Anjuman Islam Janjira's

Anjuman Islam Janjira Degree College of Science

Murud-Janjira, District-Raigad,(MS) India, 402401.

Affiliated to University of Mumbai

Accredited by NAAC at 'B' Grade with CGPA Score 2.35

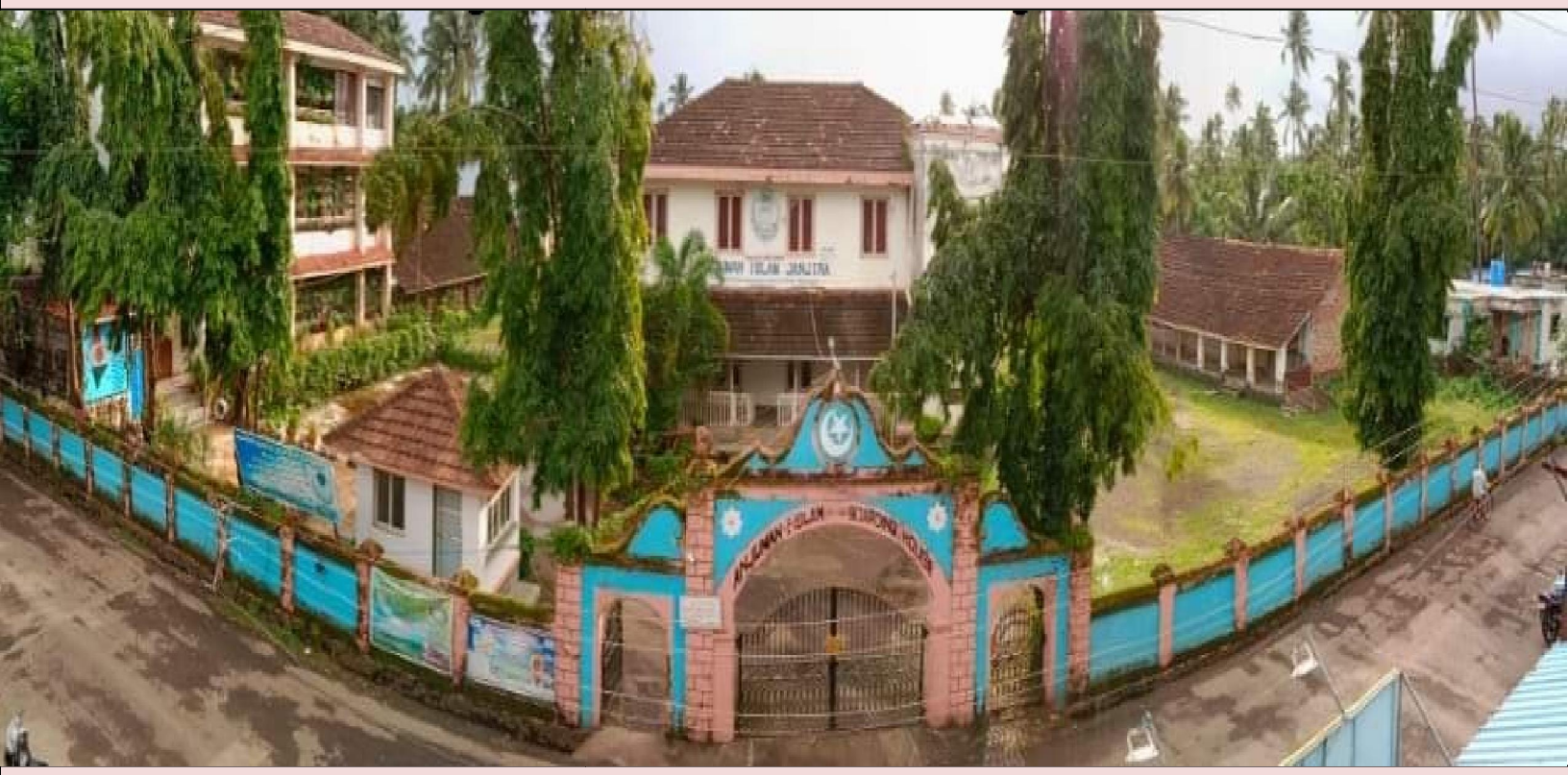
INTERNATIONAL-E-CONFERENCE

ON

RECENT TRENDS IN CHEMICAL SCIENCE, PHYSICAL SCIENCE, LIFE SCIENCE AND COMPUTER TECHNOLOGY (*ICRTCPLCT–2024)*

30th April 2024

SOUVENIR



Organized by

Anjuman Islam Janjira Degree College of Science

Contact No. 703860176

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RECENT TRENDS IN CHEMICAL SCIENCE PHYSICAL SCIENCE LIFE SCIENCE AND COMPUTER TECHNOLOGY

(*ICRTCPLCT–2024)*

30th April 2024

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Anjuman Islam Janjira Degree College of Science

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I/C Principal, A.I.J Degree College

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Contents

Conference Schedule

Sr. No.	Event	Time	Programme
1	Inaugural Function	10:30 am (IST)	All Dignitaries & Participants
2	Welcome Address	10:40am (IST)	Dr. Sajid F. Shaikh
3	Keynote Address	11.00 am (IST)	Prof. (Dr.) Kalyanrao M. Garadakar
4	Invited Talk1	11:45am (IST)	Dr. Mukund Tantak
5	Invited Talk2	12:35pm (IST)	Dr. Habib M. Pathan
8	Vote of Thanks	01:20pm (IST)	Organizers
9	Oral Paper Presentations	01.50 pm (IST)	Participants

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About the Trust and College

Anjuman Islam Janjira is one of the prime and oldest education trusts which was established in the year 1907. For the upliftment of Muslim Community Students and to provide them long lasting valuable education this trust was established localizing Urdu Medium. This trust not only provided school education but also started Technical education.

Then in year 2009, Anjuman Islam Janjira started this Degree College of science in Murud - Janjira.

With our enormous efforts and dedication for providing qualitative education for which we have been accredited by NAAC with B - Grade.

The college offers B.Sc., and B.Sc. in computer Science at UG level and M.Sc. Organic Chemistry & M.Sc. Botany Programs at PG level.

Every year this college organizes different developmental activities and interactive workshops which are very beneficial for students and society.

From last half decade the result of this college for final year is 100%. The enthusiasm of this College not Stop here. In 2022 - 23 year this college got Best College Award along with The Chairman, teacher and nonteaching staff from KAWM (Konkan Alpasankhyank Wichar Manch), Maharashtra.

In near future Research Centre in Chemistry will start.

The students of this college not only they are academically strong but also, we have proven their quality in extra-curricular activities.

Students of this college take part in cultural, sports, social work, different workshops, conferences and research activities.

About Conference

International-E-Conference on recent trends in chemical science, physical, life sciences and Computer technology (ICRT CPLCT-2024) is a brain storming to furnish on opportunity to academics aspiring scientist and research scholars from various discipline of science to interact and present their research execution in their respective field. This conference will be platform to highlight research achievement in the field of chemical science, physical science, life science and Computer Technology. Recent research trends of stated topics will be discussed in ICRTCPLCT-2024.

- **Subthemes for ICRTCPLCT–2024**

1. Green Chemistry
2. Material for electronic devises
3. Synthetic Chemistry
4. Smart Computers
5. Cyber Security
6. Plant Diversity
7. Bioorganic Chemistry
8. Agro-tourism
9. Nanomaterial for future
10. Bio fertilizers & organic farming
11. Mixed Metal Oxides
12. Polymer Chemistry
13. Scope of Computer technology
14. Artificial intelligence
15. Ethical Hacking
16. Medicinal Plants
17. Sensor
18. Biodiversity
19. Semiconductors
20. Environmental Sustainability Electronic & Magnetic Property

MESSAGE BY
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Phone: 02144 - 274058
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Regd. No. B 57(K)
انجمن اِسلام جنجیرہ
جنجیرہ مروڈ، ضلع رائے گڈھ
अंजुमन इस्लाम जंजिरा
जंजिरा मुरुड, जि. रायगड
Ref. No. _____ مراسلہ نمبر
Date: _____ تاریخ

Message by Executive Committee

It is indeed pleasure to know that Anjuman Islam Janjira Degree College of Science, Murud-Janjira, Raigad, Maharashtra India has taken lead to organize first International e-conference on 'Recent Trends in Chemical Science, Physical Science, Life Science and Computer Technology' (ICRTCPLCT–2024) on 30th April 2024 and brings out a souvenir to mark the occasion.

We hope this conference will encourage the young scientist, aspirant research scholars to archive their goal in near future. We congratulate Chairman & College Development Committee team members, Principal, Convener, Co- convener, Secretary for organizing this International E-Conference.

We wish best of success for the Conference.

Vice President

Anjuman Islam Janjira

MESSAGE BY
COLLEGE DEVELOPMENT COMMITTEE
Anjuman Islam Janjira Degree College of Science

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Mr. S. Zainuddin Kadiri

Member
Mr. Imran Malik

Member
Mr. Ismail Shaikh

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Mr. Tausif Fattey

Member
Mr. A. Latif Pathan

ANJUMAN ISLAM JANJIRA
DEGREE COLLEGE OF SCINCE
(Affiliated to University ofMumbai)
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Phone : 7038601376 / 9270083578

Anjuman Islam Janjira Established In 1907

NAAC Accredited With 2.35 CGPA B Grade

Best College Award 2019-20 By Jolly Club Raigad

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CDC Member

TAUSIF I. FATTEY
CDC Member

DR. SAJID SHAIKH
I/C. Principal

Ref. No. AIJDCM/ Date:

Message from College Development Committee

Anjuman Islam Janjira Degree College of Science, Murud-Janjira, Raigad was established in 2009 the first in Taluka. The entire team of Anjuman Islam Janjira successful development the campus. Infrastructure & college wend through NAAC Accreditation front cycle in 2019 with 'B' grade. Either this college only cathead undergraduate education in the chemistry, Botany & Computer Science. From A.Y. 2021-22, this college start M. Sc Chemistry & M. Sc. Botany. We have also received permission of Research Center in Chemistry.

Being a chairman and by entire team of college development committee, we feel, provide that this college is organizing International e- conference on 'Recent Trends in Chemical Science Physical Science Life Science and Computer Technology' (ICRTCPLCT- 2024) on 30th April 2024. Research section & Performa from various part will participants in this conference.

We feel that this conference will be useful to all buddy researchers. There will be useful academic work will be short and discussion in the conference.

This student only staff keeping stiff of this college will also be benefited from the conference.

We all thankful to concern staff involved in organizing in conference & wish a best of success for the conference.\

Chairman
Anjuman Islam Janjira Degree College of Science

MESSAGE FROM ORGANIZING COMMITTEE

It’s our great pleasure and honor for us to welcome you all to the International Conference on "Recent Trends in Chemical Science Physical Science Life Science and Computer Technology (ICRTCPLCT – 2024)" on 30th April 2024.

We are very happy that this institute is bringing the distinguished scientists, researchers and budding research scholars together for this conference. We hope these efforts of this institute will explore the recent innovations and provide new directions for the research in this area.

On behalf of organizing committee, we thank and welcome to all the persons of eminent scientists from different areas of Chemical Science, Life Science, Physical Science and Computer Science from different international and national institutions, faculties from various colleges and research students.

We also extend our sincere thanks to College Development Committee and The Principal of this institute for their constant support.

Thanks to all.

MESSAGE BY HON'BLE

Dr. Sajid F. Shaikh

I/C Principal

Anjuman Islam Janjira Degree College

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DR. SAJID SHAIKH
I/C. Principal

Ref. No. AIJDCM/ Date:

Message from Principal

It gives me immense pleasure to welcome honorable delegates & participants on the occasion of International e-conference on 'Recent Trends In Chemical Science Physical Science Life Science And Computer Technology' ICRTCPLCT-2024) organized by this college. It is intention of this college to provide platform to the research scholars in the field of science & technologies to tackle the recent achievement through the present conference organised on 30th April 2024.

This college is one of the Non grant Minority institute wear majority near about 80% Muslim girls students take education since 2009. This college focus on the honest development of students and also make society responsible & cultured citizens. This college always trine to inculcate value added education by organizing different activities, workshop, seminar and conference.

I think so this conference will above help to buddy research to give valuable technology and provide quality research for nations development.

I again welcome all the delegates for this international e-conference & look forward to most successful discussion.

I/C Principal
Dr. Sajid F. Shaikh
Anjuman Islam Janjira Degree College of Science

MESSAGE BY HON'BLE
Dr. Sonali S. Patil

Janata Shikshan Mandal's

Smt. Indirabai G. Kulkarni Arts College, J. B. Sawant Science College and
Sau. Janakibai Dhondo Kunte Commerce College and
J. S. M. College of Arts, Science & Commerce (Junior College)
Late Nanasaheb Kunte Educational Complex
Alibag, Dist. Raigad. Pin : 402 201. (Maharashtra)

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E-mail : principal_jsm@rediffmail.com
jsmcalibag@gmail.com
web site : www.jsmalibag.edu.in
Index No. : J/17.07.008

I/c. Principal : Dr. Sonali S. Patil (M.Sc., SET, Ph.D.)

President : Adv. Gautam P. Patil

Permanently Affiliated to University of Mumbai. Included under section2 (f), 12(B) of the U.G.C. Reaccredited by NAAC with 'B' Grade(CGPA:2.08)
Mumbai University Best College Award 2018 - 2019

Dr. Sonali S. Patil
Principal
J.S.M. College Alibag Raigad

Intellectual deliberation is crucial to education that is socially productive.

It is an occasion of immense pride for Anjuman Islam Degree College, Janjira takes another step in this direction. I congratulate the college for organising an International E-conference on theme "Recent Trends in Chemical Science, Physical Science, Life Science and Computer Technology.

Such conferences will definitely help in nourishing the research mind. I appreciate the efforts of whole team behind this conference and wish them best wishes for the success of the event.

Principal
Smt. Indirabai G. Kulkarni Arts
J. B. Sawant Science and
Sau. Janakibai Dhondo Kunte Commerce
College, Alibag-402 201, Dist. Raigad

MESSAGE BY HON'BLE
Dr. Kalpana P. Jain

Prof. A. E. Lakdawala
The Founder & Chairman

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OF ARTS, SCIENCE & COMMERCE
Empowerment through Value Education
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Adm. Office Tel. : 9136312913 / 9167559524 • Email : royalcollege_office@yahoo.com

Message

International E-Conference organized by Anjuman Islam Janjira Degree College on "Recent Trends in Chemical Science, Physical Science, Life Science and Computer Technology", is the golden opportunity for researchers to interact their views in the respective fields. The conference through its subthemes practically covers all the branches of Science. I hope this conference stimulates our intellect and the deliberations will be fruitful, useful for the development of society.

I wish all the best for the grand success of conference.

ROYAL COLLEGE OF ARTS SCI & COM ★ DIST. THANE

Prof. Dr. Kalpana Patankar Jain
Principal, Royal College of Arts, Science and Commerce, Mira Road,
Member, BOS (Chemistry) University of Mumbai

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Organized by
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Nanophotocatalyst for Environmental Remediation

Prof. (Dr) K. M. Garadkar,
Professor of Physical Chemistry, Nanomaterials Research Laboratory, Dept. of Chemistry, Shivaji University, Kolhapur M. S. India
kmg_chem@unishivaji.ac.in

Abstract
Removal of toxic organics has been widely studied. Over the previous decades, Photocatalysis has been a fascinating and rapidly expanding area of research. The photocatalysis process can successfully and completely turn organic pollutants into inorganic substances; hence, it acts as a significant application diagnosis for decontaminating liquid waste. TiO_2 nanocomposites were reported as a novel photocatalyst with UV and visible light-assisted irradiations highly efficient visible light driven p-type semiconductor and is a prospective sensitizer to sharpen wide band gap semiconductors Low bandgap material has low photocatalytic activity due to its limited efficiency of light absorption, slow rate of charge transfer, and high probability of recombination of e–/hþ pairs. Several methodologies have been developed to further enhance its photocatalytic operation for specific industrial applications. TiO2 is a well-known efficient photocatalyst widely used to protect the environment. It is still the most promising photocatalyst due to its exceptional properties such as low cost, non-toxic, inert, high efficiency and photostability. The combination of two semiconductors with an appropriate band position is an efficient way to successfully design and produce the semiconductor photocatalyst because it can significantly improve the efficiency of photogenerated e–/hþ pairs and the transfer of interfacial charge. A combination of two semiconductors is created with different physical and chemical properties as well as a special interface. We have developed many visible active nanocomposite photocatalysts which is very effective under sunlight. The composite like TiO_2-gC3N4, TiO_2-C TiO2—ZnO are the photocatalysts synthesised by eco-friendly methods.

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Natural Product Inspired Drug Discovery: Design and Synthesis of Indole based Tubulin Interacting Anticancer Agents

Mukund P Tantak
Moffitt Cancer Center, Tampa, Florida, USA

Abstract
Natural products and their structural analogues have historically made a major contribution to pharmacotherapy, especially for cancer diseases. Nevertheless, natural products also present challenges for drug discovery, such as technical barriers to screening, isolation, characterization and optimization, which contributed to a decline in their pursuit by the pharmaceutical industry from the 1990s onwards. In recent years, several technological and scientific developments including improved analytical tools, genome mining and engineering strategies, and microbial culturing advances are addressing such challenges and opening up new opportunities.
Indole alkaloids represent a large subset of natural products, with more than 4100 known compounds. The most of those alkaloids are biologically active, with some exhibiting excellent antitumor, antibacterial, antiviral, antifungal, and antiplasmodial activities. Consequently, the natural products of this class have attracted considerable attention as potential leads for novel therapeutics and are routinely isolated, characterized, and profiled to gauge their biological potential. However, data on indole alkaloids, their various structures, and bioactivities are complex due to their diverse sources, such as plants, fungi, bacteria, sponges, tunicates, and bryozoans; thus, isolation methods produce an incredible trove of information. The situation is exacerbated when synthetic derivatives, as well as their structures, bioactivities, and synthetic schemes, are considered. Design, synthesis and anticancer potential of natural product inspired indole-based structural analogues will be discussed in the conference.

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Recent Advances in Solar Energy Materials and Devices

H. M. Pathan
Department of Physics, Savitribai Phule Pune University, Pune - 07

Abstract
Recent advances in solar energy materials and devices showcase a dynamic landscape of innovative technologies that are reshaping the solar energy industry. Perovskite solar cells have emerged as a frontrunner, boasting impressive efficiency levels exceeding 25% in lab-scale devices. Tandem solar cells, which combine different materials like silicon and perovskites, have demonstrated efficiencies surpassing 29%, outperforming single-junction devices. Organic and hybrid solar cells offer cost-effective and flexible energy conversion solutions, with continuous improvements in materials and manufacturing techniques driving efficiency gains. Quantum dot solar cells, leveraging semiconductor nanocrystals for tailored light absorption, hold promise for high efficiencies exceeding 16%, with ongoing research focusing on stability and scalability. Dye-Sensitized Solar Cells (DSSCs) and Concentrator Photovoltaics (CPV) are also making strides in efficiency, stability, and energy output per unit area. These advancements underscore the relentless pursuit of researchers and scientists to optimize solar energy technologies for enhanced performance, cost-effectiveness, and scalability in the quest for a sustainable energy future.

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The Role of Biodiversity in Ecosystem Resilience to Climate Change

Ishwar Baburao Ghorude* & Kirti Sadhurao Niralwad**
*Department of Environmental Science, Kohinoor Arts, Commerce & Science College, Khultabad, Chhatrapati Sambhajinager.
**Department of Chemistry, Nutan Mahavidhyalaya, Selu, Parbhani
ghorade.ishwar@gmail.com

Abstract
Climate change poses unprecedented challenges to global ecosystems, threatening their stability, function, and the services they provide to humanity. Understanding how biodiversity influences ecosystem resilience to climate change is paramount for effective conservation and management strategies. This paper reviews current research on the complex interplay between biodiversity and ecosystem resilience in the face of climate change. We explore the mechanisms by which biodiversity, including species diversity, functional diversity, and genetic diversity, enhances ecosystem resilience by buffering against environmental variability, promoting ecosystem stability, and increasing adaptive capacity. Empirical evidence from diverse ecosystems and taxa underscores the critical role of biodiversity in maintaining ecosystem functioning, regulating biogeochemical cycles, and supporting ecosystem services under changing climatic conditions. Furthermore, we examine the synergistic effects of biodiversity loss and climate change on ecosystem vulnerability, highlighting feedback loops and tipping points that may lead to abrupt ecosystem shifts and irreversible losses of biodiversity. We discuss the implications of these findings for biodiversity conservation, ecosystem management, and climate change adaptation strategies. Ultimately, this synthesis underscores the urgent need for integrated approaches that prioritize biodiversity conservation as a cornerstone of ecosystem resilience-building efforts in the face of accelerating climate change. By recognizing and harnessing the inherent capacity of biodiversity to enhance ecosystem resilience, we can foster more robust, adaptive, and sustainable ecosystems capable of weathering the challenges of a changing climate.

Key words: Biodiversity, Climate change, ecosystem, sustainability & vulnerability.

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"Catalyst Evolution": Journey with Mixed Metal Oxides.

[1]Shaziya Mohammed Irfan Momin and [2]Zainab Ansari
[1]Associate Professor, Department of Chemistry,
[2]UG Research Scholar
G. M.M omin Women's College, Bhiwandi, Dist Thane, Maharashtra, India

Abstract
Two or more different kind of metal cation containing oxides are known as Mixed metal oxides (MMOs). It is the layer of precious metals oxides intermixed with titanium oxides. MMOs are now widely accepted in every field such as academic research, chemical industries, etc. In the present article, MMOs in green chemistry, important organic reactions, recent applications, etc. are well presented. MMOs catalyst was not developed by 1970s, but later rapid development took place due to XRD, NMR, FTIR, etc. and is still in progress. Future of MMOs are wide and there is a need of further study on MMOs.

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Assessment of Water Quality in Mithi River: Based On Fungi and Phytoplankton Population

Ankita Raul, Neha Verma, Sakshi Surve, Siddhi Subhedar, Sanjana Pawar, Sahil Parab, Mayuresh Mhatre and Saurabh Bhogale*
Department of Biotechnology,
Kirti M. Doongursee College of Arts, Science and Commerce Autonomous, Dadar, Mumbai

Abstract
The present investigation of Mithi river, Mumbai was performed by analyzing various physicochemical parameters and water quality index and fungal and phytoplankton diversity for the evaluation of the deterioration level. The study was carried out for one month period during January 2024. Samples were collected every sunday from six stations viz. Near Vihar Lake, Aarey colony Goregaon, Marol Andheri, Vakola Santacruz, BKC and Mahim creek. The results obtained from different parameters studied were Temperature (33°C-24°C), pH (9.7-6.1), EC (974-26µs/cm), TDS (91-435 ppm), Salinity (0-20.5) and DO (0-1.7). Certain species of fungi were also isolated from Mithi river from which majorly there is indication of presence of *Aspergillus and Rhizopus.* SWI shows the adverse effect of pollution on Mithi river. WQI of Mithi River of station 1 and 2 showed good quality of water but as the river flows through densely populated city of Mumbai the water quality of Mithi river shows deterioration.
Abbreviations: pH- Potential of Hydrogen, DO- Dissolved Oxygen, BOD- Biochemical Oxygen Demand, EC-Electrical Conductivity, TDS-Total Dissolved Solids, SWI- Shannon Wiener Diversity Index, WQI-Water Quality Index.

Keywords: Mithi river, Water sample, Physico-chemical parameters, Fungi, Phytoplankton, Pollution.

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Synthetic Strategies for Drug Discovery and Development

Kirti Sadhurao Niralwad
Department of Chemistry, Nutan Mahavidhyalaya, Selu, Parbhani
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Abstract
Synthetic chemistry plays a pivotal role in drug discovery and development, serving as a cornerstone for the synthesis of bioactive small molecules with therapeutic potential. This paper explores innovative synthetic strategies employed in the pursuit of new drugs, focusing on diverse approaches to chemical synthesis that facilitate the discovery and optimization of lead compounds for pharmaceutical applications. We investigate the principles of diversity-oriented synthesis, fragment-based drug design, and rational drug discovery, elucidating how synthetic chemists harness these strategies to access structurally diverse compound libraries with favorable pharmacological properties. Integration of synthetic chemistry with computational methods, high-throughput screening, and structure-activity relationship studies enables rapid identification of lead compounds and optimization of their potency, selectivity, and pharmacokinetic profiles.
Through case studies of successful drug development campaigns, we highlight key synthetic transformations, such as strategic bond formations, stereochemical control, and functional group manipulations, that are essential for accessing biologically relevant chemical space and achieving desired pharmacological outcomes. Furthermore, we discuss the importance of synthetic chemistry in addressing emerging challenges in drug discovery, including drug resistance, target validation, and ADMET (absorption, distribution, metabolism, excretion, and toxicity) considerations. This synthesis underscores the pivotal role of synthetic chemistry in driving innovation and progress in drug discovery and development, emphasizing the interdisciplinary nature of modern pharmaceutical research and the collaborative efforts of chemists, biologists, pharmacologists, and clinicians. By leveraging the power of synthetic strategies, we can accelerate the translation of promising drug candidates from bench to bedside, addressing unmet medical needs and improving human health outcomes.

Keywords: Drug, Development, Synthesis & Pharmacology.

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Phytochemical Studies of Some Edible Fruits

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Abstract
Wild edible plants are a traditional source of daily nutrition in addition to regular diet. Local people of Maharashtra, India utilize large number of wild edible plants sustainably. The purpose of this study was to investigate the phytochemical composition of 4 edible wild fruits. It was collected from local market. The phytochemicals estimation is screened by using aqueous solvent. The wild and edible fruits such as *Aegle marmelos, Limonia acidissima, Psidium guajava* and *Thai guava.* The phytochemicals like protein, carbohydrates, phenol, tannin, starch, flavonoids, flavonols and glycosides were estimated. The results show the presence of phytochemical constituent was present in aqueous extract. We recommend further studies to determine if the presence of a particular class of phytochemicals would translate into the bioactivity capability of these edible fruits.

Keywords: Edible fruits, *Aegle marmelos, Limonia acidissima, Psidium guajava*

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Green Choices: A Guide to Selecting Solvents and Techniques.

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Abstract
Increased regulations and growing concern for the environment have made finding green solvents for extractions, separations, formulations, and reaction chemistry a critical area of research. To address this, several general-purpose solvent selection guides have been developed to minimize the use of hazardous solvents. This review focuses on the role of these guides, exploring their commonalities and variations. It delves into how these guides can be most effectively utilized to enhance the environmental friendliness of chemical processes, specifically in laboratory organic synthesis and the pharmaceutical industry.

Keywords: Sustainable solvents, Solvent selection guide, Bio-based solvent, Green chemistry metrics.

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Methods of Synthesis of Triazole Derivatives: Review

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Abstract

A triazole is a five-member heterocyclic compound having three nitrogen atoms and two carbon atoms with molecular formula $C_2H_3N_3$. Triazoles exhibit substantial isomerism, depending on the positioning of the nitrogen atoms within ring. Due to structural characteristics, both 1, 2, 3 and 1, 2, 4- triazoles are able to undergo different electrophile and nucleophile substituents. Triazole derivatives have a wide range of applications across various fields including medicinal chemistry, agriculture, materials science, and chemical research. Therefore, this review focuses on the structures, synthesis, and applications in the field of medicine.

Keywords: Agricultural, chemical research, Isomerism, material science, medicine.

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Synthesis and Biological Activities of Imidazole Derivatives

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Abstract
Imidazole and its derivatives constitute a significant class of heterocyclic compounds with diverse biological activities, making them attractive targets in medicinal chemistry. This research paper provides an in-depth analysis of the synthesis methods employed for the preparation of imidazole and its derivatives, along with an exploration of their biological activities. Various synthetic routes, including traditional and modern methodologies, are discussed in detail, highlighting their advantages and limitations. Furthermore, the biological activities exhibited by imidazole derivatives, such as antimicrobial, anticancer, and anti-inflammatory properties, are thoroughly examined, providing insights into their potential applications in drug discovery and development.

Keywords: Imidazole, heterocyclic compounds, biological activities, antimicrobial, anticancer, anti-inflammatory, drug discovery.

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Design & Testing of a Spirometer for a pulmonary Analysis of Different Age Groups

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Abstract
Chronic Obstructive Pulmonary Disease (COPD) is considered as one of the greatest life-threatening syndromes worldwide, and it is estimated that over 600 million are afflicted with the disease. The objective of this study is to design and develop a spirometer which is functionally as well as cost effective. Authors have planned to keep the cost below 100$. The proposed spirometer has four main components – spirometer body, Circuitry, Computer and Software. The spirometer body includes a differential pressure sensor and a pilot tube through which the patient blows. The output is transmitted to the microcontroller. The analog to digital convertor within the microcontroller is employed for the conversion. Then the pressure difference output from the pressure sensor is converted into mass flow rate which is subsequently converted into volume. The microcontroller relays this data via a Universal Serial Bus (USB) connection to a computer which transmits this to the JavaScript based graphical user interface. This interface is used to display the flow and volume data in real-time. Then this experiment has proceeded further with this study by testing it on people. A spirometric test was conducted on 20 individuals of different ages, heights and gender. Their test results were tabulated and inferences on their breathing condition were drawn accordingly. The results show that lung capacity decreases with age. Although the current design is not able to meet clinical accuracy, with professional manufacturing, such a design could yield a device capable of meeting clinical accuracy without a significant increase in price.

Keywords: Chronic obstructive pulmonary disease; Microcontroller; Spirometer; Universal Serial Bus.

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Photochemical Modification of Graphene Oxide for Enhanced Removal of Heavy Metal Ions from Industrial Effluents

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Abstract
This research paper delves into the efficacy of photochemically modified graphene oxide (GO) for the enhanced removal of heavy metal ions, specifically lead (Pb), cadmium (Cd), and chromium (Cr), from synthetic industrial effluents. The objective was to investigate whether photochemical modifications could augment the adsorptive properties of GO, making it a more effective and selective adsorbent for heavy metals prevalent in industrial wastewater. A series of batch adsorption experiments were designed and conducted, simulating industrial effluents with varying concentrations of the target heavy metals. The adsorption data were analyzed using the Langmuir isotherm model to quantify the adsorption capacity and understand the nature of the adsorption process.
The key findings revealed a significant improvement in the adsorption capacities of photochemically modified GO, with maximum adsorption capacities reaching 225 mg/g for Pb, 85 mg/g for Cd, and 115 mg/g for Cr. These results underscore the enhanced efficacy and selectivity of modified GO towards specific heavy metals, attributed to the introduction of functional groups during the photochemical modification process. The study fills a critical gap in the literature by demonstrating the potential of photochemical modifications to tailor GO for specific environmental remediation applications.
The implications of this research are far-reaching, offering a novel approach to the development of more efficient and selective adsorbents for the treatment of heavy metal-laden industrial effluents, thereby contributing to the advancement of sustainable water purification technologies.

Keywords: Photochemical Modification, Graphene Oxide, Heavy Metal Removal, Industrial Effluents, Adsorption Capacity, Environmental Remediation.

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Green Synthesis of Schiff Bases: A Sustainable Approach for Versatile Compounds

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Abstract
In the 19th century, Hugo Schiff reported the first synthesis of Schiff bases (imines). A Schiff base is considered to be an aldehyde analogue with a C=N group (azomethine group). Schiff bases, known for their diverse applications in medicinal, biological, and materials science, have traditionally been synthesized through conventional methods involving harsh chemicals and solvents, often leading to environmental concerns. However, with the growing emphasis on sustainability and green chemistry principles, researchers have shifted their focus towards developing eco-friendly synthetic routes for Schiff bases. This review paper aims to provide an overview of the recent advancements in the green synthesis of Schiff bases, focusing on various environmentally benign methodologies, catalysts, and substrates utilized in their preparation. Additionally, the applications and properties of Schiff bases synthesized via green routes will be discussed, highlighting their significance in sustainable chemistry.

Keywords: Schiff's base, Green synthesis, sustainable chemistry, catalysts, eco friendly

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Synthesis of aza BODIPYs Porphyrin Moieties using Zinc Porphyrins

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Abstract
BODIPY fluorophores dyes are well studied for their uniquely small Stokes shifts, narrow absorption bands, sharp emissions, high fluorescence quantum yields, and excellent chemical and photostability. All these desirable properties makes BODIPY fluorophores attractive as tools in a variety of applications, for example, in biochemical labeling, light-emitting devices, supramolecular fluorescent gels, light harvesting systems, and as sensitizers in **Dye-sensitized solar cells (DSSC)**. Conjugation of BODIPY framework shifts the absorption of these dyes in NIR region which makes them highly selective for nonlinear optics (NLO) application. As BODIPY dyes are synthesized with most of the times with organic solvents and it becomes difficult to study their in vivo studies as fluorescent sensors and biolabels. Attemps are made to make water soluble fluorescent probes and it's in high demand. Using cesium carbonate as base we can synthesize the pyridine aza BODIPY oligomer using greener methods of synthesis. Now this azaBODIPY with attached pyridines can be used for the synthesis of azaBODIPY Porphyrin moieties.

Keywords: *BODIPY trimer, pyridine, Ethanol, NIR Dyes, Zn porphyrin*

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"Formulation and Comparative Analysis of Cosmetic Products"

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MGMU, Institute of Bioscience and Technology, Chh. Sambhajinagar

Abstract
Herbal cosmetics are natural cosmetics in which herbs are being used in crude or extract form. Herbal cosmetic products contain natural antioxidants like vitamin C and other minerals. Herbal ingredients are more effective than synthetic ones. There is an increasing demand for herbal beauty products, and herbal products. To treat skin, and hair issues. Herbal extracts are primarily incorporated into beauty products. Herbal ingredients that protect skin from UV rays and pollution include vitamins, witch hazel, willow herb, green tea extract, and botanical extracts. All of these factors will increase the demand for herbal beauty products. The research delves into the formulation and benefits of herbal cosmetic products, specifically focusing on herbal lip balm, and moisturizer. The study emphasizes the utilization of natural ingredients derived from medicinal herbs, and essential extracts. For the herbal lip balm, the focus was on providing natural healing for soft and healthy lips, while the herbal hair serum aimed at nourishing and revitalizing hair, and the moisturizer aimed at hydrating and rejuvenating the skin. The research involved rigorous formulation experiments, incorporating various botanical elements, and assessing their efficacy, sensory appeal, and environmental sustainability. Herbal Lip Balm. The herbal lip balm research emphasized the significance of natural ingredients in lip care. The study explored the healing properties of herbs and essential oils, creating a soothing and effective solution for chapped lips. Special attention was given to user experience, ensuring pleasant texture, the lip balm's antioxidant and antimicrobial properties were investigated, highlighting its role in protecting lips from environmental stressors. Herbal Hair Serum. The herbal hair serum research focused on revitalizing hair health. Strengthens hair follicles, and promotes hair growth. The study also considered the serum's ability to combat hair damage, enhance shine, and manage frizz. Environmental sustainability was a key consideration, emphasizing the use of ecofriendly packaging and sustainable sourcing of ingredients. Herbal Moisturizer. The study focused on the moisturizer's ability to maintain skin elasticity, improve texture, and promote a healthy complexion. Sustainable practices were integrated, ensuring the product's environmental impact was minimized in conclusion. The formulations developed for herbal lip balm. The studies affirm that herbal cosmetics, when thoughtfully formulated, can outperform their synthetic counterparts while minimizing environmental harm. Emphasizing the importance of sustainability, and user experience. As consumers continue to seek natural, holistic approaches to personal care, herbal lip balm, and moisturizer stand out as compelling choices

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"Advancements in Synthesis, Characterization, and Applications of Vanadium Pentoxide (V_2O_5): A Comprehensive Review"

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Abstract
This review provides an extensive examination of vanadium pentoxide (V_2O_5), highlighting its significance due to its versatile properties and applications. Various synthesis techniques, including sol-gel, hydrothermal, chemical spray deposition, solvothermal, micro-oven process, polyol process, rf-magnetron sputtering, thermal evaporation, and thermal decomposition, are thoroughly discussed along with their specific advantages and tailored approaches. Characterization methods such as X-ray diffraction (XRD), X-ray photoelectron spectroscopy (XPS), scanning electron microscopy (SEM), UV spectroscopy, Raman spectroscopy, and dielectric constant measurements are explored in detail, offering valuable insights into the structural, optical, and electrical characteristics of V_2O_5. Additionally, the review delves into the diverse applications of V_2O_5 in gas sensing, supercapacitors, and other fields, underscoring its potential across a wide spectrum of scientific and technological domains.

Keywords: Vanadium pentoxide (V_2O_5), synthesis methods, characterization techniques, X-ray diffraction (XRD), X-ray photoelectron spectroscopy (XPS), scanning electron microscopy (SEM), UV spectroscopy, Raman spectroscopy, dielectric constant, gas sensing, supercapacitors, materials science, nanotechnology.

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Evaluation of Quality of Water of Certain Beaches in Mumbai Region, Maharashtra with the Perspective of Climate Changes

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Abstract
Water is one of the most indispensable element since it aids in various tenacities at the native as well as commercial level. Precisely for native purposes quality of water is a matter of great concern. Hence the evaluation of the quality of water has a very high relevance especially in modern times when there is a lot of scarcity of pure water. One of the resolution is converting the water of the beaches into drinking water by using techniques such as De-salination, Reverse Osmosis. The quality of water of these beaches is always under scrutiny since they are of tourist attraction, hence regular inspection of quality of water is of immense importance. Present study involves the assay of water samples from the certain beaches such as Versova, Dadar & Silver located in the Mumbai region. The water samples were collected at quarterly intervals and subjected to testing for the various physico-chemical factors such as TDS, DO, pH, color, electrical conductivity, COD, Total hardness, alkalinity through chemical and instrumental techniques. Present analysis suggests higher level of pollution of the water bodies with respect to its conversion for the use in domestic purposes. As per the available standards the present study reveals that the flora and fauna in this area are declining due to rise in pollution levels thus jeopardizing the environment. The present study incorporates the relative approach towards water quality from different locations so as to have methodical approach towards increasing the quality of water.

Keywords; De-salination, reverse osmosis, physico-chemical factors, Chemical and Instrumental techniques, .

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"Progress in DNA Sequencing Technology: Recent Breakthroughs and Future Prospects"

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Abstract
In the dynamic field of DNA sequencing, continuous advancements in science and technology drive progress. Notably, recent developments have focused on the refinement of techniques and the introduction of innovative tools to enhance sequencing capabilities. For instance, Michael's work in 2005 showcased the integration of microfluidic separation platforms into Sanger sequencing methods, marking a significant milestone in the field. Furthermore, Jay A.'s research in 2008 contributed to the optimization of dideoxy sequencing protocols, further improving the efficiency and accuracy of DNA sequencing processes. Additionally, the pioneering work of Sanger and subsequent reports by Clyde A. Hutchinson in 2007 introduced novel techniques such as plus and minus sequencing, expanding the repertoire of available sequencing methods. Moreover, advancements have been made in the sequencing of methylated DNA and the investigation of DNA and RNA protein interactions, as evidenced by George M. Church's seminal work in 1988. This review endeavors to synthesize and present a comprehensive overview of these cutting-edge techniques and their implications for DNA sequencing methodologies.

Keywords*:* DNA sequencing, RNA, Application, Techniques and Scope.

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A Comprehensive Review on its Physiological, Ecological, Phytochemical and Pharmacological Perspectives of Neolamarckia cadamba

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Abstract
Research on Neolamarckia cadamba, or "kadam", has been in trend till now; considering its various immunomodulatory, anti-microbial, anti-diabetic, anti-oxidant, and other medicinal properties. It can be useful in developing various preventative therapies and disease-curing strategies around the world. Even though profound research investigations have been conducted on Neolamarckia cadamba, or "kadam", for its use in ailment treatments, a wise understanding of the physiological, ecological, phytochemical, and pharmacological behaviour of "kadam" has to be addressed. This paper presents a comprehensive survey of various studies that have been reported on physiological, ecological, phytochemical, and pharmacological behaviour with the same objective. This review will provide researchers with a clear onset of the importance of medical values discovered in the cadamba plant.

Keywords: Neolamarckia cadamba, Physiological, Ecological.

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Recent trends in Specialty Pharma Business Model

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, Anjuman Islam Janjira Degree College of Science, Murud – Janjira.

Abstract
The recent rise of specialty pharma is attributed to its flexible, versatile, and open business model while the traditional big pharma is facing a challenging time with patent cliff, generic threat, and low research and development (R&D) productivity. These multinational pharmaceutical companies, facing a difficult time, have been systematically externalizing R&D and some even establish their own corporate venture capital so as to diversify with more shots on goal, with the hope of achieving a higher success rate in their compound pipeline. Biologics and clinical Phase II proof-of-concept (POC) compounds are the preferred licensing and collaboration targets. Biologics enjoys a high success rate with a low generic biosimilar threat, while the need is high for clinical Phase II POC compounds, due to its high attrition/low success rate. Repurposing of big pharma leftover compounds is a popular strategy but with limitations. Most old compounds come with baggage either in lackluster clinical performance or short in patent life. Orphan drugs is another area which has gained popularity in recent years. The shorter and less costly regulatory pathway provides incentives, especially for smaller specialty pharma. However, clinical studies on orphan drugs require a large network of clinical operations in many countries in order to recruit enough patients. Big pharma is also working on orphan drugs starting with a small indication, with the hope of expanding the indication into a blockbuster status. Specialty medicine, including orphan drugs, has become the growth engine in the pharmaceutical industry worldwide. Big pharma is also keen on in-licensing technology or projects from specialty pharma to extend product life cycles, in order to protect their blockbuster drug franchises. Ample opportunities exist for smaller players, even in the emerging countries, to collaborate with multinational pharmaceutical companies provided that the technology platforms or specialty medicinal products are what the big pharma wants. The understanding of intellectual properties and international drug regulations are the key for specialty pharma to have a workable strategy for product registration worldwide.

Keywords: corporate venture, intellectual property, open innovation.

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Vermi Transformation for Sustainable Development – A Mini review

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Abstract
The world population is increasing at an alarming rate and tremendous quantity of waste is getting produced due to urbanization, industrialization, increase in human population, and various anthropogenic activities that cause serious problems of disposal and management. In developing countries, the most common practice of waste processing and management includes (i) land-filling (ii) incineration (iii) unscientific dumping, and (iv) vermi- composting. The first three methods have one or another drawback including, contamination of soil and groundwater, environmental pollution by burning biomass, and impacting human health and hygiene of the environment. One of the safest methods for managing organic waste is vermi-composting, an eco-friendly bioremediation process mediated by earthworms for the conversion of organic waste into compost in a sustainable and eco-friendly manner. Earthworms play very important roles in human welfare such as waste decomposers, bio-fertilizer manufacturers, land reclaimer, protein producers, food and vitamin source, natural detoxicant as bio-indicator of pollution, bait, industrial raw materials, and above all drug sources. However, the contribution of earthworms is still underdetermined in modern human society. In this article, efforts have been made to summarize the current scenario of waste management, vermi-composting, and the potential of earthworms in waste decomposition to find a sustainable, eco-friendly, and economic solution to manage organic waste.

Keywords: Waste management, Earthworms, Vermicomposting.

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A Review Paper on Starting Materials, Processes and Characteristics of Bio-Based Foams

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Abstract
Bio foam products have attracted considerable attention lately because there is a growing demand for green/sustainable products. To this end, various biobased foams have either been developed or are currently in development, e.g., bio-based polyurethanes (PUs), polylactic acid (PLA), starch, and polyhydroxyalkanotates (PHAs). Indeed, significant progress has been made; however, challenges still persist, for example, biobased foam products have poor processability, inferior compatibility, thermal and strength properties. In this review, we focus on five biofoam products namely bio-based PUs, PLA, starch, PHAs, and cellulose biofoam products, along with their properties and performance, as well as their manufacturing processes. Further efforts are still needed to unlock the full potential of these bio-based products and meet the goal of complementing and gradually replacing some of their fossil-based counterparts. Finally, the challenges, as well as arising opportunities of future research directions are discussed.

Keywords: Bio foam, Bio-based polyurethanes Polylactic acid.

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Disposal Practices of Unused and Expired Household Medicines

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Anjuman Islam Janjira Degree College of Science, Murud – Janjira

Abstract
Expansion of pharmaceutical industries and improved availability of pharmaceuticals across the world have contributed to an increase in drug usage and accumulation in homes. Improper disposal of expired and unused medications has several consequences such as environmental pollution, and childhood poisoning. The study revealed insufficient knowledge as well as inappropriate disposal practices of unused and expired medicines among residents of Murud - Janjira. There is need to organize a public enlightenment programme on safe, appropriate use, as well as disposal of unused and expired medicines

Keywords: Pharmaceutical preparations, Medical waste disposal, Knowledge.

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Green Adsorbents as a Sustainable Alternative for Water Environments: A Review

Tamseel Shakeel Shahjahan[1], Miss. Nida M. Gorme[2], Rayyan Hukkebardar[3], Takey Summaya Zameer [4]
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Abstract
The presence of heavy metal, chromium (VI), in water environments leads to various diseases in humans, such as cancer, lung tumors, and allergies. This review comparatively examines the use of several adsorbents, such as biosorbents, activated carbon, nanocomposites, and polyaniline (PANI), in terms of the operational parameters (initial chromium (VI) concentration (Co), temperature (T), pH, contact time (t), and adsorbent dosage) to achieve the Langmuir's maximum adsorption capacity (qm) for chromium (VI) adsorption. The study finds that the use of biosorbents (fruit bio-composite, fungus, leave, and oak bark char), activated carbons (HCl-treated dry fruit waste, polyethyleneimine (PEI) and potassium hydroxide (KOH) PEI-KOH alkali-treated rice waste-derived biochar, and KOH/hydrochloric acid (HCl) acid/base-treated commercial), iron-based nanocomposites, magnetic manganese-multiwalled carbon nanotubes nano composites, copper-based nanocomposites, graphene oxide functionalized amino acid, and PANI functionalized transition metal are effective in achieving high Langmuir's maximum adsorption capacity (qm) for chromium (VI) adsorption, and that operational parameters such as initial concentration, temperature, pH, contact time, and adsorbent dosage significantly affect the Langmuir's maximum adsorption capacity (qm). Magnetic graphene oxide functionalized amino acid showed the highest experimental and pseudo-second-order kinetic model equilibrium adsorption capacities.

Keywords: Biosorbent, Graphene, Nanocomposite.

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Cyber Security and Indian Cyber Law

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Abstract
Security, safety, and privacy are essential for anyone who uses the internet. Cyber security refers to the methods, strategies, and processes used to prevent computers, programs, networks, and data from being hacked, damaged, or accessed without permission. India has laid strong foundations to defend its population from cybercrimes, all while keeping internet users' best interests in mind. Cybercrime is a sort of crime that uses computers or other electronic devices and involves the use of a system (computer) as a target, a tool, or a storage device for evidence of a crime. Many pieces of cyber law, such as the national cyber security policy and IT Act, have shown to be highly effective at keeping unwanted attackers out. Despite India's stringent anti-cybercrime legislation, the country's main issue is a lack of public awareness. Individuals fighting cybercrime should try to predict qualitative and quantitative changes in the underlying materials so that their strategies can be suitably planned to avoid giving hackers an advantage. This paper emphasizes the need of understanding the repercussions of cybercrime while keeping in mind recent activities and providing methods to safeguard an individual and/or an organization from them. This research paper includes a summary of Indian cyber laws, lists the various types of cyber security and cyber-attacks; sheds insight on India's current situation of cyber security.

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Review on Cytological Profile and Health Promoting Effects of Mung Bean *Vigna radiata* L. Wilczek

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Abstract

Mungbean (*Vigna radiata* L. Wilczek) is economically most important crop of *Vigna* group. It is also known as green gram, golden gram, moong. In anatomical characters, paracyctic type of Stomata was observed on both surfaces of laminae. The opposite system of two Vascular bundles was observed in the midrib. The vascular bundles of stem were Showed continuous circular ring. The vascular bundles of petioles, lamina, Midribs and stems were collateral type. The vascular bundles of roots were found Tetrarch to polyarch. Studied on seeds and sprouts of mung bean (*Vigna radiata*), a common food, contain abundant nutrients with biological activities. This review provides insight into the nutritional value of mung beans and its sprouts, discussing chemical constituents that have been isolated in the past few decades, such as flavonoids, phenolic acids, organic acids, amino acids, carbohydrates, and lipids.

Keywords: *Vigna radiata*, paracyctic, mung been, flavonoids.

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Effect of Salt Stress on Physiological and Biochemical Parameters of Four *Cicer arietinum* L. Varieties

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Abstract

Chickpea, *Cicer arietinum* L. belongs to the family Fabaceae. It is a self-pollinated, diploid, annual legume crop. The global production of chickpea is nearly 11 million tonnes and India is the major producer accounting for 64% of the total chickpea production. It is a major source of high quality protein in human diet and also provides high quality crop residues for animal feed. In the present investigation the effects of salinity stress affect species productivity and change physiological and biochemical changes of four varieties of *Cicer arietinum* L. Biochemical and physiological parameters, growth, and yield of field crops especially salt sensitive crops like chickpea are affected adversely by salinity in arid to semi-arid regions.

Key words: Chickpea, *Cicer arietinum* L., Salt

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Fast Forward: 5G's Role in the Evolution of Computing and Communication

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Abstract
The advent of 5G technology marks a pivotal moment in the evolution of computing and communication sectors. This study delves into the transformative impact of 5G on these domains, exploring its potential to reshape technological interactions and communications. 5G promises to deliver ultra-fast speeds, significantly reduced latency, and enhanced reliability compared to its predecessors. These advancements are poised to enable new applications and services that were previously unattainable due to technological constraints. The research employs a comprehensive methodology, encompassing both qualitative and quantitative analyses. A thorough review of existing literature provides insights into the technical specifications, benefits, challenges, and potential applications of 5G technology. The study presents empirical findings that highlight the tangible impacts of 5G adoption, such as improved network performance, enhanced user experiences, and the emergence of innovative services like augmented reality, autonomous vehicles, and remote healthcare. Furthermore, the paper discusses the broader implications of 5G technology adoption, including its influence on digital transformation, economic growth, and societal changes. While 5G offers immense opportunities, it also presents challenges related to infrastructure deployment, security, and privacy concerns that need to be addressed for successful implementation. 5G technology holds the promise to revolutionize computing and communication sectors, fostering innovation and driving unprecedented advancements. However, realizing this potential requires collaborative efforts from industry stakeholders, policymakers, and researchers to overcome existing challenges and harness the full capabilities of 5G.

Keywords: 5G technology, computing, communication, ultra-fast speeds, low latency, reliability, digital transformation, infrastructure, security, innovation.

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Secure Mobile Computing

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Student[2], Department of Computer Science
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Abstract
As more and more people enjoy the various services brought by mobile computing, it is becoming a global trend in today's world. At the same time, securing mobile computing has been paid increasing attention. In this article, we discuss the security issues in mobile computing environment. Reanalyse the security risks confronted by mobile computing and present the existing security mechanisms. As mobile computing becomes increasingly ubiquitous in both personal and professional spheres, ensuring the security of mobile devices and the data they handle is paramount. This paper explores the challenges and solutions involved in securing mobile computing environments to maintain confidentiality, integrity, and availability. The **Abstract** begins by examining the unique characteristics of mobile computing, including limited resources, diverse communication channels, and varying degrees of trust in network infrastructures. These characteristics introduce vulnerabilities that must be addressed to mitigate risks effectively. Next, the paper discusses the fundamental principles of mobile security, including encryption, authentication, and access control. These principles form the basis of a comprehensive security framework designed to protect data both at rest and in transit. Techniques such as end-to-end encryption, biometric authentication, and multi-factor authentication are explored in detail.

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Morpho-Ecological Note On Genus Brachymenium From Trimbakeshwar Mountain Ranges, Western Ghats, Maharashtra

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Abstract
The present paper deals with the study of genus Brachyminium from Trimbakeshwar mountains ranges, Western Ghats Maharashtra. Two species viz *Brachymenium nepalense* Hook and *Brachymenium turgidum* Broth. ex Dix are first time reported from this region. Both corticolous fertile mosses were collected from various localities during the monsoon peried and identied with the help of standard monographs and subsequently confirmed. *B. nepalense* is robust with dentate margin, recurved apex, capsule sub-erect , papillose, spore brownish and 30-35 µ in diameter. *B. turgidum* is a plant with cushions, nerve excurrent, seta erect, capsule turgid oval, spore globose, brown and 40-45 µ in diameter. This genus

Keywords: Bryophytes, Mosses, Trimbakeshwar, Western Ghats, *Brachymenium*

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Diversity of Marine Algae from Alibag Sea shore and Kulaba fort in Raigad District.

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Abstract
India, the sub-continent is blessed with both east and west coasts having more than 7000 km. of coastal stretch and a number of islands located therein, which harbours a large number of marine macrophytic algal species. On the West Coast of India, in the Arabian Sea the Gulf of Kutch and Gulf of Cambay are the important Gulfs, while the Arabian Sea touch the land at the shores of Gujarat, Maharashtra, Goa, Karnataka and Kerala. Maharashtra has a sea coast of 720 Km. along the five districts including Mumbai. There are many islands along the coast. Raigad is one of the district of it extends from Shriwardhan taluka in south to Uran taluka in North. It has rocky shores at many of the places. Alibag is the district place of Raigad. There is a sea fort known as Kulaba which is an island at the distance of two kms from shore. The shore is abundant in marine algae.
The first record of any algae from the Indian Ocean is perhaps that of a specimen of *Amphiroa* collected by Hermann as early as 1672. Koing came to India in 1767 as a missionary and made extensive marine algal collections. An attempt was made to identify and study the marine algae from the shore of Alibag and the surroundings of Kulaba fort. There were many large and small marine ponds in the intertidal zone holding the benthic algae. The study was carried out throughout the year in 2022-23. Apart from sea weeds and grasses colourful fishes, various crabs, beautiful corals, marine mammals and various organisms were observed growing in the ponds. Total 30 species of the marine algae were reported in the study. It shows various types of marine algae like *Caulerpa, Ulva, Chaetomorpha, Sargassium, Gracilaria, Gelidiopisis, Codium, Padina, Cladophora, Enteromorpha, Porphyra*, etc. found in large quantity. Biodiversity of macro marine algae plays an important role in the marine ecosystem. Detail of the marine algae identified are described in the paper. Taxonomic distribution along the various classes as Chlorophyta, Phaeophyta, and Rhodophyta is also discussed.

Key Words: marine algae, shore, beach, Kulaba, Alibag

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Phytochemical Analysis of Aerial Roots of *Plumeria* Species

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Abstract

The present study investigates the phytochemical analysis of aerial roots of 3 species of *Plumeria*: *P. obtusa*, *P. rubra* and *P. alba.* Methanol extracts showed high efficiency for extracting secondary metabolites in the plant samples and were used for phytochemical analysis. Thin layer chromatography (TLC) yielded best results for flavonoids using Benzene: Chloroform: Ethyl Alcohol as a solvent system in the ratio 4:2:1. Total phenolic content in *P. obtusa, P. rubra* and *P. alba* reported were 0.036mg GAE/g of sample, 0.0166±0.014mg GAE/g of sample and 0.032±0.120mg GAE/g of sample respectively and total flavonoid content reported were 0.026±0.226mg QE/g of sample, 0.026±0.233mg QE/g of sample and 0.018±0.226mg QE/g of sample respectively. Testing for antioxidant and anti-dandruff activity yielded reproducible results for all three species.

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Lactic Acid: A Rising Star as a Green Solvent in Organic Synthesis

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Abstract

The search for environmentally friendly alternatives to traditional, often hazardous, solvents is a major thrust in green chemistry. Lactic acid, a bio-based, non-toxic organic acid, has emerged as a promising candidate in this pursuit. This paper explores the potential of lactic acid as a solvent for green organic synthesis.

Keywords: Green solvent, Green chemistry, Biodegradable, Sustainable

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Smart Technology: Ecosystem, Impacts, Challenges

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Abstract

Smart technologies have become increasingly integral to modern society, bringing many benefits and opportunities. However, they also raise important questions about their impacts on individuals, organizations, and society and how everyone can move forward smoothly in integrating and adopting technology. Therefore, this study analyzed and reviewed the literature to address the questions. The study provides an overview of the potential benefits and challenges of smart technologies and applications, including artificial intelligence, machine learning, natural language processing, robotics, and the Internet of Things. The review also explores the key entities involved in a smart technology ecosystem, including governments, businesses, and international communities, and each entity's unique role in developing and implementing smart technologies.

Keywords: IoT; artificial intelligence; machine learning;impacts

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A Review on Genetic History of Spinach (*Spinacia oleracea* L.)

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Abstract
Spinach (Spinacia oleracea L. 2n=2x=12) is a widely consumed leafy vegetable known for its nutritional benefits. It is a very versatile crop as it is eaten either raw or cooked, and it is a common ingredient in various cuisines. The history of spinach, both from a domestication and a breeding history perspective, is arguably little known and not many references are available on this topic. For this reason, this study intends to be a review of what is known about spinach and what are the current trends on the breeding of this vegetable.

Keywords: Genetics, Spinach.

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Study on Mineral Content of Some Medicinal Plants from Konkan Region

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Abstract

The present paper deal with the mineral analysis of some medicinal important plants *Dalbergia sissoo*, *Vitex nugundo* and *Chlorophytum borivilianum*. Conducted on Jan. 2024. The dried leaves was acid digested as mentioned by Toth et al.,(1948) method, minerals such as Potassium,Calcium,Iron. One of the main problems of medicine, Ayurvedic system is lack of solid scientific evidence regarding safety, efficacy, quality of practices and their precise molecular mechanisms. However, many Ayurvedic preparations appear to demonstrate significant success in treatment and cure of complex diseases. Purpose: In order to develop a stronger basis for appreciating the curative effects of Ayurvedic medicinal plants, the aim of the present study was to investigate their elemental composition, which is very often overlooked in biochemical assays.

Keywords- Ayurvedic *Dalbergia sissoo*, *Vitex nugundo* and *Chlorophytum borivilianum*.

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Unlocking India's Sustainable Potential: The Role of Computer Technology

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Abstract
In India's rapidly evolving sustainable development scenario, computer technology plays a pivotal role across various sectors, from environmental conservation to economic growth and social equity. The Digital India initiative epitomizes India's commitment to digital transformation, emphasizing the development of digital infrastructure, services, and literacy. IoT-enabled smart agriculture has been a game-changer, revolutionizing farming practices by optimizing resource utilization and promoting sustainability. On the economic front, platforms like UPI have catalyzed financial inclusion, fostering a shift towards a cashless economy and bolstering small businesses. This digital revolution has not only promoted economic growth but has also bridged economic disparities, promoting inclusive development. Socially, telemedicine services have had a transformative impact by enhancing healthcare access, particularly in remote and underserved areas. Online consultations have reduced healthcare costs and improved health outcomes, contributing significantly to achieving health-related Sustainable Development Goals. However, despite these advancements, challenges such as the digital divide, cybersecurity threats, and infrastructure limitations continue to pose obstacles. Through a mixed-methods approach, this study offers insights into the strategies, challenges, and opportunities in integrating computer technology into sustainable development practices in India. Collaborative efforts among policymakers, businesses, and communities are essential to address these challenges effectively. Strategic interventions focusing on digital literacy, cybersecurity, and infrastructure development will be crucial for harnessing the full potential of computer technology in India's journey towards a sustainable and inclusive future.

Keywords: Computer technology, Sustainable development, India, Environmental conservation, Economic growth, Social equity, Smart agriculture, Digital governance, Telemedicine, Financial inclusion, Digital divide, Cybersecurity threats, Collaborative efforts, Policymakers, Businesses, Communities.

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Review on the Dapsone

Mhatre Anushka Yyashwant
Veer Wajekar ASC College, Phunde

Abstract
The only remaining sulfone used in anthropoid therapy is dapsone (4,4'-diaminodiphenylsulfone), which is commercially available in an oral formulation, an inhalation preparation, and a 5% or 7.5% cream. Dapsone is widely used to treat leprosy and other chronic inflammatory dermatological conditions. The natural history of IgA vasculitis is normally self-limiting; nevertheless, one-third of patients experience symptom recurrence and refractory conditions. Dapsone is employed in dermatology and other sectors due to its antiinflammatory effects, which were found in inflammatory animal models. As a result, dapsone clearly performs two functions. Dapsone's therapeutic applicability is primarily dictated by its pharmacology and mechanisms of action, as well as chronic conditions other than dermatology. The trial involved 80 people (54 leprosy and 26 non-leprosy patients) who were given dapsone 100 mg orally.

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Catalysis in Green Chemistry: Brief Review

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Abstract
Sustainable chemistry, alternatively referred to as green chemistry, encompasses the creation of chemical products and processes that eliminate or reduce the production and utilization of hazardous substances. Only environmentally safe compounds and chemical processes are employed. It is founded upon a set of twelve principles that can be applied in the construction or replication of molecules, materials, reactions, and processes that are inherently more environmentally friendly and secure for human health. As this article demonstrates, green chemistry reduces the environmental impact of chemical processes and technologies. Further investigation into the function of catalysts in green chemical synthesis is the objective of this study, which strives to contribute to a more sustainable future. Critical to the environmentally favorable synthesis of novel and existing compounds is the process of catalysis. Enhanced efficiency is indicated by the fact that catalyzed processes produce fewer by-products, co-products, and other waste materials and require less energy to operate. Environmental non-hazardous catalysts are capable of being manufactured. Certain catalysts, which are available in an array of sizes and configurations, contribute positively to the chemical industry. Biomass, Biocatalysis, Ionic Liquids, Critical Fluids, Microwave Irradiation, Photocatalysis, Green Chemistry are all essential terms.

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Plant Tissue Culture of *Curcuma longa* (Haldi) through Micropropagation

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Abstract
A successful micropropagation method for turmeric (Curcuma longa Linn.) has been developed using rhizome bud explants. Woody plants were supplemented with various concentrations of BAP alone to initiate shoot growth in MS medium. Additionally, the explants were treated with different concentrations of Bavistin (1%, 2%, and 3%). Among these concentrations, 3% Bavistin showed the highest survival rate (90%), followed by 2% (70%), while the control explants showed no survival. The effect of mercuric chloride (HgCl2) on the explants was tested using 0.1% HgCl2 for different time intervals. Explants treated for 8 minutes and 10 minutes showed the highest survival rate (100%), followed by a 70% survival rate when the explants were treated with 0.1% HgCl2. Browning was observed in explants treated for 8-10 minutes, so a treatment time of 6 minutes was considered optimal. Contamination-free explants were then inoculated on MS media containing 2 mg/l of BAP to initiate shoot growth. After 28 days of inoculation, shoots were successfully initiated from the explants.

Keywords: Micropropagation, *Curcuma longa.*

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Hygiene, Probiotics, and Health: A Comprehensive Guide to Well-being of Murud-Janjira Taluka.

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Abstract
This research aims to assess the current level of awareness regarding health and hygiene issues and their impact on community health and hygiene. The interconnection between health and hygiene is significant. Factors such as the consumption of contaminated drinking water, unhealthy diet habits, inadequate environmental sanitation, and poor personal and food hygiene practices are major contributors to various diseases, particularly in developing countries like India. These diseases encompass both communicable and non-communicable ones. Substance abuse weakens the immune system and adversely affects mental and social well-being. Probiotics, commonly known as "Health Friendly Bacteria," are live microorganisms present in fermented foods and cultured milk. They offer numerous health benefits, including boosting the immune system and treating skin and oral ailments.

Keywords: Probiotics, Hygiene, Prebiotics, communicable and non-communicable diseases.

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"A Comprehensive Analysis of Electric Vehicles: Environmental Impact, Challenges, and Solutions"

Altaf Fakir[1], Kadiri Sovliha Sayyed Ali[1], Solkar Ayesha Nazim[2], Ghaltey Naureen Anwar Khan[2]
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Abstract
Electric vehicles (EVs) are emerging as a cornerstone of sustainable transportation, offering significant potential to reduce pollution compared to conventional gasoline-powered vehicles. This study delves into the scientific evidence supporting the ability of EVs to decrease emissions of harmful pollutants like carbon dioxide (CO_2), nitrogen oxides (NO_x), and particulate matter. We analyze the multifaceted impact of a growing EV market, examining its influence on electricity demand and potential environmental consequences. Furthermore, the study explores the environmental footprint associated with EV batteries throughout their lifecycle, including both their production and recycling processes. By critically evaluating these factors, the paper concludes with a discussion of potential solutions that can mitigate any negative environmental impacts associated with the widespread adoption of EVs.

Keywords: Electric vehicles (EVs), Emission reduction, Air quality, Electricity demand, Battery lifecycle, Sustainable transportation

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Impacts of ChatGPT

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Abstract
ChatGPT is a revolutionary technology that uses advanced artificial intelligence techniques to generate natural language responses to a given prompt or input. It has been used across various fields, from natural language processing to customer service to content creation. This study and analysis of ChatGPT explore its origins, how it works, and its impact on different fields of study. It examines the advantages and disadvantages of ChatGPT, as well as its limitations and features. It also discusses the impact of ChatGPT on academics, cyber security, customer support, software development, jobs, and information technology, as well as its potential applications for researchers and scholars.

Keywords : ChatGPT, SFT Model, RM Model, OpenAI.

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Neutraceutical Potential Of Edible Flowers

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Abstract
The increasing interest in nutraceuticals has exaggerated exploration into new foods that have positive effects on human wellbeing. Even more we see edible flowers as a new way of nutritional health. Edible flowers are a very good source of valuable nutrients, which improves our health. People are eating vegetables in the form of leaves as well as flower. In present study, author have tried to analyse various phytochemical from edible flowers (*Sasbania grandiflora* L., *Moringa oleifera* Lam., *Musa paradisiaca* L.) We investigated the Proximate parameters and mineral content of edible flower. Results showed that It is found that the majorgroups of dietary phytochemicals in edible flowers include flavonoids, phenolic acids,and anthocyanins and they are capable of exerting antioxidant, anti-inflammatory,anti-diabetic, anticancer, cardioprotective, hepatoprotective gastroprotective, and genoprotective effects. Taking into consideration the current recommended dietary allowances (RDAs), these flowers could contribute in beneficial way to the human diet. This article helps to popularize the edible flowers among consumers and food industry which are very potent source of nutraceutical compounds.

Keywords: Edible flowers, nutrition, bioactive compound.

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Exploring the Dual Impact of Artificial Intelligence on Science and Technology

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Abstract

Artificial Intelligence (AI) has significantly transformed various sectors, including science and technology. Its applications span from enhancing research capabilities to optimizing industrial processes. We have analyzed both the positive and negative impacts of AI on science and technology, along with potential solutions to counteract the negative aspects. By addressing concerns related to bias, job displacement, and ethical considerations, and by leveraging AI as a tool for collaboration and creativity, society can harness its potential for positive transformation in these fields. Responsible AI development, education, and interdisciplinary collaboration will be pivotal in maximizing the benefits while mitigating the negative impacts of AI on science and technology.

Keywords: Artificial Intelligence (AI), Science, Technology, Responsible AI development, scientific research, technology, bias, collaboration, ethics.

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Biofertilizers as a Tool for Mitigating Climate Change

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Abstract
Biofertilizers, derived from beneficial microorganisms, offer a sustainable alternative to chemical fertilizers in agriculture and hold significant promise as a tool for mitigating climate change. This paper reviews the potential of biofertilizers in sequestering carbon, reducing greenhouse gas emissions, and enhancing soil resilience, thereby contributing to climate change mitigation efforts. Through mechanisms such as nitrogen fixation, promotion of plant growth, and stimulation of soil microbial communities, biofertilizers play a crucial role in increasing soil organic carbon content and improving soil health. By reducing the need for synthetic fertilizers and curbing emissions of nitrous oxide and methane, biofertilizers contribute to greenhouse gas emission reduction in agricultural systems. Furthermore, their ability to enhance soil structure, nutrient availability, and water retention capacity bolsters soil resilience to climate change impacts, including extreme weather events. Widespread adoption of biofertilizers not only mitigates environmental pollution but also promotes sustainable agriculture practices, thereby fostering rural livelihoods and food security. Addressing challenges such as limited awareness and variability in efficacy requires coordinated efforts from policymakers, researchers, and agricultural stakeholders. Harnessing the power of biofertilizers can lead to a more sustainable and climate-resilient agricultural system, aligning with global efforts to combat climate change and ensure food security for future generations.

Keywords: Biofertilizers, Climate change mitigation, Carbon sequestration, Greenhouse gas emissions, Soil health & Sustainable agriculture.

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Strategies for the Total Synthesis of Natural Products: Innovations, Challenges and Perspectives

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Abstract
Natural products have long served as a wellspring of inspiration for synthetic chemists, driving innovation in organic synthesis and drug discovery. The total synthesis of these complex molecules represents a pinnacle of achievement in synthetic chemistry, requiring strategic planning, creative problem-solving, and mastery of diverse synthetic methodologies. This **Abstract** provides a concise overview of strategies employed in the total synthesis of natural products, highlighting key concepts, innovative methodologies, and future directions in the field. Retrosynthetic analysis serves as the cornerstone of total synthesis, guiding chemists in the strategic disconnection of target molecules into readily accessible precursors. Innovative synthetic methodologies, including transition metal-catalyzed reactions, asymmetric transformations, and cascade reactions, have revolutionized the field, enabling the efficient construction of complex molecular architectures with high efficiency and selectivity. Despite these advancements, the synthesis of natural products remains a challenging endeavor, fraught with synthetic hurdles and unforeseen obstacles. Looking ahead, the future of natural product synthesis is filled with promise and opportunity. The integration of computational tools, automation, and sustainability practices holds the potential to accelerate the discovery and optimization of synthetic routes to target molecules. Interdisciplinary collaborations between synthetic chemists, biologists, pharmacologists, and clinicians are essential for unlocking the therapeutic potential of natural products and developing new medicines to address unmet medical needs. Overall, the total synthesis of natural products continues to be a vibrant and dynamic field, driven by a combination of innovation, collaboration, and perseverance.

Keywords: Natural products, Total synthesis, Synthetic methodologies, Retrosynthetic analysis, Innovation & Drug discovery.

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Solvent-Free Microwave Synthesis of Octahydroquinazolinone Derivatives Catalyzed by Ammonium Metavanadate

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Abstract
This review paper provides an overview of the solvent-free microwave synthesis of octahydroquinazolinone derivatives catalyzed by ammonium metavanadate. The methodology offers a sustainable and efficient alternative to traditional synthetic approaches, addressing environmental concerns associated with the use of organic solvents and harsh reaction conditions. The review discusses the reaction mechanism, optimization parameters, and scope of this synthetic strategy, highlighting its advantages and applications in organic synthesis. Optimization of reaction conditions, including temperature, reaction time, catalyst loading, and stoichiometry, is crucial for achieving high yields and minimizing side reactions. The broad substrate scope and functional group tolerance of this methodology enable the rapid assembly of diverse molecular scaffolds with potential biological activities. Examples of applications in organic synthesis and drug discovery illustrate the versatility and utility of this synthetic approach. Recent advancements in reaction optimization and substrate diversification have expanded the scope and synthetic utility of this methodology, paving the way for further developments in sustainable synthetic chemistry.

Keywords: Solvent-free synthesis, Microwave-assisted synthesis, Octahydroquinazolinone derivatives, Ammonium metavanadate, Sustainable chemistry & Organic synthesis.

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Green Synthesis of Octahydroquinazolinones via Microwave-Assisted One-Pot Reaction with Ammonium Metavanadate

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Abstract
Microwave-assisted organic synthesis has revolutionized the field of green chemistry by enabling rapid, efficient, and environmentally benign synthetic routes. This review focuses on the green synthesis of octahydroquinazolinones via a one-pot reaction under microwave irradiation, utilizing ammonium metavanadate as a catalyst. Octahydroquinazolinones, renowned for their diverse pharmacological properties, are synthesized through the condensation of an amine, aldehyde, and urea or its derivatives. The catalytic role of ammonium metavanadate facilitates the formation of these heterocyclic compounds under mild reaction conditions, offering advantages such as reduced reaction times, high yields, and operational simplicity. The mechanism of the reaction involves the intermediacy of key species formed through the catalytic action of ammonium metavanadate. Recent advancements in this field, including modifications to the synthetic methodology and applications in medicinal chemistry, are discussed. Overall, the microwave-assisted green synthesis of octahydroquinazolinones with ammonium metavanadate represents a promising strategy for the sustainable production of biologically active heterocycles, aligning with the principles of green chemistry.

Keywords: Microwave-assisted synthesis, Green chemistry, Octahydroquinazolinones, Ammonium metavanadate & One-pot reaction.

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Nanoparticles as Photocatalyst

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Abstract
The world is currently dealing with two main issues: the growing global pollution problem and the daily increase in energy consumption brought on by human activity. Both established civilization and developing nations face these serious issues. The world's current energy needs cannot be met by the limited supply of current energy sources, which also have many negative side effects. Metal nanoparticle carry out excellent absorption of visible and ultraviolet light, hence have gained recent interest as photocatalysts. The key contribution to the activation of molecules on metal nanoparticles facilitating chemical transformation is the energy absorbed by metal conduction electrons and the intense electric fields in close proximity, created by a localized surface plasmon resonance effect. A number of successful reactions catalyzed by supported nanoparticles of pure metals and alloys driven by light at ambient or moderate temperatures, can now be seen. These examples show that these materials are a new class of effective photocatalysts for the conversion of sunlight to chemical energy and distinguish them from semiconductor photocatalysts in their mechanism. An overview of recent research on direct photocatalysis for organic synthesis using metal nanoparticles supported by light irradiation is presented here, and we discuss the major reactions occurring with light radiation.

Keywords: Pollution, Environmental Issues, Energy, Photocatalysis, light irradiation.

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