Seth G.B. Podar College Nawalgarh
Department of Botany
Seminar
on
"WORLD BIOFUEL DAY"

August 10th, 2022

ORGANISED BY

Department of Botany, Seth G. B. Podar College, Nawalgarh, Rajasthan

Affiliated to Pandit Deendayal Upadhyaya Shekhawati University, Sikar (Rajasthan)

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SETH GYANIRAM BANSIDHAR PODAR COLLEGE

Podar Educational Campus, Nawalgarh - 333042 (Raj.)

DEPARTMENT OF BOTANY

Date: 04/08/2022

To

The Principal

Seth Gyaniram Bansidhar Podar College

Nawalgarh, Rajasthan

Through IQAC

Subject: Permission for Seminar "World Biofuel Day" on 10 August 2022.

Sir,

With due regards, I wish to state that department of Botany like to Seminar "World Biofuel Day" on 10 August 2022. Where students of M.Sc. (Previous & Final) take participate and learn about the biofuel.

Kindly allow for the same.

Thanking you

4/08/22

Yours' Sincerely
Dr. Ravindra Goswami
Department of Botany
Seth G. B. Podar College
Nawalgarh, Rajasthan

4/8/22

Permitted

04/8/22

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SETH GYANIRAM BANSIDHAR PODAR COLLEGE

Podar Educational Campus, Nawalgarh - 333042 (Raj.)

Date 18/11/22

Notice

All the students of P.G. and U.G. are hereby informed that department of Botany is organizing a a workshop cum training session on **"Computer Application: Uses of Internet Communication, MS Word and MS Excel" form 19-21 November for the students of P.G. and U.G** with the collaboration of department of Zoology. Presence of all students if P.G. classes is mandatory for the workshop

18/11/22

Dr. Satyendra Singh

(Principal)

18/11

Dr. Ravindra Goswami

(Workshop Coordinator)

Dr. Ravindra Goswami
Head, Department of Botany
Seth G.B. Podar College
Nawalgarh, Rajasthan

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Objectives & Course Content

- To develop the knowledge of Biofuel
- To Aware why on 10 August Biofuel Day is celebrated
- To impart knowledge among students
- Role of Biofuel
- How Biofuel is helpful for the environment
- To learn Characteristics of Biofuel
- To learn about environment
- Teach how to develop a good discussion sense in class
- How to present themselves for any presentation
- How to ask right habit of learning

REPORT

On the World biofuel day Department of Botany, Seth Gyaniram Bansidhar Podar College organized a Seminar for the students of M.Sc. batch 2020-22 & 2021-23. In the program total 23 students participated and know about the Biofuel and its important. The program was started with the inaugural speech by Dr. Satyendra Singh, Principal Seth Gyaniram Bansidhar Podar College, in his speech he concluded now the time how the production and researches are going on biofuel which is necessary for meet out the fuel crises in future. After this Dr. Ravindra Goswami, Head Department of Botany gave his lecture on biofuel and explain why in modern time biofuel is important. In his lecture he explained unlike other renewable energy sources, biomass can be converted directly into liquid fuels, called "biofuels," to help meet transportation fuel needs. The two most common types of biofuels in use today are ethanol and biodiesel, both of which represent the first generation of biofuel technology.

From his research experience he also added how Biofuel can be generated from the bio waste products. Biodiesel is a liquid fuel produced from renewable sources, such as new and used vegetable oils and animal fats and is a cleaner-burning replacement for petroleum-based diesel fuel. Biodiesel is nontoxic and biodegradable and is produced by combining alcohol with vegetable oil, animal fat, or recycled cooking grease.

In modern time production of biofuel, Biodiesel is very important because human beings use energy resources so fast, it is predicted that all the petroleum products with other sources will get vanished very soon.

In the list of guest Dr. Satyendra Singh, Dr. Vinod Saini and Dr. Dau Lal Bohra was present with Ms. Shyama Didwania and Ms. Suman Saini. The program ended with the vote of thanks given by Ms. Suman Saini, Department of Botany.

NOTES OF THE SESSION:

Unlike other renewable energy sources, biomass can be converted directly into liquid fuels, called "biofuels," to help meet transportation fuel needs. The two most common types of biofuels in use today are ethanol and biodiesel, both of which represent the first generation of biofuel technology.

The Bioenergy Technologies Office (BETO) is collaborating with industry to develop next-generation biofuels made from wastes, cellulosic biomass, and algae-based resources. BETO is focused on the production of hydrocarbon biofuels—also known as "drop-in" fuels—which can serve as petroleum substitutes in existing refineries, tanks, pipelines, pumps, vehicles, and smaller engines.

ETHANOL

Ethanol (CH3CH2OH) is a renewable fuel that can be made from various plant materials, collectively known as "**biomass**." Ethanol is an alcohol used as a blending agent with gasoline to increase octane and cut down carbon monoxide and other smog-causing emissions.

The most common blend of ethanol is E10 (10% ethanol, 90% gasoline) and is approved for use in most conventional gasoline-powered vehicles up to E15 (15% ethanol, 85% gasoline). Some vehicles, called **flexible fuel vehicles**, are designed to run on E85 (a gasoline-ethanol blend containing 51%–83% ethanol, depending on geography and season), an alternative fuel with much higher ethanol content than regular gasoline. Roughly 97% of gasoline in the United States contains some ethanol.

Most ethanol is made from plant starches and sugars—particularly corn starch in the United States—but scientists are continuing to develop technologies that would allow for the use of cellulose and hemicellulose, the non-edible fibrous material that constitutes the bulk of plant matter.

The common method for converting biomass into ethanol is called fermentation. During fermentation, microorganisms (e.g., bacteria and yeast) metabolize plant sugars and produce ethanol.

BIODIESEL

Biodiesel is a liquid fuel produced from renewable sources, such as new and used vegetable oils and animal fats and is a cleaner-burning replacement for petroleum-based diesel fuel. Biodiesel is nontoxic and biodegradable and is produced by combining alcohol with vegetable oil, animal fat, or recycled cooking grease.

Like petroleum-derived diesel, biodiesel is used to fuel compression-ignition (diesel) engines. Biodiesel can be blended with petroleum diesel in any percentage, including B100 (pure biodiesel) and, the most common blend, B20 (a blend containing 20% biodiesel and 80% petroleum diesel).

Learn more about **Biodiesel**.

RENEWABLE HYDROCARBON "DROP-IN" FUELS

Petroleum fuels, such as gasoline, diesel, and jet fuel, contain a complex mixture of hydrocarbons (molecules of hydrogen and carbon), which are burned to produce energy. Hydrocarbons can also be produced from biomass sources through a variety of biological and thermochemical processes. Biomass-based renewable hydrocarbon fuels are nearly identical to the petroleum-based fuels they are designed to replace—so they're compatible with today's engines, pumps, and other infrastructure.

BIOFUEL CONVERSION PROCESSES

DECONSTRUCTION

Producing advanced biofuels (e.g., cellulosic ethanol and renewable hydrocarbon fuels) typically involves a multistep process. First, the tough rigid structure of the plant cell wall—which includes the biological molecules cellulose, hemicellulose, and lignin bound

tightly together—must be broken down. This can be accomplished in one of two ways: high temperature deconstruction or low temperature deconstruction.

High-Temperature Deconstruction

High-temperature deconstruction makes use of extreme heat and pressure to break down solid biomass into liquid or gaseous intermediates. There are three primary routes used in this pathway:

- Pyrolysis
- Gasification
- Hydrothermal liquefaction.

During pyrolysis, biomass is heated rapidly at high temperatures (500°C–700°C) in an oxygen-free environment. The heat breaks down biomass into pyrolysis vapor, gas, and char. Once the char is removed, the vapors are cooled and condensed into a liquid "bio-crude" oil.

Gasification follows a slightly similar process; however, biomass is exposed to a higher temperature range (>700°C) with some oxygen present to produce synthesis gas (or syngas)—a mixture that consists mostly of carbon monoxide and hydrogen.

When working with wet feedstocks like algae, hydrothermal liquefaction is the preferred thermal process. This process uses water under moderate temperatures (200°C–350°C) and elevated pressures to convert biomass into liquid bio-crude oil.

Low-Temperature Deconstruction

Low-temperature deconstruction typically makes use of biological catalysts called enzymes or chemicals to breakdown feedstocks into intermediates. First, biomass undergoes a pretreatment step that opens up the physical structure of plant and algae cell walls, making sugar polymers like cellulose and hemicellulose more accessible. These

polymers are then broken down enzymatically or chemically into simple sugar building blocks during a process known as hydrolysis.

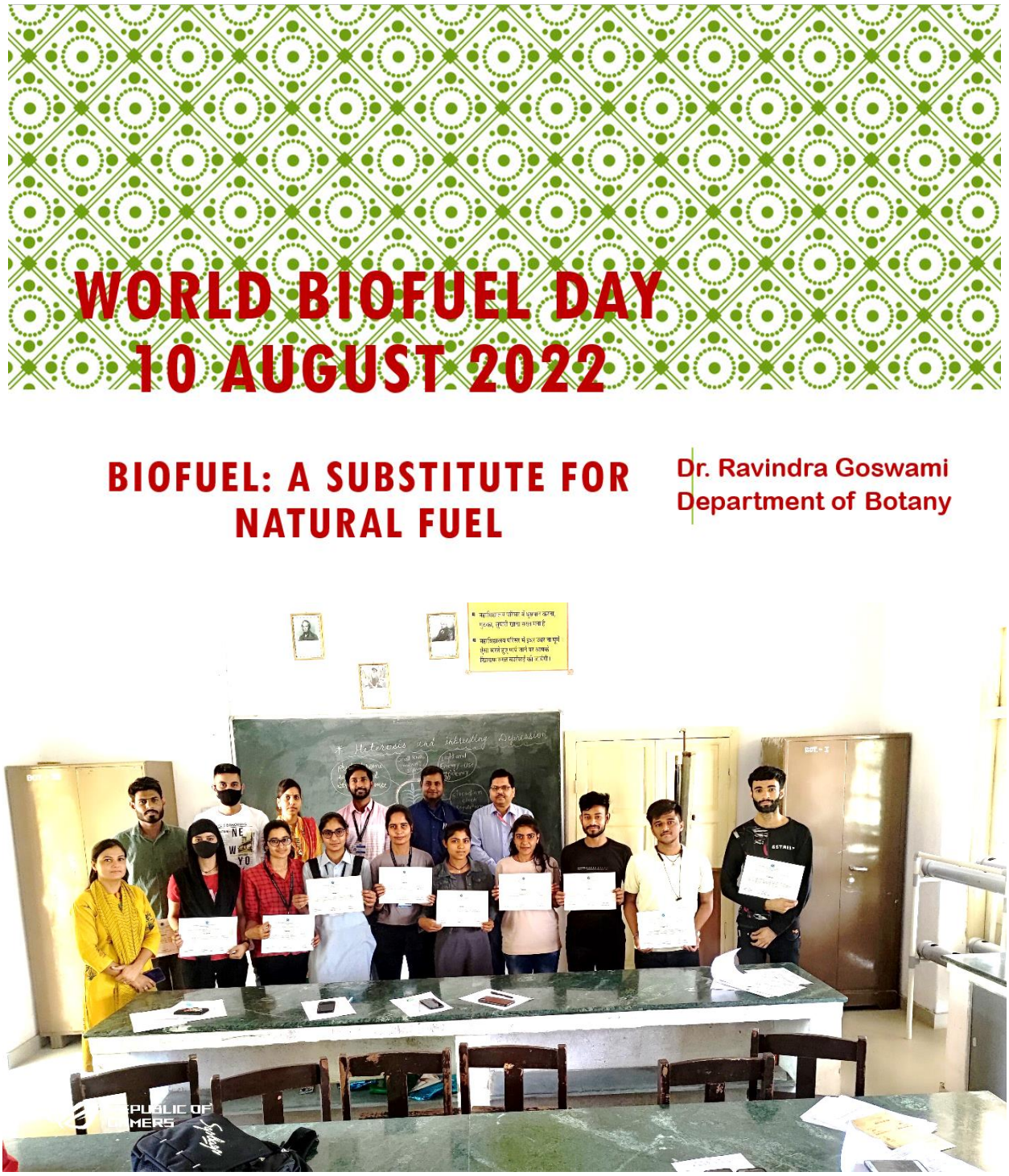
UPGRADING

Following deconstruction, intermediates such as crude bio-oils, syngas, sugars, and other chemical building blocks must be upgraded to produce a finished product. This step can involve either biological or chemical processing.

Microorganisms, such as bacteria, yeast, and cyanobacteria, can ferment sugar or gaseous intermediates into fuel blendstocks and chemicals. Alternatively, sugars and other intermediate streams, such as bio-oil and syngas, may be processed using a catalyst to remove any unwanted or reactive compounds in order to improve storage and handling properties.

The finished products from upgrading may be fuels or bioproducts ready to sell into the commercial market or stabilized intermediates suitable for finishing in a petroleum refinery or chemical manufacturing plant.

GLIMPSES OF THE SEMINAR



Distribution of Certificates by the Principal sir after the Seminar