Department : Chemical ENgineering		
Academic Year : 2021-22		
Sr. No.	**Programme Code**	**Name of the Programme**
01.	211	B. Tech. Chemical Engineering

Following students have carried out their Project work for the academic session 2021-22

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1	Abhishek Soni GGV/18/1008	1-3
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25	Ujjwal Kumar GGV/18/1239	25-27
26	Palavalasa Thomas Babu GGV/18/1196	25-27
27	Amit Dixit GGV/18/1036	28-30
28	Yamjala Rakesh GGV/18/1352	28-30
29	Digambar Prasad Rajwade GGV/18/1099	28-30
30	Mantosh Kumar Yadav GGV/18/1165	31-33
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A

Major Project Report

On

Experimental Study on Reactive Extraction of Gallic Acid

Submitted in the partial fulfillment of the requirement for award of the degree of

Bachelor of Technology

in

Chemical Engineering

Submitted by

ABHISHEK SONI

CHENNUPATI VIRAT SWARUPA CHARI

GOVIND KOSRE

Guided by

Mrs. Anuradha N. Joshi

Assistant Professor

Department of Chemical Engineering
School of Studies in Engineering and Technology
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(2018-22)

CERTIFICATE OF APPROVAL

This is to certify that the report entitled "Experimental Study on Reactive Extraction of Gallic Acid" submitted by **Abhishek Soni (18101001), CH. Virat Swarupa Chari (18101007), and Govind Kosre (18101019)** to the **Department of Chemical Engineering, School of Studies in Engineering and Technology, GGU, Koni, Bilaspur, (C.G.)** towards the fulfillment of requirements for the award of degree of Bachelor of Technology in Chemical Engineering is a bonafide record of work carried by them in the Department of Chemical Engineering, School of Studies in Engineering and Technology, GGU, Bilaspur under my supervision and guidance,

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Abstract

Gallic acid is an important phenolic acid as it has significant applications in pharmaceutical industries. In this study, the physical and reactive extraction process is performed to extract the gallic acid from its aqueous solution in six different concentrations. The range of the concentration was 0.01-0.06 mol/L. Firstly, physical extraction is performed using different diluents namely Soybean oil, Sunflower oil, benzene, and petroleum ether. In this study, the order of %Extraction found was, Sunflower oil (17.77%) >Soybean oil (13.17%) >Benzene (9.27%) >petroleum ether (7.94%). In order to improve the extraction process the experiments of reactive extraction were performed using Tri-n-butyl Phosphate (TBP) in three different concentrations i.e 0.365 mol/L, 0.73 mol/L, and 1.095 mol/L with diluents mainly Soybean oil, Sunflower oil, Benzene. On adding TBP, % extraction efficiency of Soybean oil increased from 13.17% to 52.1 %, for Sunflower oil it was increased from 17.77% to 74.16%, and for benzene from 9.2% to 68.7%. Other parameters like partition coefficient (P), distribution coefficient (K_D), dimerization constant (D), loading factor (Z), and equilibrium complexation constant (Ke) have been calculated.

A

Major Project Report

On

"Optimization of Adsorptive Removal of Victoria Blue B from Wastewater"

Submitted in the partial fulfillment of the requirement for award of the degree of

Bachelor of Technology in

Chemical Engineering

Submitted by

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Rani Besra

Guided by

Dr. Saurabh Meshram

Assistant Professor

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Department of Chemical Engineering

School of Studies of Engineering and Technology

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May 2022

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CERTIFICATE OF APPROVAL

This is to certify that the thesis entitled **"Optimization of Adsorptive Removal of Victoria Blue B from Wastewater"** submitted by **Miss. Chanchal Kashyap** (Roll no.- 18101007) and **Miss. Rani Besra** (Roll no.- 18101032) in fulfillment of the requirements for the degree of **Bachelor of Technology** in **Department of Chemical Engineering**, is a record of bonafide and original research work carried out by them under our guidance and the thesis does not include any work which has previously been submitted for the award of other degree, diploma, associate-ship, fellowship, or other similar title to them. We, further certify that the work reported in this thesis was carried out independently by the candidates.

Approved by

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ABSTRACT

The present study deals with the removal of Victoria Blue B from wastewater using Carbon Black. Batch adsorption studies were conducted by varying contact time (30-120 min), adsorbent dosage (0.5-1.5 g) and pH (2-8). Response Surface Methodology (RSM) design called Central Composite Design (CCD) was used to obtained number of experimental runs and optimize the adsorption process. Experiments were run at the obtained optimum conditions. The effects of three variables, pH, contact time and dose of adsorbent using carbon black and their effects on percentage of Victoria Blue B dye removal and adsorption capacity were investigated. Based on CCD design, quadratic models and two factor interactions were developed correlating the adsorption variables to the two responses. Analysis of variance (ANOVA) was used to judge the adequacy of the model. Counter plot and 3D-Surface Plot were plotted using CCD. The maximum and minimum % removal of Victoria Blue B dye obtained was 99.49 % and 92.34% respectively at its respective optimum conditions. The maximum and minimum adsorptive capacity obtained was 5.42 mg/g and 0.55 mg/g respectively at its optimum conditions.

A

Major Project Report

On

CFD ANALYSIS OF HEAT TRANSFER IN THE GASIFICATION OF RICE HUSK USING SUPERCRITICAL WATER FLUIDIZED BED TECHNOLOGY

Submitted in the partial fulfillment of the requirement for award of the degree of

Bachelor of Technology

in

Chemical Engineering

Submitted by

THAMMINA KIRAN (18101041)

PENUMAKA DILIP RAMAN (18101025)

PRAKHAR SHARMA (18101027)

Guided by

(Dr) S.N. Saha
Professor
Department of Chemical Engineering

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May 2022

DECLARATION BY THE SCHOLAR

I / we hereby declare that the work presented in the major project entitled **"CFD analysis of heat transfer in the gasification of rice husk using supercritical water fluidized bed technology"** in partial fulfillment of the requirement for Guru Ghasidas Vishwavidyalaya, Bilaspur for the award of degree of Bachelor of Technology in Chemical Engineering. The work has been performed by T.Kiran, P.Dilip and Prakar Sharma under the guidance of Prof. S.N. Saha.

The entitled work is original and no part of this work is submitted in any university for the award of any degree or diploma.

Signature of the Students

Thammina Kiran

Penumaka Dilip

Prakhar Sharma

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ABSTRACT

Hydrogen production from waste biomass is considered to be a clean gaseous fuel and efficient for heat and power generation due to its high energy content and eco-friendly nature. Supercritical water gasification of biomass is found promising in hydrogen production by avoiding biomass drying and allowing maximum conversion. Waste biomass containing cellulose, sewage waste etc. can be utilized in the production of hydrogen and it is essential to understand their degradation mechanisms to engineer hydrogen production. For gasification, supercritical water fluidized bed reactors can be employed as a non-conventional method. Supercritical water fluidized bed (SCWFB) is a new reactor concept for the gasification of biomass and coal in supercritical water. Reaction temperature, pressure, feed concentration, residence time and catalyst have significant roles in gasification. In this paper, the Eulerian two-fluid model based on Kinetic Theory of Granular Flow in fluidized bed was established and NIST REFPROP equations were imported to input supercritical water properties in ANSYS FLUENT (2021 R2). The results of gasification of rice husk without consideration of chemical reactions show with the increase in the superficial velocity of supercritical water, the bed-to-wall heat transfer coefficient increases, reaches a maximum value and then decreases in SCW fluidized bed. Moreover, there is an increase in the minimum fluidization velocity with increase in the wall temperature.

A

Major Project Report

On

STUDY OF KINETICS OF ESTERIFICATION REACTION

Submitted in the partial fulfilment of the requirement
For award of the degree of

Bachelor of Technology

In

Chemical Engineering

Submitted by: -

GAURAV KUMAR (18101016)
GITANJALI (18101017)
RAMVIJAY YADAV (18101031)

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DECLARATION BY THE SCHOLAR

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The entitled work is original and no part of this work is submitted in any university for the award of any degree or diploma.

Signature of the Student	Signature of student	Signature of student
Gaurav Kumar (18101016)	Gitanjali (18101017)	RamVijay Yadav (18101031)

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ABSTRACT

Catalytic Esterification Reaction of acrylic acid with n- butyl alcohol, catalyzed by sulphuric acid has been carried out in stirred batch reactor under atmospheric pressure. Kinetics namely rate constants, equilibrium constant, activation energy, enthalpy and entropy were calculated by experimental results. Different reaction temperatures varies from 50 to 70°C at constant catalyst loading 2% (v/v) and alcohol/acid molar ratio 1:1. The H_2SO_4 catalyst loading is ranged 1-3% (v/v) of reaction mixture at a fixed temperature of 50°C and initial reactants mole ratio of 1:1 was used in the reaction system. The temperature dependence is exponential and expressed by Arrhenius type of relationship. The rate equation has a remarkable fit to the data and was able to describe the behaviour of the system at various reaction temperatures. sulphuric acid as catalyst for esterification of acrylic acid with n –butyl alcohol.

A

Major Project Report

On

Generation Of Bioenergy from Microbial Fuel Cells and Optimize the Variables Using Response Surface Methodology (RSM)

Submitted in the partial fulfillment of the requirement for award of the degree of

Bachelor of Technology

in

Chemical Engineering

Submitted by

Chhavi Verma

Jatin Patel

Nishek Kumar Gautam

Guided by

Dr. Sandeep Dharmadhikari

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DECLARATION BY THE SCHOLAR

I / we hereby declare that the work presented in the minor project entitled "**Generation Of Bioenergy From Microbial Fuel Cells And Optimize The Variables Using Response Surface Methodology (RSM)**" in partial fulfillment of the requirement for Guru Ghasidas Vishwavidyalaya, Bilaspur for the award of degree of Bachelor of Technology in Chemical Engineering. The work has been performed by **Chhavi Verma , Jatin Patel , Nishek Kumar Gautam** under the guidance of **Dr. Sandeep Dharmadhikari.**

The entitled work is original and no part of this work is submitted in any university for the award of any degree or diploma.

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2. Jatin Patel(18101020)
3. Nishek Kumar Gautam(17101214)

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ABSTRACT

This review explores the strength producing capability of microbial fuel cells(MFCs) in discrepancy to utmost of MFC studies, which targets the long- term solicitations of renewable strength product and wastewater treatment. This paper considers a spot operation that can be used right down in exercise, specifically powering detectors from wastewater, purpose is to study the performance traits of MFCs in this trial. Also presents the current statistical view of proton exchange membrane & the successful adventure of membranes and its use in energy cell technology. Microbial fuel cells(MFCs) are used for energy generation from wastewater through microbial oxidation of organic adulterants. Energy cell system is an advanced power system for the future that's sustainable, clean, and environmentally friendly. We can intensively lessen the pollution from the energy sector through environmentally friendly attributes. With its adding demand, utmost effective, zero or low emigration system of producing electricity it has the implicit to contend with the reactionary energies in the future and disguise as a dependable source of energy. Proton exchange membrane fuel cells(PEMFCs) directly transfigure chemical energy into electrical energy with high energy viscosity and zero carbon emigrations, thereby offering a clean energy volition for fossil energies. Proton exchange Membrane conducting protons from the anode to the cathode within the cell's membrane electrode assembles(MEA) separates the reactant energies and prevents electrons from passing through. Electrons flow from an external circuit, from anodic to cathodic cube with the help of bipolar plates(BPs) and induce electricity, High proton conductivity is the most important specific of the PEM, as this contributes to the performance and effectiveness of the energy cell.

KeyWords:
Open circuit voltage(**OCV**), power density (**PD**), current density (**CD**), chemical oxygen demand(**COD**), water uptake and ion exchange capacity(**IEC**).

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A

Major Project Report

On

"REVIEW OF PROTON EXCHANGE MEMBRANE FOR MICROBIAL FUEL CELL AND OPTIMIZATION OF PARAMETERS USING RESPONSE SURFACE METHODOLOGY"

Submitted in the partial fulfilment of the requirement
for award of the degree of

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in
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Submitted by

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DECLARATION BY THE SCHOLAR

We hereby declare that the work presented in the project entitled "**Review of Proton Exchange Membrane for Microbial Fuel Cell and Optimization of Parameters Using Response Surface Methodology**" in partial fulfilment of the requirement for Guru Ghasidas Vishwavidyalaya, Bilaspur for the award of degree of Bachelor of Technology in Chemical Engineering. The work has been performed by **Shivani Kumari, Pranjal Nirmalkar and Banoth Sai Kiran** under the guidance of **Dr. Amit Jain**

The entitled work is original and no part of this work is submitted in any university for the award of any degree or diploma.

Shivani Kumari	Pranjall Nirmalkar	Banoth Sai Kiran
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ABSTRACT

The current statistical picture of proton exchange membranes, as well as the successful venture of membranes and their usage in fuel cell technology, is presented in this paper. The fuel cell system is an advanced power system for the future that is ecologically benign, clean, and sustainable. Through ecologically favourable qualities, we can significantly reduce pollution from the energy sector. With rising demand, the most efficient, zero- or low-emission method of producing electricity has the potential to compete with fossil fuels and become a stable source of energy in the future. Proton exchange membrane fuel cells (PEMFCs) directly transform chemical energy into electrical energy with high energy density and zero carbon emissions, thereby offering a clean energy alternative for fossil fuels. Proton exchange Membrane conducting protons from the anode to the cathode within the cell's membrane electrode assemblies (MEA) separates the reactant fuels and prevents electrons from passing through. Electrons flow from an outer circuit, from anodic to cathodic compartment with the help of bipolar plates (BPs) and generate electricity. High proton conductivity is the most important characteristic of the PEM, as this contributes to the performance and efficiency of the fuel cell. However, they exhibit some limitations like membrane's durability to ensure that it can maintain its performance under the actual fuel cell's operating conditions and perform a long-lifetime. At present Nafion is the standard bench mark of PEMs but are limited due to their high cost, loss of conductivity at elevated temperatures due to dehydration, and fuel crossover. The purpose of our paper is to highlight different types of materials used in preparing proton exchange membranes which were compared to Nafion & their synthesis. Proton-exchange alternatives to Nafion have become a well-researched topic in recent years and also discussed about some of the new materials, technologies, and research directions being pursued to try to meet the demanding performance and durability needs of the PEM fuel cell industry.

A

Project Report

on

Comparative Study of Adsorption of Crystal Violet over different Activated Carbon

Submitted in the partial fulfillment of the requirement for award of the degree of

Bachelor of Technology
in
Chemical Engineering

Submitted by

EKANSH KUMAR
KETAN SINGH RATHORE
PRADYUMN KR UPADHYAY

Guided by

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May 2022

DECLARATION BY THE SCHOLAR

We hereby declare that the work presented in the minor project entitled "**Comparative Study of Adsorption of Crystal Violet over different Activated Carbon**" in partial fulfillment of the requirement for Guru Ghasidas Vishwavidyalaya, Bilaspur for the award of degree of Bachelor of Technology in Chemical Engineering. The work has been performed by **EKANSH KUMAR, KETAN SINGH RATHORE, PRADYUMN KR UPADHYAY** under the guidance of **MR. VISHNU PRASAD YADAV**

The entitled work is original and no part of this work is submitted in any university for the award of any degree or diploma.

Signature of the Student	Signature of the Student	Signature of the Student
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ABSTRACT

Chemically Activated carbon and non-Chemically activated carbon obtained from Delonix regia, Chemically Activated carbon obtained from almond shell and Carbon black from waste rubber to furnace oil manufacturing industry are used as an adsorbent for the adsorption of Crystal Violet. The parameters that are affects the percentage removal of Crystal Violet are pH, adsorbent dosage, initial Concentration and Contact time. The percentage removal of Crystal Violet is maximum at pH 2. The percentage removal of Crystal Violet is maximum at dose 0.01g in case of almond shell and both Chemically and Non-Chemically activated carbon obtained from Delonix regia but in case of Carbon black from waste rubber to furnace oil manufacturing industry The activated carbon can be reused 4 to 5 times.

A

Major Project Report

On

" STUDY OF PREPARATION OF POLYMERIC NANOMATERIALS USING EMULSION POLYMERIZATION "

Submitted in the partial fulfillment of the requirement
for award of the degree of

Bachelor of Technology

in

Chemical Engineering

Submitted by

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Department of Chemical Engineering

Department of Chemical Engineering
School of Studies of Engineering and Technology
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)- 495009
May 2022

DECLARATION BY THE SCHOLAR

we hereby declare that the work presented in the major project entitled "**STUDY OF PREPARATION OF POLYMERIC NANOMATERIALS USING EMULSION POLYMERIZATION**" in partial fulfillment of the requirement for Guru Ghasidas Vishwavidyalaya, Bilaspur for the award of degree of Bachelor of Technology in Chemical Engineering. The work has been performed by Deepak sen (18101012), Mouli Sai Karanam (18101023), Suryakant Yadav (17101219) der the guidance of Dr. Anil Kumar Chandrakar. The entitled work is original and no part of this work is submitted in any university for the award of any degree or diploma.

Sign	Sing K. Mouli Sai	Sign
Deepak sen	Moulli sai Karanam	Suryakant Yadav
Roll no. – 18101012	Roll no. – 18101023	Roll No. – 17101219
Enrollment no. – GGV/18/1093	Enrollment no. - GGV/18/1173	Enrollment No. – GGV/17/1226

CERTIFICATE OF APPROVAL

This is to certify that the above statement made by the candidate is correct tothe best of my knowledge

Approved by

Signature

Dr. Anil Kumar Chandrakar
Head
Department of Chemical Engineering
School of Studies of
Engineering and Technology
Guru Ghasidas Vishwavidyalaya
Bilaspur (C.G.)

Guided by

Signature

Dr. Anil Kumar Chandrakar
Associate Prof. & Head
Department of Chemical Engineering
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Bilaspur (C.G.)

विभागाध्यक्ष, रासायनिक अभियांत्रिकी
HoD, Chemical Engineering
प्रौद्योगिकी संस्थान/Institute of Technology
गुरु घासीदास विश्वविद्यालय, बिलासपुर (छ.ग.)
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)

ABSTRACT

In recent years, there has been a rise in interest in developing new nanoparticle-based drug delivery systems. Nanoparticles have high stability, high specificity, high drug transport capability, controlled release capability, the potential to use in multiple routes of administration, and thus the ability to deliver both hydrophilic and hydrophobic drug molecules. Polymeric nanoparticles are one of the most studied methods of drug encapsulation in current medicine. The formulations that can deliver the drug to specific sites in an extremely controlled manner are of particular interest. In this context, stimulus-responsive nanoparticles and enhanced intercellular drug delivery. As a result, this review addressed modern drug delivery mechanisms and the impact of internal and external factors. and focuses on nanoparticle classification and manufacturing processes, characterization, applications, advantages, and health perspectives.

A

Major project report

On

Comparative study of raw and activated carbon obtained from potato peels for wastewater treatment for removal of pharmaceutical pollutants

Submitted in partial fulfillment of the requirement
For the award of the degree of
Bachelor of Technology
In
Chemical Engineering

Submitted by

Anushka Mishra
Ujjwal Kumar
Palavalasa Thomas Babu

Guided by
Mr. Neeraj Chandrakar
Assistant Professor
Department of Chemical Engineering
School of Studies of Engineering and Technology
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)- 495009

(2018-22)

CERTIFICATE OF APPROVAL

This is to certify that the report entitled "Comparative study of raw and activated carbon obtained from potato peels for wastewater treatment for removal of pharmaceutical pollutants" submitted by Anushka Mishra, Ujjwal Kumar, and P. Thomas Babu to Department of Chemical Engineering, School of Studies in Engineering and Technology, GGU, Koni, Bilaspur, (C.G.) towards the fulfillment for the award of the degree of Bachelor of Technology, GGU, Bilaspur under my supervision and guidance.

Approved by **Dr. Anil Kumar Chandrakar** Head Department of Chemical Engineering School of Studies of Engineering and Technology Guru Ghasidas Vishwavidyalaya Bilaspur (C.G.)	*Guided by* **Mr. Neeraj Chandrakar** Assistant Professor Department of Chemical Engineering School of Studies of Engineering and Technology Guru Ghasidas Vishwavidyalaya Bilaspur (C.G.)

विभागाध्यक्ष, रासायनिक अभियांत्रिकी
HoD, Chemical Engineering
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Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)

ABSTRACT

With rapid urbanization comes a large amount of wastewater containing recalcitrant organic and inorganic pollutants. It is the inability of conventional treatment technologies to bring down recalcitrant pollutant concentrations below desired standards that has given rise to tertiary treatment technologies. As a tertiary treatment technique, adsorption is widely preferred due to its ease of operation, high efficiency, and wide range of applications. A key factor driving the popularity of activated carbon is the ease of synthesis, stability, and large specific surface area (SSA) of the material. Here, we look at the synthesis and performance of AC derived from carbonaceous precursors for pollutant removal, the role of activation techniques, modifications for specific pollutants, regeneration techniques, and their disposal. Trend analysis showed that research on AC derived from agricultural waste and sludge has a high potential for at least another 50 and 25 years, respectively.

A

Project Report

On

Preparation and Characterization of Activated Carbon from Almond Shell and Its Application in Fluoride Removal from Synthetic Water

Submitted in the partial fulfillment of the requirement

For award of the degree of

Bachelor of Technology

In

Chemical Engineering

Submitted by

Amit Dikshit

Digambar Prasad Rajwade

Yamjala Rakesh

Guided by

Dr. Raghwendra Singh Thakur

Assistant Professor

Department of Chemical Engineering

School of Studies of Engineering and Technology

Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) - 495009

May 2022

CERTIFICATE OF APPROVAL

This is to certify that the report entitled "**Preparation and Characterization of Activated Carbon from Almond Shell And Its Application in Fluoride Removal from Synthetic Water**" submitted by **Amit Dikshit (18101003), Digambar Prasad Rajwade (18101013) and Yamjala Rakesh (18101042)** to **the Department of Chemical Engineering, School of Studies of Engineering and Technology Guru Ghasidas Vishwavidyalaya Bilaspur** towards the fulfillment of requirements for the award of degree of Bachelor of Technology in **Chemical Engineering** is a bonafied record of work carried out by them in the **Department of Chemical Engineering, School of Studies of Engineering and Technology, Guru Ghasidas Vishwaividyalaya, Bilaspur** under my supervision and guidance.

Approved by

Dr. Anil Kumar Chandrakar
Head
Department of Chemical Engineering,
School of Studies of Engineering and Technology
Guru Ghasidas Vishwavidyalaya, Bilaspur

Guided by

Dr. Raghwendra Singh Thakur
Assistant Professor
Department of Chemical Engineering
School of Studies of Engineering and Technology
Guru Ghasidas Vishwavidyalaya, Bilaspur

विभागाध्यक्ष, रासायनिक अभियांत्रिकी
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Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)

ABSTRACT

The almond shell (prunus dulcis shell) is sun dried to make the moisture content at the minimum, then it is crushed. The particle size is reduced to 125 micron or 125 nm. The granular particles are thermally carbonized at 400°C, 500°C and 600°C to get thermally activated carbon in electric furnace i.e. muffle furnace. And also the particles are impregnated with zinc chloride ($ZnCl_2$) at 16% impregnated ratio. Then the chemically treated powder particles are then also carbonized at 400°c, 500°c and 600°c in the muffle furnace. Proximate analysis of almond shell particle was done to investigate moisture, ash, volatile matter and fixed carbon content. Characterization of the adsorbents was done through FTIR, BET and XRD analyses. Activated carbon (AC) prepared using $ZnCL_2$ as activating agent was used to adsorb fluoride (F^-) from an aqueous solution

गुरु घासीदास विश्वविद्यालय
(केन्द्रीय विश्वविद्यालय अधिनियम 2009 क्र. 25 के अंतर्गत स्थापित केन्द्रीय विश्वविद्यालय)
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Guru Ghasidas Vishwavidyalaya
(A Central University Established by the Central Universities Act 2009 No. 25 of 2009)
Koni, Bilaspur – 495009 (C.G.)

A

Major Project Report

On

PREPARATION AND CHARACTERIZATION OF FUEL PELLET FROM RICE HUSK BLENDED WITH COAL

Submitted in the partial fulfillment of the requirement

for award of the degree of

Bachelor of Technology

In

Chemical Engineering

Submitted by

MANTOSH KUMAR YADAV (18101022)

GOLLAPALLI VENKATESH (18101018)

GADIPELLY SRIKANTH (18101015)

Guided by

Mr. Gautam Prasad Dewangan
Assistant Professor
Department of Chemical Engineering

Department of Chemical Engineering

School of Studies of Engineering and Technology

Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)- 495009

May 2022

CERTIFICATE OF APPROVAL

This is to certify that the project report on **"Preparation and Characterization of Fuel Pellet from rice husk blended with coal"** submitted by Mantosh Kumar Yadav (18101022), Gollapalli Venkatesh (18101018), Gadipelly Srikanth (18101015) in partial fulfillment of the requirements for the prescribed curriculum of Bachelor of Technology in Chemical Engineering at the Institute of Technology Guru Ghasidas Vishwavidyalaya, Bilaspur for the session 2018-22 in an authentic work to the best of my knowledge.

Approved by

Signature

Dr. Anil Kumar Chandrakar
Head
Department of Chemical Engineering
School of Studies of
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Guru Ghasidas Vishwavidyalaya
Bilaspur (C.G.)

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Signature 20/05/2022

Mr. Gautam Prasad Dewangan
Assistant Professor
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Bilaspur (C.G.)

विभागाध्यक्ष, रासायनिक अभियांत्रिकी
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Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)

ABSTRACT

Rice husk is a large - tonnage waste left from rice production. It is not subject to humification and therefore becomes a serious environmental pollutant. Due to the presence of two essential elements- carbon and silicon- in its composition, rice husk is a promising organo-mineral raw material. Rice husk contains a lot of material that can be used as a source of energy and participate in an enormous population's growth and economic development. The waste to energy is the best method to tackle this agricultural waste economically and environmentally friendly. The present project work focused on preparing a fuel pellet using rice husk and coal in different proportions. The 4 cm ID cold bed fluidization column was used to fluidize the prepared fuel pellets and studied the pellet's minimum fluidization velocity and complete fluidization velocity. Based on the present experimental work, a new correlation was proposed.