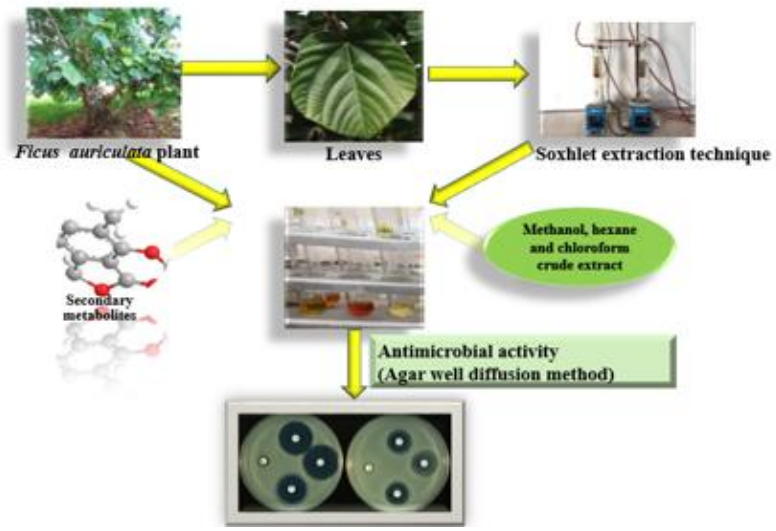
The present study is to evaluate the antimicrobial efficacy of *Ficus auriculata* leaves which was collected from regions of (Almora) Uttarakhand. Plants are highly sessile and dependent on the capacity to production of chemical signal in to environment for defense and communication. Leaves were extracted in methanol, chloroform and hexane by successive soxhlet extraction technique. For antimicrobial assay, activity was done by agar well diffusion method against two human pathogenic bacteria (one gram positive and one gram negative bacteria) i.e, *Escherichia coli* and *Staphylococcus aureus.*The hexane extract of leaves showed the maximum inhibition zone against *E.coli.* (15.7mm) at 800 µg/ml. The plants are the source to produce naturally antimicrobial agents. In future aspects we formulate a antimicrobial multidrug for healthy life of human being and their need.



Keywords: Antimicrobial activity, Ficus, leaves

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PP-12

Assessment of Water Quality Parameters

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Water is very precious substance in our daily lives, not only for drinking and household purposes but huge amount of it used in industrial processes and in agriculture. Water is a commodity essential to all life. Without water, life does not exist. The availability of fresh water supply is also not adequate to meet the demand of increased population and water crisis in all over the world. Industrial development is associated with the disposal of a large number of toxic pollutants and use of chemical fertilizers and pesticides in agriculture are causing diminish of water quality and depletion of aquatic biota. Due to the use of contaminated water from the industries provides many problems to human health. So it was necessary to test water quality parameters. Quality of water generally refers to the water's physical, chemical and biological properties in terms of its suitability for a specified function. The collected sample were analyzed for their parameters like total suspended solid, TDS, conductivity, turbidity, pH, chloride, iron and manganese. These parameters are helping to indicate the level of ground and surface water for drinking and other domestic purpose.

Key words: Water quality parameters; toxic pollutants; surface water.

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PP-13

Study of Wetland Survey in Moradabad City

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The wetland is an area which covers surface with water. The wetlands are of two types and are present in our environment like known as coastal wetland and Inland wetland.. Approximately a 80 wetlands are present in Moradabad U.P where water connect with soil. The soil is saturated with the water and form water lands called, wetlands. The weather also effect in the form of hydrological cycle which determine the development of plants and animals. Wetlands directly impact the aquatic and second of the terrestrial species. The Water directly provides conditions for the favorable growth of specially adapted plants. The hydrophytes and promote the development of wetland. In the study of wetland survey we measured physico-chemical properties of water such as odor, turbidity, pH, temperature and dissolved oxygen. Some time wetland is good / bad for the environment. This is recommended that in Moradabad city. Lakri wetland is not useful because it produce bad odor due to waste water flowing from industries. These wetlands enhance water pollution and soil pollution. On the other hand wetland present in Khushalpur is useful for our environment and useful for agriculture.

Key words: Wetlands, hydrological cycle, ecosystem

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PP-14

Studies on pH, Alalinity and Hardness of Ramganga River

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The Ram Ganga River is situated at Moradabad, Uttar Pradesh. Moradabad is thickly populated and is popular as Brass City. The variety of Chemical processes are carried out in the Brass Industry like polishing and Electro plating , washing of products with acids and lot of applications of sodium hydroxide . The water discharged from domestic usage and small scale industries is discharged in the Sewer system and directly fall in the Ram Ganga River . Due to excess of waste materials the quality of water is deteriorated and water becomes toxic. Such water is severely harmful to fauna and flora and animals .The pH , hardness, alkalinity studies of Ram Ganga water samples have been carried out time to time to maintain an equilibrium between toxic substances. Three sampling stations were spotted for water sample having a distance of 6 Km. The hardness of water is caused due the presence of calcium and magnesium sulfates, chlorides, bicarbonates. Onward the water becomes very hard. The studies showed that samples collected from various sources showed hard water. The pH of the samples is showing objectionable pH range and it shows soluble metals. The metal hydroxides are present are also found in some water samples. It means the water samples are dangerous for drinking. The alkalinity also showed variation in samples. The studies are very using full to explain the quality of water samples.

Key words: pH , Alkalinity and very hard water

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PP-15 Excess Molar Enthalpies of Dibromomethane with Acetonitrile, Furan, Acetophenone and Tetrahydrofuran at T=313.15 K

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Excess enthalpies have been measured for binary liquid mixtures of dibromomethane (CH_2Br_2) (DBM) with acetonitrile, furan, acetophenone ($C_6H_5COCH_3$) and tetrahydrofuran(C_4H_8O) at 313.15 K with the help of Microcalorimeter. The values of excess molar enthalpies are positive for the systems CH_2Br_2 + acetonitrile (CH_3CN), and + furan (C_4H_4O) whereas negative for the system CH_2Br_2 + acetophenone and + C_4H_8O throughout the whole composition range. The results were fitted with the Redlich- Kister equation by means of the least square method and standard deviations were also calculated. These results indicate the occurrence of specific interactions between all these components. Binary systems of CH_2Br_2 with all these compounds are of considerable interest due to occurrence of specific interactions between these components in the liquid state. This is due to presence of two Br and two H atoms in CH_2Br_2, which can thus act as σ-acceptors towards, and be involved in the hydrogen bond formation with CH_3CN, C_4H_4O , $C_6H_5COCH_3$ and C_4H_8O . Latter will act as n-donors. These systems were selected to find out the effect of oxygen atom in aromatic ring (furan), outside the ring (acetophenone), and also to establish the effect of one oxygen (C_4H_8O) in the cyclic ether. Dibromomethane has two equivalent proton donors and can thus form different type of complexes with the above-mentioned compounds. In these systems not only the N----H or O---H or O--Br interactions but interactions between CH_2 groups and Br atoms contribute to excess enthalpy. The high negative values of HE for the system CH_2Br_2 + C_4H_8O indicate the presence of strong specific interaction due to hydrogen bonding between H atom of CH_2Br_2 and lone pair electrons on the oxygen atom of tetrahydrofuran. There is much difference in the values of H E for the system CH_2Br_2 + C_4H_8O and CH_2Br_2 + C_4H_4O though both has one oxygen atom, this is attributed to the fact that C_4H_8O has saturated ring whereas furan unsaturated ring. Saturation of ring in compound makes it more reactive.

Key words: Dibromomethane, partial molar enthalpy, excess enthalpy

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PP-16

Electrochemical Impedance Spectroscopy in Electrochemical Energy Conservation & Storage

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Electrochemical energy conservation is necessary to fulfil global energy demand There is high energy demand in today's world the main energy sources as per 2018 report are petroleum (34%), coal (27%) and natural gas (24%) .Around 85% of world share for fossil fuel serves as the main energy consumption while the non fossil fuel sources are nuclear (4.4%) and others (4%) that reflects the social dependency on fossil fuel to adopt new energy sources .Energy storage is implemented through rechargeable batteries, fuel cells , electrochemical capacitors , and solar cells. The durability of electodes and their electrochemical response is best ascertained through various elecrochemical methods. Electrochemical impendence spectroscopy offers a rapid, clean and reproducible method of investigation of stability of electrodes in a series of saline, microbial and biochemical media. This is also used for studying electrode-solution interface with application in energy storage, corrosion and bio-analysis.

Keywords: Electrochemical energy, Conservation, Storage, Electrochemical Impedance Spectra

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PP-17

Electroanalytical Methods for Quantification and Detection of Biologically Active Molecules

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Biologically active molecules have received growing attention in agricultural and medical sciences over decades. They may range from pesticides to pharmaceuticals, polysaccharides, proteins and nucleic acids. In this context, pesticides offers key role in controlling, preventing, destroying or repelling any organisms that are deemed to be pest. Extensive use of pesticides increases the crop yield but also has adverse effect on environment & human health. On the other hand, excessive use of drugs immune the system that make ineffective towards healing the disease and infections. For such reasons, sustainable method of determination of biomolecules is essential for their effective agricultural and biomedical applications. In this context, the most commonly used separation techniques are gas chromatography and liquid chromatography, mass spectrometry, high performance liquid chromatography that offers analysis and quantification of wide range of biologically active molecules. These techniques require a costly, non mobile apparatus, special training for handling and interpreting results, as well as a special exhaustive sample preparation. Electroanalytical techniques have great susceptibility in the field of detection and quantification of biologically active molecules specially drugs, pharmaceuticals and persticides. They provide information on quantitative content and the mechanisms of their redox behavior along with possible products of decomposition. The equipments used in this technique are mobile, available at affordable cost, execute the precise, accurate and fast quantification and detection of biologically active molecules.

Key words: Electroanalysis, Current status, Biologically active molecules

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Electroanalytical Methods for Quantification and Detection of

PP-18 Amperometric Biosensors in Selective Recognition of Biomolecules

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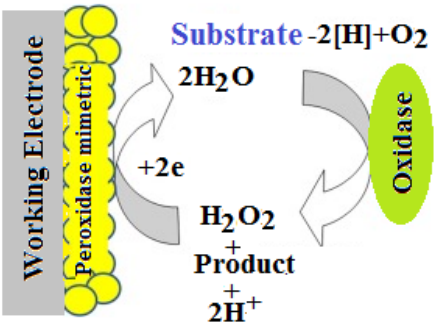
Estimation of concentration of analyte has made essential in high-throughput drug screening, disease diagnosis and treatment, quality control, and environmental monitoring. Research in the field of biosensors, amperometric biosensors (ABs) is believed to be initiated by Clark in 1956 on oxygen electrodes. ABs are the subclass of chemical sensors used for selective recognition of enzymes, proteins, nucleic acids and antibodies. ABs are the self-contained integrated devices based on measurement of current resulting from the oxidation or reduction of an electroactive biological element providing specific quantitative analytical information The most investigated ABs is supposed to be the glucose biosensors wherein glucose oxidase (GOx) catalyze the oxidation of glucose into gluconolacton and H_2O_2 at working electrodes. The present poster may demonstrate the development, application and mechanism of functioning of selected ABs in quantification and detection of various biomolecules



Key words: Amperometric biosensors, , Development, Biomolecules, Estemation

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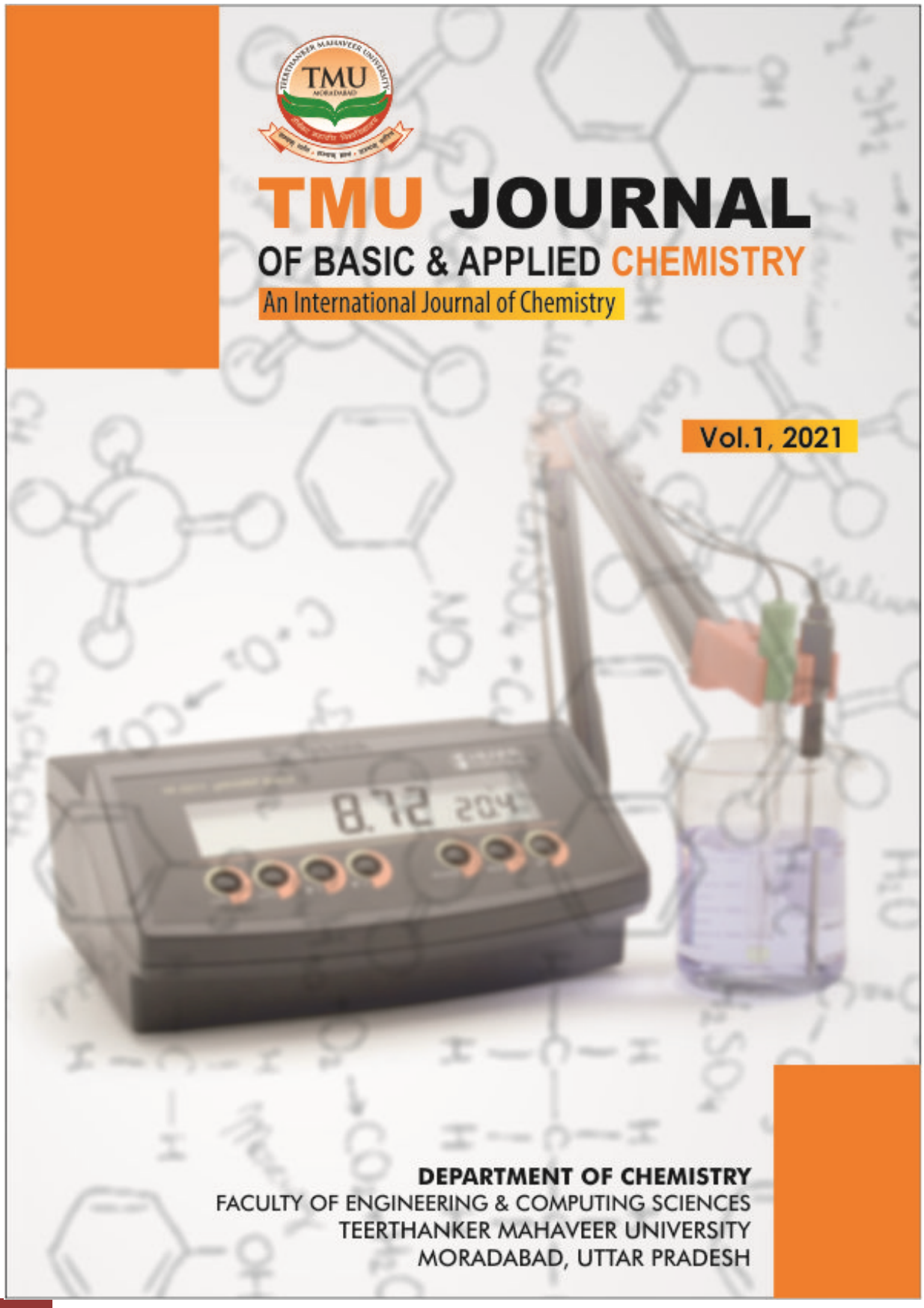

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