

INTERNATIONAL CONFERENCE ON ENVIRONMENTAL CHALLENGES AND REMEDIES FOR SUSTAINABLE FUTURE

ICECRSF - PARTICIPATION

International Conference On Environmental Challenges And Remedies For Sustainable Future 2023 is conducted on 15th & 16th September 2023 by Department of Chemistry, Government Degree college (A), Rajahmundry.

Total of Five abstracts, 3 from Lecturers and 2 from students were Submitted From the Department of Biotechnology And got Published with ISBN number

1. Dr.B.Nageshwari (Lecturer-in-charge : Biotechnology Department) - **ABSOLUTE ANALYSIS AND SOLUTION TO ENVIRONMENTAL PROBLEMS**

2. Mrs.K.Anusha (Lecturer in Biotechnology Department) - **BIOPLASTICS- A NOVEL APPROACH TO THE GREEN TRANSITION**

3. Ms.I.Parnika Sai (Guest Lecturer in Biotechnology Department) - **CLIMATE CHANGE- SUSTAINABILITY BY COMPOSTABLE PLASTICS**

And 4 Students from III B.Sc BBC & AGRO BBC - Sh.Shabnam, M.Sri Hari, S.T.V.V.Sushma & J.Rishitha Submitted two Abstracts :

4. HYDROGEN : POWERING A SUSTAINABLE FUTURE

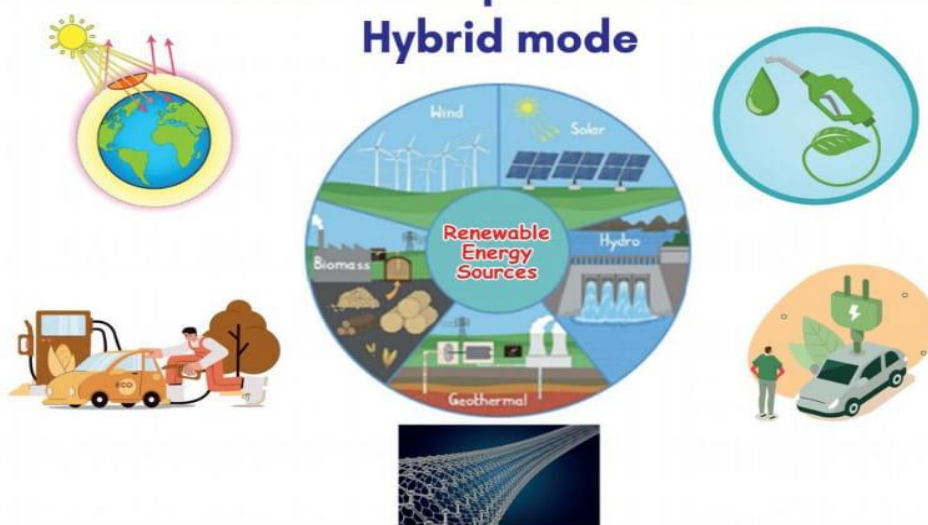
5. ALGAE - THE PINNACLE OF BIOFUELS

Conference Proceedings

1st International Conference on Environmental Challenges and Remedies for Sustainable Future (ICECRSF-23)

On 15-16th September 2023

Hybrid mode



Organized by :

DEPARTMENT OF CHEMISTRY



GOVERNMENT COLLEGE, RAJAHMUNDRY

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(PP-101) Absolute Analysis And Solution To Environmental Problems

Dr. B. NAGESHWARI,

Department Of Biotechnology, Government College (A), Rajahmundry

Abstract

Sustainable future about environment is a most critical area of discussion as the damage to environment is no more restricted to environment alone the damage to environment is directly and indirectly affecting the biosphere. Plants and Animal kingdom are all absorbing micro plastics beyond tolerable levels. Which is resulting in severe health damage to the natural flora and fauna. It is as simple as "we cannot have the cake and eat it too "when it comes to environment.

All of us knowingly or unknowingly use products in our daily life which release lots of pollutants carbon foot print during their production process. Everything that is present is bound to end one day but the human activities like running after luxuries have only fastened the process.

The Government of A.P has taken a good initiative by sending the students to community service projects, internships etc., It would be much helpful if the student is sent on a survey to observe note down how much pollution is caused in producing a particular trinket or product which would enlighten the students about their environment and their own healthy future.

The policy makers need to interfere and make policies favourable for overall living population existing on the earth. Awareness and implementation of environment friendly and moderation and simplicity in life is "THE KEY TO THE PROBLEM", related not only to environment but all major problems the human kind is facing.



(PP-99) Bioplastics - A Novel Approach to the Green Transition

K. Anusha

Department of Biotechnology, Government College(A), Rajahmundry.

Abstract

Petroleum derived bioplastics are an important environmental pollutant. Most of these are non-biodegradable and decompose slowly. A potent strategy for replacing petroleum-based polymers is the adoption of sustainable substitutes. Development of affordable, long-lasting, and widely-applicable bio-based polymers is receiving more attention. India has the potential to grow its bioplastics industry. Initiatives promoting environmental awareness, the accessibility of feedstock, and government support are contributing to the market for bioplastics.

Bioplastics are typically made from biomass, which includes polysaccharides, starch, lipids, proteins, and cellulose, and as a result, they indirectly endanger the safety of our food supply. Thus, the method of producing bioplastic using microorganisms is a revolutionary technique since it uses organic wastes with biological origins. This minimises the dependency on agricultural crops while also potentially promoting efficient solid waste management. Hence, focuses on the types of bio-based plastics and gives an insight on biological wastes that can be utilized to produce such plastics.

An innovation in Bioplastic production with special additives like antibacterial, antifungal, and antioxidant agents, offering added values promising opportunities for developing sustainable and practical solutions in various fields. For instance, integrating antibacterial additives into bioplastics enables extending the shelf-life of food by inhibiting spoilage-causing bacteria and microorganisms. Moreover, bioplastics with antioxidant additives can be applied in wound dressings. To achieve a sustainable approach to the biodegradation of biopolymers, Composting method of recycling bioplastics offers the best way of green recycling.



(PP-100) Climate Change- Sustainability by Compostable Plastics

I. Parnika Sai

Department Of Biotechnology, Government College (A), Rajahmundry.

Abstract

The most disquieting situation scaring the Environmental Sustainability is Climate Change. It is more subtle, cruel, and cumulative. Our current actions do not just exacerbate the situation—they compound it and its one of the greatest challenges of present time by affecting social and environmental determinants of health.

One of the decisive factors is the release of greenhouse gases on burning fossil fuels, which are a major cause of Global warming leading to long-term climate change. And now it's time to focus on the finest adaptation strategy - to conserve non-renewable resources and mitigate climate change by making resources more efficient and resilient to climate change.

We all know what plastic does to our environment and thus replacing petroleum-based plastics with Compostable plastics could reduce industrial greenhouse gas emissions by 25%. Compostable plastic bags are also made using plant materials that revert to base organic components when processed.

In addressing this, the production of such compostable plastics using cellulose (common natural polymer- no toxic gases are released into the environment on decomposition) extracted from corn husk-an abundant byproduct obtained from corn processing. Corn Plastic is a non-petroleum material made by converting corn into a resin called poly lactic acid (PLA). And then by using Sorbitol, starch, and chitosan as the plasticizer, matrix, and preservative respectively corn plastic is produced. It can be also made from sugarcane, tapioca root, cassava, and sugar beet. Compostable plastics production requires 65% less energy and Emits 68% fewer greenhouse gases than traditional petroleum-based plastics, unlike natural gas or crude oil that is a finite resource, corn is available, functional, and renewable.

Thus, compostable plastics are a viable and valuable solution for a more sustainable and inclusive future and thus contributes to climate change mitigation.



(PP-103) Hydrogen: Powering A Sustainable Future

Shaik Shabnam, M. Srihari, S.T.V.V. Sushma, and J. Rishitha

|| B.Sc., Biotechnology- Department of Biotechnology, Government college (A) Rajamahendravaram

Abstract

Currently raise in global warming potential due to greenhouse effect is a major threat to the environment. To address the concerning issue, it is imperative to explore viable options for incorporating renewable sources that can be endlessly harnessed from nature. The most important requirements for an optimal fuel are its never-ending supply, cleanliness, practicality, and freedom from outside interference.

All these features make hydrogen a viable transportation and non-transportation fuel. On a global basis, hydrogen is being explored and promoted as such. Two basic technologies for producing hydrogen fuel, are reformation of methane and electrolysis of water. Most hydrogen is produced through steam methane reforming, in which high-temperature steam (7000 °C–10000 °C) at 325 bar pressure is used to decompose methane. The present study aims to assess the viability of integrating the production of hydrogen from natural gas with the elimination of CO₂. The cost penalties associated with these schemes are significantly lower than those commonly observed in CO₂ removal schemes linked to electricity generation.

The most efficient method employed by NREL (National Renewable Energy Laboratory) is electrolysis. The PEC (Photo electrochemical) system, developed by NREL, has the capability to generate hydrogen from sunlight without the need of electrolyzers, thereby eliminating the associated costs and complexities. It is imperative to adapt the solar-to-hydrogen conversion. The efficiency of this system is 12.4% lower heating value, which is achieved through the utilization.



(PP-102) Algae – The Pinnacle of Biofuels

S.T.V.V. Sushma, M. Srihari, J. Rishitha, and Shaik Shabnam

|| B.Sc. Biotechnology- Department of Biotechnology, Government college (A), Rajamahendravaram

Abstract

The ongoing usage of fossil fuels is increasing CO₂ levels in the atmosphere at an alarming rate. First generation biomass produced from energy crops, plants and agricultural crop residues on processing increase CO₂ concentration in atmosphere. Edible plants corn & sugarcane for biofuel production leads to decrease in land and food resources as population increases.

This study aims to overcome above limitations by alternative biofuels produced from Algae has great repeatability, is carbon neutral, and has a high biomass output with high oil or starch and lipid content. Based on life cycle estimations, it shows low carbon footprints excluding transportation and production process than land-based biofuels and conventional fossil fuels.

The production of algae is mainly done in open and closed photobioreactors. The open pond system allows natural light penetration and environmental CO₂ absorption with additional supply of inorganic salts. Municipal waste water, seawater, and dairy/swine lagoon effluents can be used in this process. It has some limitations such as evaporation of water, low productivity, and separation of algae. The closed systems involve external supply of CO₂ and salts with algal broth contained in transparent apparatus. Oxygen trapped inside is released through periodic air bubbling methods. However, enclosed photobioreactors can have certain drawbacks. Reactors are costly and difficult to scale up. Furthermore, light restriction cannot be overcome completely since light penetration is inversely related to cell concentration. Algal growth on the tube walls hinders equal light distribution.

In conclusion, with the assistance of developing novel production processes through rigorous research and application of genetic engineering studies in reducing the cultivation costs and upgrading the quality and productivity of algae can make them the future of a sustainable energy resource.



Three students - B.Deepika (Classical Dance), P.Jyothi & Ch.Mahima Murthy (Singing) from Single Major Biotechnology Participated in ICECRSF 2023 cultural programmes (Dance & Singing) And got certified.



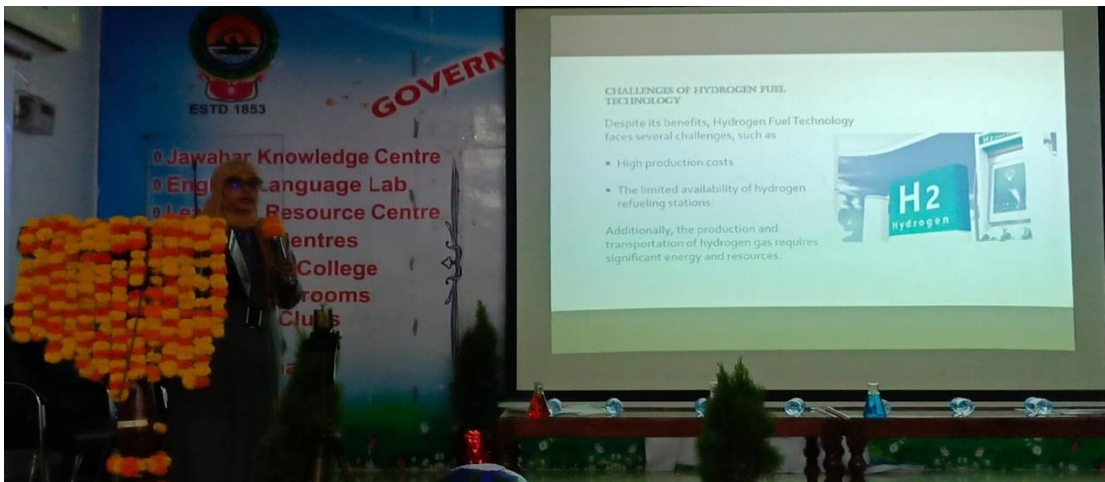
POSTER PRESENTATION COMPETITION - WORLD OZONE DAY

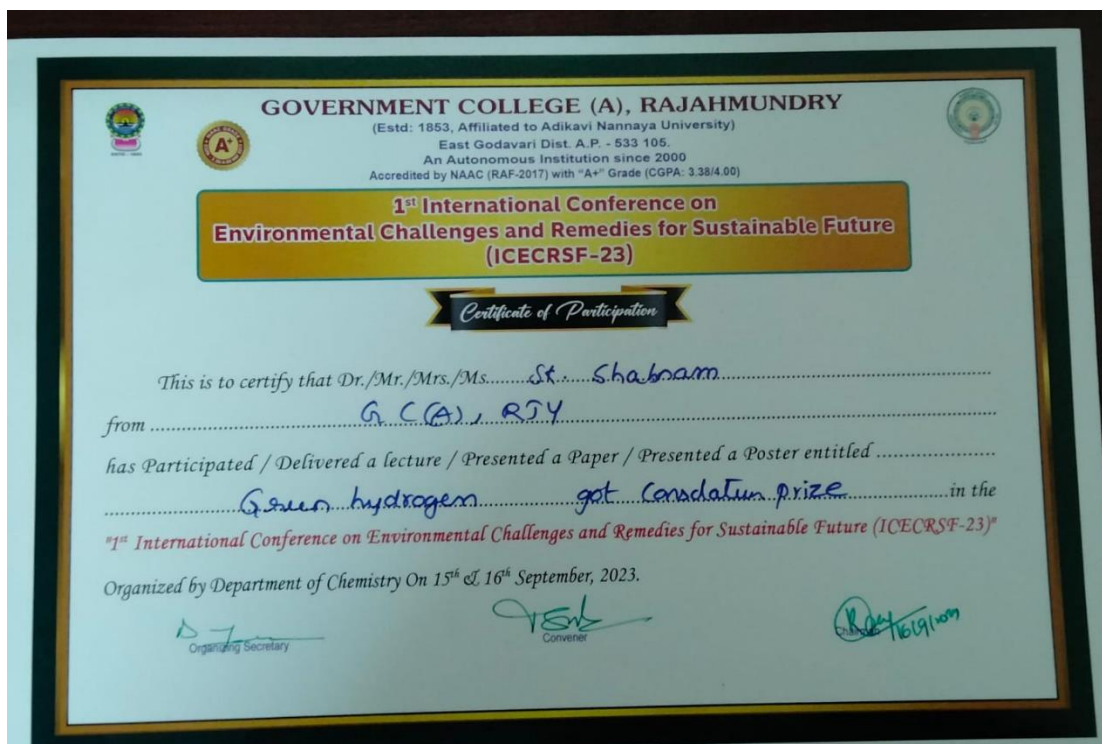
As a part of ICECRSF 2023 Department of Chemistry Conducted poster presentation competition on World Ozone Day 16th September 2023

Dr.B.Nageshwari (Lecturer-in-Charge) Department of Biotechnology Acted as a one of the judge in the poster presentation Competiton on World Ozone Day



4 Students from III B.Sc BBC & AGRO BBC - Sh.Shabnam, M.Sri Hari(Model Presentation on Green Hydrogen), S.T.V.V.Sushma & J.Rishitha (PPT- Algae - The Pinnacle of Biofuels) Participated in Poster and Power Point Presentations and secured Consolation Prizes Respectively.







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Certificate of Participation

This is to certify that Dr./Mr./Mrs./Ms.....*S.T.V.V. Sushma*.....
from *Best Oral presentation*
has Participated / Delivered a lecture / Presented a Paper / Presented a Poster entitled
..... *Algae - the pinnacle of Biofuels* in the
"1st International Conference on Environmental Challenges and Remedies for Sustainable Future (ICECRSF-23)"
Organized by Department of Chemistry On 15th & 16th September, 2023.


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