Department : Chemistry		
Academic Year : 2024-25		
Sr. No.	**Programme Code**	**Name of the Programme**
01.	2136	B. Sc. Chemistry

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Bilaspur 495009 (C.G.)

Signature and Seal of the Head

GREEN SYNTHESIS AND CHARACTERIZATION OF POLY LACTIC ACID

B.Sc. Project Report

By

Anjali Khunte

(Roll No.: 22103106)

Department of Chemistry

Guru Ghasidas Vishwavidyalaya Bilaspur (C.G.) India

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E-mail - akkhunte1311@gmail.com

Enrollment no - GGV/22/07006

9/5/25

Certificate

It is to certify that the work in the project report titled "Green synthesis and characterization of poly lactic acid (PLA) Biopolymer Film from natural sources" by Anjali Khunte has been approved under my supervision that this work has not been submitted elsewhere

09.05.2025

Prof. Khemchand Dewangan

Project Supervisor

Department of Chemistry

Guru Ghasidas Vishwavidyalaya

Bilaspur (C.G.)

09.05.2025

Prof. Khemchand Dewangan

Head of Department

Department of Chemistry

Guru Ghasidas vishwavidyalaya Bilaspur (C.G.)

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B.Sc. REVIEW WRITING REPORT

ON

Application of low-cost adsorbent for dye removal using agricultural waste

SUBMITTED TO

GURU GHASIDAS VISHWAVIDYALAYA (A CENTRAL UNIVERSITY)
KONI, BILASPUR, (C.G.), INDIA, 495009

FOR THE AWARD OF DEGREE OF

BACHELOR OF SCIENCE (Hons.)
IN
CHEMISTRY
BY

Sankalp Singh Paleria
(Enrollment No.: GGV/22/07051)

SUPERVISOR

Prof. Charu Arora

DEPARTMENT OF CHEMISTRY
SCHOOL OF STUDIES OF INTERDISCIPLINARY EDUCATION AND RESEARCH
GURU GHASIDAS VISHWAVIDYALAYA (A CENTRAL UNIVERSITY)
KONI, BILASPUR, (C.G.), INDIA, 495009

2025

DECLARATION BY THE CANDIDATE

I hereby declare that this B.Sc. Review Writing report entitled **"Application of low-cost adsorbent for dye removal using agricultural waste,**" is my original research work carried under the supervision of Prof. Charu Arora, Department of Chemistry, School of Studies of Interdisciplinary Education and Research, Guru Ghasidas Vishwavidyalaya (A Central University), Koni, Bilaspur, (C.G.), India, 495009.

The particulars given in this report are true and authentic to the best of my knowledge and belief.

Date: 09-05-2025
Place: Bilaspur

Sankalp Singh Paleria
B.Sc. (Hons.) Chemistry, Semester-VI
Enrollment No: GGV/22/07051

Department of Chemistry
Guru Ghasidas Vishwavidyalaya, Koni, Bilaspur, (C.G.), India, 495009
(A Central University Established by the Central University Act,2009 No. 25 of 2009)

CERTIFICATE

This is to certify that the B.Sc. Review Writing report entitled *"***Application of low cost adsorbent for dye removal using agricultural waste,**" submitted by **Sankalp Singh Paleria** (Enrollment No.: GGV/22/07051) *for the award of the degree of* **Bachelor of Science (Hons.) in Chemistry** is carried out under the supervision of Dr. Charu Arora, Department of Chemistry, School of Studies of Interdisciplinary Education and Research, Guru Ghasidas Vishwavidyalaya (A Central University), Koni, Bilaspur, (C.G.), India, 495009.

Prof. Charu Arora

Prof. K Dewangan
Professor and Head of
Department

ACKNOWLEDGEMENTS

First and foremost, I wish to express my deepest gratitude to my mentor and supervisor, Dr. Charu Arora, Assistant Professor, Department of Chemistry, Guru Ghasidas Vishwavidyalaya (A Central University), Bilaspur, C.G., for his invaluable guidance, constant support, and utmost encouragement throughout the duration of my coursework.

I wish to Sincerely thank Prof. Charu Arora, Professor and Head, Department of Chemistry, Guru Ghasidas Vishwavidyalaya (A Central University), Bilaspur, C.G. for providing me with the opportunity and resources to undertake the B.Sc. Review Writing coursework.

I am deeply thankful to the faculty and staff of the Department of Chemistry, Guru Ghasidas Vishwavidyalaya (A Central University), Bilaspur, C.G., for their direct or indirect assistance and support during my coursework.

I am also thankful to my family and friends for their understanding, encouragement, and support.

Lastly, I acknowledge that the work presented in this report is a result of the cooperation and support of many individuals who may not be mentioned here, but I am sincerely grateful. I extend my thanks to all of them.

Date: 09-05-2025
Place: Bilaspur

Sankalp Singh Paleria
B.Sc. (Hons.) Chemistry, Semester-VI
(Enrollment No.: GGV/22/07051)

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A

Literature Based Project Report

ON

A Review on Wittig and Ylide-Mediated Strategies for Alkene Synthesis: A Modern Perspective

Submitted for

Partial Fulfillment of the Requirement for the Degree of

Bachelor of Science in Chemistry

Session: 2024-2025

SUPERVISED BY
Dr. Subhash Banerjee
Associate Professor
Department of Chemistry
Guru Ghasidas Vishwavidyalaya
Bilaspur (C.G.)

SUBMITTED BY
Shreyash Pandey
B. Sc. (Chemistry)
(Sixth Semester)
Enroll No. GGV/22/07056
Roll no. 22103156

Department of Chemistry
Guru Ghasidas Vishwavidyalaya
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Department of Chemistry

Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)
(A Central University)

CERTIFICATE

This is to certify that SHREYASH PANDEY has carried out this literature survey-based project under my supervision in the Department of Chemistry, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) on the topic "A REVIEW ON THE WITTIG AND YLIDE-MEDIATED STRATEGIES FOR ALKENE SYNTHESIS: A MODERN PERSPECTIVE".

He has worked diligently, methodically and also collected the literature very sincerely and carefully. During this project work he has learnt about various organic synthesis related to the entitled topic.

To the best of our knowledge the work presented in this project is original and has not been submitted anywhere. I recommend the project report to be forwarded to the respective examiners for evaluation. I wish every success in his career and life.

SUBMITTED BY

SHREYASH PANDEY
BSc. Chemistry
VI Semester
Enroll No. GGV/22/07056
Roll no. 22103156

SUPERVISED BY

Dr. Subhash Banerjee
Associate Professor
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GGV, Bilaspur (C.G.)

CONTENTS

A

Literature Based Project Report

ON

A Review on Synthesis and Application of Imidazopyridine derivatives

Submitted for

Partial Fulfillment of the Requirement for the Degree of

Bachelor of Science in Chemistry

Session: 2024-2025

SUPERVISED BY
Dr. Subhash Banerjee
Associate Professor
Guru Ghasidas Vishwavidyalaya

SUBMITTED BY
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9/5/25

Department of Chemistry
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)
(A Central University)

CERTIFICATE

This is to certify that YOGITA VERMA has carried out this literature survey-based project under my supervision in the Department of Chemistry, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) on the topic "A REVIEW ON THE SYNTHESIS AND APPLICATION OF IMIDAZOPYRIDINE DERIVATIVES".

She has worked diligently, methodically and also collected the literature very sincerely and carefully. During this project work she has learnt about various organic synthesis related to the entitled topic.

To the best of our knowledge the work presented in this project is original and has not been submitted anywhere. I recommend the project report to be forwarded to the respective examiners for evaluation. I wish every success in her career and life.

SUBMITTED BY
YOGITA VERMA
B. Sc. Chemistry
VI Semester
Enroll No. GGV/22/07068
Roll no. 22103168

SUPERVISED BY
Dr. Subhash Banerjee
Associate Professor
Department of Chemistry
GGV, Bilaspur (C.G.)

CONTENTS

A Review on the Applications of Oxone in Organic Synthesis

A Project submitted to

Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)

In partial fulfillment

For the award of the degree

Of

Bachelor of Science
in

Chemistry

by

Bhawana Narmada

Under the Guidance of

Dr. Subhash Banerjee

Research center
Department of Chemistry,
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G)

May 2025

9/5/25

CERTIFICATE OF THE SUPERVISOR

This is to certify that the work incorporated in the major project "***A Review on the Applications of Oxone in Organic Synthesis***", is a record of research work carried out by ***Bhawana Narmada*** bearing RollNo.22103110, Enrollment No. GGV/22/07010 under my guidance and supervision for the award of Degree of the *Bachelor o f Science* in Chemistry in the Guru Ghasidas Vishwavidyalaya, Bilaspur, (CG) India.

To the best of my knowledge and belief the major dissertation synopsis i) Embodies the work of the candidate herself, ii) Has duly been completed, iii) Fulfils the requirement of the Ordinance relating to the Bachelor of Science in Chemistry degree of the University is up to the desired standard both in respect of contents and language for being referred to the examiners.

(Signature of the Supervisor)

Dr. Subhash Banerjee
Associate Professor
Department of Chemistry,
G.G.V. Bilaspur (C.G)

Carbon – Carbon Bond Formation via Coupling Reaction

A Project submitted to

Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)

In partial fulfillment

For the award of the degree

Of

Bachelor of Science in

Chemistry

by

Girdhar Kumar

Under the Guidance of

Dr. Subhash Banerjee

Research center

Department of Chemistry,

Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G)

9/5/25

CERTIFICATE OF THE SUPERVISOR

This is to certify that the work incorporated in the major project "***Carbon – Carbon Bond Formation via Coupling Reaction***", is a record of research work carried out by ***Girdhar Kumar*** bearing Roll No. 22103123, Enrollment No. GGV/22/07023 under my guidance and supervision for the award of Degree of the *Bachelor of Science* in Chemistry degree at the Guru Ghasidas Vishwavidyalaya, Bilaspur, (CG) India.

To the best of my knowledge and belief the major dissertation synopsis i) Embodies the work of the candidate himself, ii) Has duly been completed, iii) Fulfils the requirement of the Ordinance relating to the Bachelors of Science in chemistry degree of the University is up to the desired standard both in respect of contents and language for being referred to the examiners.

(Signature of the Supervisor)

Dr. Subhash Banerjee
Associate Professor
Department of Chemistry, G.G.V. Bilaspur (C.G)

Design of a Schiff Base chemo sensor for Rapid Colorimetric and Turn-On Fluorescence Sensing of Zn^{2+}

A Project Report Submitted

To

Guru Ghasidas Vishwavidyalaya, Bilaspur

In Partial Fulfillment to the Requirement for the degree of

Bachelor of Science

In

Chemistry

SUBMITTED BY

PRAKHAR MISHRA

SUPERVISOR

DR. GOUTAM KUMAR PATRA

Department Of Chemistry

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

9/5/25

रसायन विज्ञान

Department of Chemistry

गुरु घासीदास विश्वविद्यालय, बिलासपुर-495009, छत्तीसगढ़

Guru Ghasidas Vishwavidyalaya, Bilaspur-495009, Chhattisgarh

(A Central University established by the Central University Act 2009 No. 25 of 2009)

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Dr. Goutam Kumar Patra

Professor

Dept. of Chemistry

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Phone: 9433378801

CERTIFICATE

This is to certify that PRAKHAR MISHRA has completed the project work entitled "Design of a Schiff Base Chemosensor for Rapid Colorimetric and Turn-On Fluorescence Sensing of Zn^{2+}" under my supervision for the partial fulfillment of required degree of "Bachelor of science".

I wish his every success in the future life

Date: 09/08/25

Signature

Place: Bilaspur

CONTENTs

An *o*-Vanillin-Based Schiff Base Chemosensor for Colorimetric and Fluorescence *Turn-Off* Detection of Ni^{2+} Ions"

A Project Report Submitted

to

Guru Ghasidas Vishwavidyalaya, Bilaspur

In partial fulfilment to the requirement for the degree of

Bachelor of Science

in

Chemistry

Submitted by

Prahlad Kumar

Pandey

Supervisor .

Dr.Goutam Kumar

Patra

Department of Chemistry

Guru Ghasidas Vishwavidyalaya, Bilaspur-495009(C.G.) (2025)

9/5/25

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Professor
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CERTIFICATE

This is to certify that ***Prahlad Kumar Pandey*** *has completed the project work entitled ' An o-Vanillin-Based Schiff Base Chemosensor for Colorimetric and Fluorescence Turn-Off Detection of Ni^{2+} Ions" '****under*** *my supervision for the partial fulfillment of required degree of* ***"Bachelor of Science"****.*

I wish his every success in the future life.

Signature

Date: 09/05/25

Place: **Bilaspur**

CONTENT'S

Design of a Schiff Base Chemosensor for Dual Optical Sensing of Zn^{2+} Ion

A Project Report Submitted to

Guru Ghasidas Vishwavidyalaya, Bilaspur, C.G.

In partial fulfillment of the requirement for the degree of

Bachelors of Science
In
Chemistry

Submitted by
Durgesh Patel
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Enrollment No. – GGV/22/07020
Roll No.- 22103120

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Department of Chemistry
Guru Ghasidas Vishwavidyalaya

MAY 2025

9/5/25

Guru Ghasidas Vishwavidyalaya

(A Central University established under Central Universities Act 2009)

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CERTIFICATE

This is to certify that ***Durgesh Patel*** has completed the project dissertation entitled as ***"Design of a Schiff Base Chemosensor for Dual Optical Sensing of Zn^{2+} Ion"*** under my supervision for the partial fulfillment of required degree of ***"Bachelors of Science in Chemistry"***.

He has worked diligently, methodically and also collected the literature very sincerely. During this project work he has learnt about various aspects of chemical science to the entitled topic.

To the best of my knowledge and belief of the project

1) is original and has not been submitted anywhere for award of any degree.
2) Fulfils the requirement of the Ordinance relating to the B.Sc. degree of the university.

I wish his every success in the future life.

Date: 09/05/25

Place: **Bilaspur, C.G.**

Patra

Signature of the Supervisor

CONTENTS

"Colorimetric and Turn-Off Fluorometric Detection of Ni (II) using a Novel Schiff Base Chemosensor"

A Project Report Submitted to

Guru Ghasidas Vishwavidyalaya, Bilaspur,C.G.

In partial fulfillment of the requirement for the degree of

Bachelors of Science
In
Chemistry

Submitted by
Tanmay Patel
B.Sc. 6th Semester
Enrollment No.-GGV/22/07062
RollNo. - 22103162

Supervisor
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(Professor)
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MAY 2025

Guru Ghasidas Vishwavidyalaya

(A Central University established under Central Universities Act 2009)

Prof. Goutam Kumar Patra

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Bilaspur-495009,C.G.

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This is to certify that *Tanmay Patel* has completed the project dissertation entitled as **"Colorimetric and Turn-Off Fluorometric Detection of Ni (II) using a Novel Schiff Base Chemosensor"** under my supervision for the partial fulfillment of required degree of *"Bachelors of Science in Chemistry"*.

He has worked diligently, methodically and also collected the literature very sincerely. During this project work he has learnt about various aspects of chemical science entitled topic.

To the best of my knowledge and belief of the project

1) Is original and has not been submitted anywhere for award of any degree.
2) Fulfils the requirement of the Ordinance relating to the B.Sc.degree of the university.

I wish his every success in the future life.

Date: **09/05/2025**

Place: Bilaspur,C.G.

Signature of the Supervisor

CONTENT

Dual-Mode Detection of Ni^{2+} Using a Triazole-Linked Schiff Base: Colorimetric and Turn-On Fluorometric Sensing

A Project Report Submitted to

Guru Ghasidas Vishwavidyalaya, Bilaspur, C.G.

In partial fulfillment of the requirement
For the degree of

Bachelors of Science
In
Chemistry

Submitted by

Esha Patel

B.Sc.6thSem

Enrollment No.–GGV/22/07021

RollNo.-22103121

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MAY 2025

9/5/25

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Bilaspur-495009,C.G.

CERTIFICATE

This is to certify that *Esha Patel* has completed the project dissertation entitled as**"1-2-diphenyl-N^1,N^2-di(4H-1,2,4-triazol-4-yl)ethane-1,2-diimine: Synthesis and Spectroscopic Characterization"** under my supervision for the partial fulfillment of required degree of *"Bachelors of Science in Chemistry"*.

She has worked diligently, methodically and also collected the literature very sincerely.
During this project work he has learnt about various aspects of chemical science to the entitled topic.

To the best of my knowledge and belief of the project

1) Is original and has not been submitted anywhere for award of any degree.
2) Fulfils the requirement of the ordinance relating to the B.Sc. degree of the university.

I wish her every success in the future life.

Date: 09/08/25

Place: **Bilaspur,C.G.**

Signature of the Supervisor

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

Enzyme as a Biocatalyst

A Project report submitted to

In partial fulfillment of the requirement for the degree of

Bachelor of Science

In

Chemistry

Session –2024-25

Guided By

Dr. Bhaskar Sharma

Assistant professor

Department of Chemistry

Submitted By

Chand

B.Sc. 6th Sem

Roll no.- 22103113

9/5/25

Dr. KHEMCHAND DEWANGAN

Head of the department

Department of chemistry

Guru Ghasidas Vishwavidyalaya, Bilaspur, C.G. [A Central University]

Forwarding Certificate

This is certified that CHAND (B.Sc. Semester -6th Chemistry) has been completed a project on "ENZYME AS A BIOCATALIST" under the supervision of Dr. BHASKAR SHARMA. This project work is submitted for the partial fulfillment of required degree in chemistry and forwarded to Examiner for evaluation.

I wish her every success in the future life.

Signature

09.05.2025

Dr. KHEMCHAND DEWANGAN

अध्यक्ष / Head
रसायन शास्त्र विभाग
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Guru Ghasidas Vishwavidyalaya,
बिलासपुर 495009 (छ.ग.)
Bilaspur 495009 (C.G.)

Content

Evaluation of Parthenium ash as an Adsorbent for the Removal of Malachite Green from Wastewater

A Project Report Submitted to

Guru Ghasidas Vishwavidyalaya, Bilaspur, C.G.

This dissertation is submitted in partial fulfilment of the requirements for the degree of

Bachelor of Science

in

Chemistry

May 2025

Submitted by
Tejas Yadav
B.Sc. 6th Sem
Roll No. 22103163

Supervisor
Dr. Charu Arora
(Professor)
Department of Chemistry

Guru Ghasidas Vishwavidyalaya

(A Central University established under Central Universities Act 2009)

Tejas Yadav

B.Sc. 6th Sem Roll No. 22103163

Department of Chemistry
Guru Ghasidas Vishwavidyalaya
Bilaspur-495009, C.G.

DECLARATION

I, TEJAS YADAV, hereby declare that the project dissertation entitled ***"Evaluation of Parthenium ash as an Adsorbent for the Removal of Malachite Green from Wastewater"*** is submitted as partial fulfilment of B.Sc. in Chemistry. The project work has been performed in the Department of Chemistry, Guru Ghasidas Vishwavidyalaya, Bilaspur under the supervision of *Prof. Charu Arora*.

I hereby declare that, to the best of my knowledge, this project is an original work and does not contain any material that has been previously submitted for the award of any degree at this University or any other educational institution, without proper citation and acknowledgement. I further affirm that this project is my own original work and will remain the intellectual property of the Department of Chemistry, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.).

Signature of the Candidate

Date: 9/05/25 Place: **Bilaspur, C.G.**

Guru Ghasidas Vishwavidyalaya

(A Central University established under Central Universities Act 2009)

Prof Charu Arora
Professor
Dept. of Chemistry

Department of Chemistry
Guru Ghasidas Vishwavidyalaya
Bilaspur-495009, C.G.

CERTIFICATE

This is to certify that *Mr. Tejas Yadav* has completed the project dissertation entitled ***"Evaluation of Parthenium ash as an Adsorbent for the Removal of Malachite Green from Wastewater"*** under my supervision for the partial fulfilment of required degree of *"Bachelor of Science in Chemistry"*. Throughout this project, he has demonstrated diligence, a methodical approach, and a sincere commitment to collecting and reviewing relevant literature. In the process, he has gained a comprehensive understanding of various aspects of chemical science related to the topic at hand.

To the best of my knowledge and belief of the project

1) is original and has not been submitted anywhere for award of any degree.
2) Fulfill the requirement of the Ordinance relating to the B.Sc. degree of the university.

I wish him every success in the future life.

Date: 9.5.25
Place: Bilaspur,(C.G)

Charu Arora
Signature of the Supervisor

Guru Ghasidas Vishwavidyalaya

(A Central University established under Central Universities Act 2009)

Prof. K.D Dewangan
Head of the Department

Department of Chemistry
Guru Ghasidas Vishwavidyalaya
Bilaspur - 495009, C.G.

FORWARDING CERTIFICATE

This is to certify that *Mr. Tejas Yadav* has completed the project work entitled as ***"Evaluation of Parthenium ash as an Adsorbent for the Removal of Malachite Green from Wastewater"*** under the supervision of *Prof Charu Arora,* for the partial fulfilment of required degree of *"Bachelor of Science in Chemistry"*.

To the best of my knowledge and belief of the project

1) is original and has not been submitted anywhere for award of any degree.
2) Fulfills the requirement of the Ordinance relating to the B.Sc. degree of the university.

I recommend the project report be forwarded to the respective examiners for evaluation.

Date:

Place: Bilaspur, C.G.

09.05.2025

Signature of the H.O.D

अध्यक्ष / Head
रसायन शास्त्र विभाग
Deptt. of Chemistry
गुरु घासीदास विश्वविद्यालय,
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बिलासपुर 495009 (छ.ग.)
Bilaspur 495009 (C.G.)

ACKNOWLEDGEMENT

I would like to express my profound gratitude and grateful regards to my supervisor, **Prof. Charu Arora,** Department of Chemistry, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.), who has given their benevolent co-operation at every stage of project work and without their guidance this work would hardly have been completed.

I am grateful to **Prof. Khemchand Dewangan** , Head, Department of Chemistry, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.), who has been helping and facilitating during my project work.

I express my thanks to **Prof. H.S.Tewari** , Dean, School of Physical Sciences, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.), for his co-operation and encouragement.

I extend my earnest thanks to **Prof. S. K. Singh, Prof. A. K. Singh, Dr. B. Sharma, Dr. A. Shrivastava, Dr. S. S. Thakur, Dr. U. P. Azad, Dr. S. B. Singh, Mr. Santosh Kumar, Mr. Aazad Verma, Mr. Raju, Mrs Aparna ,** Department of Chemistry, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) for helping me in conducting laboratory work as well as in data completion.

I am also thankful to my classmates and my relatives who always encouraged and inspired me.

Words can never convey my deep gratitude and grateful regards to my parents and family for their affection, faith and patience during the whole of the project.

Date:

Tejas Yadav

Table of Contents

INTRODUCTION

Scientists and researchers around the world are increasingly concerned about a pressing global problem: the escalating pollution of water [1]. The swift pace of urbanization and industrial growth has led to the contamination of natural water sources, causing significant harm to the environment, society, and the economy [2]. The primary causes of water pollution are a range of human activities, such as industrial waste discharge into water bodies, inadequate water supply, wastewater treatment facilities, and agricultural practices [3]. One of the main contributors to water pollution is the textile sector, which uses a variety of colours in its production operations [4]. The dye molecules present in wastewater pose significant long-term environmental threats because they are not biodegradable and persist in the ecosystem for extended periods [5].

Therefore, before wastewater is released into the environment, colour molecules must be removed. These dye molecules can seriously endanger aquatic life as well as human health if they are left untreated in the water [6]. Aquatic species have been linked to serious health problems because of exposure to contaminated water, and humans have experienced skin irritations and even cancer-like illnesses [7].

Why Removing Dye Molecules from Water Sources Is Essential

Eliminating dyes from wastewater is essential because, if not addressed, they can harm the environment [8] [9]. Dye molecules are resistant to biodegradation, which means they remain in nature for extended periods, causing physical, chemical, and biological changes to water bodies. Aquatic life has been shown to have serious health issues, such as behavioural, development, and reproductive alterations, when exposed directly to contaminated water. Additionally, dye molecules decrease oxygen transfer and light penetration in water, which might change the physicochemical characteristics of aquatic habitats [10]. If wastewater discharged into the environment contains untreated colour, it may have long-term negative effects on human health. People may be exposed to contaminated water when it is discharged into natural water sources, which can lead to skin irritation and other health problems. Furthermore, using contaminated water might result in more severe health problems including cancer or liver and kidney damage.

The paper, leather, textile, and biological staining industries have long made substantial use of the synthetic dye malachite green [11]. However, the use of this dye has been

The wrong use of chemistry

A Project Report Submitted to ***(a review work)***

Guru Ghasidas Vishwavidyalaya bilaspur C.G

Bachelor's of Science in Chemistry

Submitted by

YourName:Manshi Singh.

B.Sc.6thsem

Enrollment No. GGV/22/07031

RollNo. 2210313)

no.no. 8827661703

mail.id Singhmanshi0629@gmail.com

Supervisor

Prof. Khemchand Dewangan

AssistantProfessor

DepartmentofChemistry

GuruGhasidasVishwavidyalaya

Dr.Khemchand Dewangan
Assistant Professor

Department of Chemistry
GuruGhasidasVishwavidyalaya
Bilaspur-495009,C.G.

CERTIFICATE

This is to certify that *miss.Manshi singh* has completed the project dissertation entitled The wrong use of chemistry under my supervision for the partial fulfillment of required degree of *"Batchler of Science in Chemistry"*.She has worked diligently, methodically and also collected the literature review sincerely. During this project work she has learnt about various aspects of chemical science to the entitled topic.

To the best of my knowledge and belief of the project

- Is original and has not been submitted any where foraward of any degree.
- Fulfills the requirement of the Ordinance relating to the BSc. Degree of the university.

I wish her every success in the future life.

Date:**09-05-2025**
Place:Bilaspur,C.G.

Signature of the Supervisor

A

Project Report

On

EVALUATION OF PARTHENIUM ASH AS AN ADSORBENT FOR FUCHSIN BASIC REMOVAL FROM WASTEWATER

Submitted by

Mithlesh Kumar Chandra

In partial fulfillment of the requirements for the degree in

B.Sc. 6th Sem. (Chemistry)

Under the guidance of

Dr. Charu Arora

DEPARTMENT OF CHEMISTRY

GURU GHASIDAS VISHWAVIDYALAYA BILASPUR (C.G.)

May 2025

9/5/25

गुरु घासीदास विश्वविद्यालय, बिलासपुर
Guru Ghasidas Vishwavidyalaya, Bilaspur

Attaining the pinnacle of excellence,
Our Institute proudly secures the highest grade in NAAC accreditation!

CERTIFICATE

This is to certify that the project report entitled, "Evaluation of Parthenium Ash as an Adsorbent for Fuchsin basic Removal from Wastewater", submitted by Mithlesh Kumar Chandra in partial fulfillments for the requirements for an award of B.sc (chemistry) in Guru Ghasidas Vishwavidyalaya is prepared by him under my supervision and guidance and this work is not been submitted elsewhere for a degree.

Charu Arora
9.5.25

Dr. Charu Arora

(Professor)

Department of chemistry

09.05.2025

Signature of the HOD

अध्यक्ष / Head
रसायन विभाग
Dept. of Chemistry
गुरु घासीदास विश्वविद्यालय,
Guru Ghasidas Vishwavidyalaya,
बिलासपुर 495009 (छ.ग.)
495009 (C.G.)

ACKNOWLEDGEMENTS

I consider it as my privilege to express gratitude and respect to all those who guided and inspired me in the completion of my B.sc project. The undertaking of this project inculcated a strong sense of research inside me and I also came to know about so many new things. First of all, I would like to acknowledge and extend my heartfelt gratitude to Dr. Charu Arora Professor at Department of chemistry , Guru Ghasidas Vishwavidyalaya Bilaspur for his exemplary guidance and constructive criticism, during the undertaking of this project entitled, " removal of basic dye from aqueous solution by adsorption us uing plant ash" I am also thankful to all the faculties and supporting staff of Department of chemistry , Guru Ghasidas Vishwavidyalaya Bilaspur for their constant help and extending the departmental facilities for my project.

Signature of candidate

ABSTRACT

Water pollution due to synthetic dyes, especially from textile and paper industries, has become a serious environmental issue. Basic dyes like methylene blue are widely used because of their bright color and solubility in water. However, they are toxic, non-biodegradable, and pose a threat to aquatic life and human health. Effective removal of these dyes from wastewater is essential. Among various methods, **adsorption** is considered one of the most efficient and economical techniques. This study investigates the use of **plant ash** as a low-cost, eco-friendly adsorbent for removing basic dye from water. Plant ash is obtained by burning plant biomass and is rich in minerals such as calcium, magnesium, potassium, and silica. These components give plant ash a high surface area and alkaline nature, making it suitable for adsorbing cationic dyes. The experiment was conducted using methylene blue dye solution. Plant ash was added in different amounts to the solution and stirred for varying time intervals. The remaining dye concentration was measured using a UV-Visible spectrophotometer. The effects of different parameters like **pH, contact time, adsorbent dosage, and initial dye concentration** were studied. Results showed that dye removal efficiency increased with higher adsorbent dose and longer contact time. The maximum removal occurred in the pH range of 8–9 due to favorable electrostatic interactions between the dye and the negatively charged ash surface. This research concludes that **plant ash is an effective, inexpensive, and sustainable material** for removing basic dyes from aqueous solutions. It presents a practical solution for treating dye-contaminated water, particularly in low-resource settings, and supports environmentally friendly practices in wastewater management.

CONTENTS

Extraction and identification of DNA from Banana

BSc. Project Report

BY

NAGESHWARI SAHU

Roll No.- 22103134

Enrollment No.-GGV/22/07034

Department of Chemistry

GURU GHASHIDAS VISHAWAVIDYALAYA

KONI, BILASPUR, (C.G.)

Mobile No. – 9301555261

E-Mail - rajimpunni21@gmail.com

7/5/25

Certificate

It is to certify that the work in the project report titled **"Extraction and identification of DNA from Banana"** by Nageshwari Sahu has been approved under my supervision that this work has not been submitted elsewhere.

GGV, Bilaspur

09/05/2025

Prof. Khemchand Dewangan

Project Supervisor

Department of Chemistry

Guru Ghasidas Vishawavidyalaya

Koni, Bilaspur, (C.G.)

Prof. Khemchand Dewangan

Head of Department

Department of Chemistry

Guru Ghasidas Vishawavidyalaya

Koni, Bilaspur, (C.G.)

Table of Contents

Lab work on Hydrogel and Its application

A Project Report Submitted

to

Guru Ghasidas Vishwavidyalaya, Bilaspur

In partial fulfillment to the requirement for the degree of

Bachelor of Science
in
Chemistry

Submitted by

NIDHI SHUKLA

Supervisor

Dr. BHASKAR SHARMA

Department of Chemistry

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

(2025)

रसायन विज्ञान
Department of Chemistry
गुरु घासीदास विश्वविद्यालय, बिलासपुर-495009, छत्तीसगढ़
Guru Ghasidas Vishwavidyalaya, Bilaspur-495009, Chhattisgarh
(A Central University established by the Central University Act 2009 No. 25 of 2009)
https://www.new.ggu.ac.in/

Prof. Khemchand Dewangan
Professor and Head
M.Sc., Ph.D.

Department of Chemistry
Guru Ghasidas University
Contact: 9691012090, 9935269379
E-mail ID:
dewanganke@gmail.com

Ref. No.

Bilaspur. Date: 9|5|2025

FORWARDING CERTIFICATE

*This is to certify that **NIDHI SHUKLA** has completed the project work entitled **"LAB WORK ON HYDROGEL AND ITS APPLICATION"** under the supervision of **Dr. Bhaskar Sharma**, for the partial fulfillment of required degree of **"Bachelor of Science"** and forwarded to the Examiner for evaluation.*

I wish her every success in the future life.

09.05.2025

Signature of the Head

अध्यक्ष / Head
रसायन शास्त्र विभाग
Dept. of Chemistry
गुरु घासीदास विश्वविद्यालय,
Guru Ghasidas Vishwavidyalaya,
बिलासपुर 495009 (छ.ग.)
(C.G.)

CONTENTS-

Adsorptive Removal of Aniline Blue using Pomegranate Leaf Ash

A Project Report Submitted to

Guru Ghasidas Vishwavidyalaya, Bilaspur, C.G.

This dissertation is submitted in partial fulfilment of the requirements for the degree of

Bachelors of

Science in

Chemistry

Submitted by
Borangi Tushara
B.Sc. 6th Sem
Enrollment No.GGV/22/07012
Roll No.22103112

Submitted to
Dr. Charu Arora (Professor)
Department of Chemistry
Guru Ghasidas Vishwavidyalaya

9/5/25

Guru Ghasidas Vishwavidyalaya

(A Central University established under Central Universities Act 2009)

Borangi Tushara
B.Sc. 6th Sem
Roll No. 22103112

Department of Chemistry
Guru Ghasidas Vishwavidyalaya
Bilaspur -495009,C.G.

DECLARATION

I, *Borangi Tushara*, hereby declare that the project dissertation entitled ***"Adsorptive Removal of Aniline Blue using Pomegranate Leaf Ash"*** is submitted as partial fulfilment of B. Sc. in Chemistry. The project work has been performed in the Department of Chemistry, Guru Ghasidas Vishwavidyalaya, Bilaspur under the supervision of *Prof. Charu Arora*.

I hereby declare that, to the best of my knowledge, this project is an original work and does not contain any material that has been previously submitted for the award of any degree at this University or any other educational institution, without proper citation and acknowledgement. I further affirm that this project is my own original work and will remain the intellectual property of the Department of Chemistry, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.).

B. Tushara

Signature of the Candidate

Date: 9/5/25

Place: **Bilaspur, C.G.**

Guru Ghasidas Vishwavidyalaya

Prof. Charu Arora
Professor
Department of
Chemistry

Department of Chemistry
Guru Ghasidas Vishwavidyalaya
Bilaspur-495009, C.G.

(A Central University established under Central Universities Act 2009)

CERTIFICATE

This is to certify that *Ms. Borangi Tushara* has completed the project dissertation entitled ***"Adsorptive Removal of Aniline Blue using Pomegranate Leaf Ash"*** under my supervision for the partial fulfilment of required degree of *"Bachelors of Science in Chemistry"*. Throughout this project, she has demonstrated diligence, a methodical approach, and a sincere commitment to collecting and reviewing relevant literature. In the process, she has gained a comprehensive understanding of various aspects of chemical science related to the topic at hand.

To the best of my knowledge and belief of the project

1) is original and has not been submitted anywhere for award of any degree.
2) Fulfils the requirement of the Ordinance relating to the B.Sc. degree of the university.

I wish her every success in the future life.

Date: 9/5/25

Place: Bilaspur,(C.G)

Charu Arora

Signature of the Supervisor

(A Central University established under Central Universities Act 2009)

Prof. K. Dewangan
Head of the
Department

Department of Chemistry
Guru Ghasidas Vishwavidyalaya
Bilaspur -495009 C.G.

FORWARDING CERTIFICATE

This is to certify that *Ms. Borangi Tushara* has completed the project work entitled as ***"Adsorptive Removal of Aniline Blue using Pomegranate Leaf Ash"*** under the supervision of *Prof Charu Arora*, for the partial fulfilment of required degree of *"Bachelors of Science in Chemistry"*.

To the best of my knowledge and belief of the project

1) is original and has not been submitted anywhere for award of any degree.
2) Fulfils the requirement of the Ordinance relating to the B.Sc. degree of the university.

I recommend the project report be forwarded to the respective examiners for evaluation.

Date: 9/5/25

Place: Bilaspur, C.G.

Signature of the H.O.D

ACKNOWLEDGEMENT

I would like to express my profound gratitude and grateful regards to my supervisor, **Prof. Charu Arora,** Department of Chemistry, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.), who has given their benevolent co-operation at every stage of project work and without their guidance this work would hardly have been completed.

I am grateful to **Prof. K. Dewangan**, Head, Department of Chemistry, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.), who has been helping and facilitating during my project work.

I extend my earnest thanks to **Dr. S. K. Singh, Dr. A. K. Singh, Dr. B. Sharma, Dr. A. Shrivastava, Dr. S. S. Thakur, Dr. U. P. Azad, Dr. S. B. Singh, Mr. Santosh Kumar, Mr. Aazad Verma, Mr. Raju, Mis Aparna , Mis Nidhi Rai** Department of Chemistry, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) for helping me in conducting laboratory work as well as in data completion.

I am also thankful to my classmates and my relatives who always encouraged and inspired me.

Words can never convey my deep gratitude and grateful regards to my parents and family for their affection, faith and patience during the whole of the project.

Date 9/5/25

Borangi Tushara

TABLE CONTENTS

Evaluation of Parthenium Ash as an Adsorbent for Aniline Blue Dye Removal from Wastewater

A Project Report Submitted to

Guru Ghasidas Vishwavidyalaya, Bilaspur, C.G.

This dissertation is submitted in partial fulfilment of the requirements for the degree of

Bachelor of

Science in

Chemistry

May 2025

Submitted by

RAJESH CHANDRA

B.Sc. 6th Sem

Enrolment No. GGV/22/07043

Roll No. 22103143

Supervisor

Dr. Charu Arora (Professor)

Department of Chemistry

Guru Ghasidas Vishwavidyalaya

गुरु घासीदास विश्वविद्यालय, बिलासपुर
Guru Ghasidas Vishwavidyalaya, Bilaspur

Attaining the pinnacle of excellence
Our Institute proudly secured the highest grade in NAAC accreditation

Prof. Charu Arora

Department of Chemistry

(A Central University established under Central Universities Act 2009)

CERTIFICATE

This is to certify that *RAJESH CHANDRA* has completed the project dissertation entitled **"Evaluation of Parthenium Ash as an Adsorbent for Aniline Blue Dye Removal from Wastewater"** under my supervision for the partial fulfilment of required degree of *"Bachelor of Science in Chemistry"*. Throughout this project, he has demonstrated diligence, a methodical approach, and a sincere commitment to collecting and reviewing relevant literature. In the process, he has gained a comprehensive understanding of various aspects of chemical science related to the topic at hand.

To the best of my knowledge and belief of the project

1) is original and has not been submitted anywhere for award of any degree.
2) Fulfils the requirement of the Ordinance relating to the M.Sc. degree of the university.

I wish him every success in the future life.

Date: 9.5.25

Place: Bilaspur,(C.G)

Charu Arora

Signature of the Supervisor

(A Central University established under Central Universities Act 2009)

Prof. KC DEWANGAN
Head of the Department

Department of Chemistry Guru
Ghasidas Vishwavidyalaya
Bilaspur - 495009, C.G.

FORWARDING CERTIFICATE

This is to certify that *RAJESH CHANDRA* has completed the project work entitled as ***"Evaluation of Parthenium Ash as an Adsorbent for Aniline Blue Dye Removal from Wastewater"*** under the supervision of *Prof Charu Arora,* for the partial fulfilment of required degree of *"Master of Science in Chemistry".*

To the best of my knowledge and belief of the project

1) is original and has not been submitted anywhere for award of any degree.
2) Fulfils the requirement of the Ordinance relating to the M.Sc. degree of the university.

I recommend the project report be forwarded to the respective examiners for evaluation.

Date:

09.05.2025

Place: Bilaspur, C.G.

Signature of the H.O.D

अध्यक्ष / Head
रसायन शास्त्र विभाग
Dept. of Chemistry
गुरु घासीदास विश्वविद्यालय,
Guru Ghasidas Vishwavidyalaya,
Bilaspur 495009 (C.G.)

TABLE CONTENTS

COMPUTATIONAL CHEMISTRY FOR BLIND AND VISUALLY IMPAIPED STUDENTS

A Project Report Submitted to

Guru Ghasidas Vishwavidyalaya, Bilaspur, C.G.

In partial fulfillment of the requirement for the degree of

Bachelors of Science
In
Chemistry

Submitted by

Samiksha Yadav

B.Sc. 6th Sem

Enrollment No. – GGV/22/07050

Roll No.- 22103150

Supervisor

Prof. Khemchand Dewangan

Head of Department

Department of Chemistry

Guru Ghasidas Vishwavidyalaya

9/5/25

CERTIFICATE

This is to certify that the report entitled **"Computational Chemistry for Blind People"** submitted by **Samiksha yadav**, bearing enrollment number **22103150**, is the result of original work carried out under my supervision and guidance. This project was carried out in partial fulfilment of the requirements for the Bachelors of chemistry at Guru Ghasidas University.

To the best of my knowledge, the work presented herein has not been submitted to any other institution or university for the award of any degree or diploma.

09.05.2025

Supervisor's Name: Prof. Khemchand Dewangan(HOD)

Designation: Project Supervisor

Department: Department of Chemistry

Institution: Guru Ghasidas University, Bilaspur

Date: _____

Signature: _____

TABLE OF CONTENT

DEPARTMENT OF CHEMISTRY

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.) INDIA

(A central University Established by the Central University Act 2009 No. 25 of 2009)

A

Project Report

On

Enzymes catalyse polyester synthesis: A comparison with chemical catalyst.

Submitted For
Partial fulfillment of the requirement for the degree of
Bachelor of Science (Hon's) in
Chemistry

Under the Guidance :
Prof Khemchand Devangan (HOD)
Dr. Bhaskar Sharma(Asst. prof)
B.Sc. (Chemistry) VI Sem.
Department of Chemistry
Guru Ghasidas Vishwavidyalaya
Bilaspur (C.G.), 495009, INDIA

Submitted by:
Saumya Mishra
Roll no. – 22103152

Session – 2022-25

DEPARTMENT OF CHEMISTRY

GURU GHASIDAS VISHWA[illegible]AYA, BILASPUR (C.G.) INDIA

(A central University Established by [illegible] Act 2009 No. 25 of 2009)

APPROVAL CERTIFICATE

This is the certify that the project entitled, " Enzymes catalyse polyester synthesis: A comparison with chemical catalyst " submitted by Saumya Mishra is approved for the award of Bachelor of Science (Hon's) in Chemistry.

Date:09/05/2025

Prof Khemchand Devangan
Head of Department
Department of Chemistry
Guru Ghasidas Vishwavidyalaya
Bilaspur(C.G

अध्यक्ष/Head
रसायन शास्त्र विभाग
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बिलासपुर 495009 (छ.ग.)
Bilaspur 495009 (C.G.)

TABLE OF CONTENT

"Design and Quantum Chemical Evaluation of Molecular Systems Using Avogadro Modeling and ORCA Simulations"

A Project Report Submitted to

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR, C.G.

In partial fulfillment of the requirement for the degree of

Bachelors of Science
In
Chemistry

Submitted by
Shruti Goswami
B.Sc. 6th Sem
Enrollment No.- GGV/22/07057
Roll No.- 22103157

Supervisor
Prof. Khemchand Dewangan
Head of Department
Department of Chemistry
Guru Ghasidas Vishwavidyalaya

9/5/25

CERTIFICATE

It is to certify that the work in the project report titled "**Design and Quantum Chemical Evaluation of Molecular Systems Using Avogadro Modeling and ORCA Simulations**" by Shruti Goswami has been approved under my supervision that this work has not been submitted elsewhere.

GGV BILASPUR
09/05/2025

09.05.2025
Prof. Khemchand Dewangan
Project Supervisor
Department of Chemistry
Guru Ghasidas Vishwavidyalaya,
Bilaspur (C.G.)

09.05.2025
Prof. Khemchand Dewangan
Head of Department
Department of Chemistry
Guru Ghasidas Vishwavidyalaya
Bilaspur, 495001 (C.G.)

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A PROJECT REPORT ON

MICROWAVE ASSISTED SYNTHESIS: A GREEN CHEMISTRY APPROACH

DEPARTMENT OF CHEMISTRY

GURU GHASIDAS VISHWAVIDYALAYA

(A CENTRAL UNIVERSITY)

SUPERVISOR:

DR. BHASKAR SHARMA
ASSISTANT PROFESSOR
GURU GHASIDAS VISHWAVIDYALAYA
KONI, BILASPUR (C.G.)

SUBMITTED BY:

SURBHI SHUKLA
B.Sc (HONOURS)
6TH SEMESTER
ROLL NO- 22103160

9/5/25

DEPARTMENT OF CHEMISTRY
GURU GHASIDAS VISHWAVIDYALAYA

KONI, BILASPUR (C.G.)

FORWARDING CERTIFICATE

This is to certify that **SURBHI SHUKLA** has completed the project under the supervision of **DR. BHASKAR SHARMA,** for the partial fulfillment of required degree of "Bachelors of Science in Chemistry".

To the best of my knowledge and belief of the project is original and has not been submitted anywhere for award of any degree, and it fulfills the requirements of the ordinance relating to that B.Sc. degree of the university.

I wish her every success in the future life.

09.05.2025

Head of Department
Prof. Khemchand Dewangan

अध्यक्ष /Head
रसायन शास्त्र विभाग
Deptt. of Chemistry
गुरु घासीदास विश्वविद्यालय,
Guru Ghasidas Vishwavidyalaya
Bilaspur 495009 (छ.ग.)

CONTENTS

B.sc. Project Dissertation Report

METAL THIOLATE COMPLEXES , STRUCTURE AND APPLICATION IN BIOLOGICAL SYSTEMS

By

Chitranshi Mandavi

Roll no : 22103114

Supervisor : Dr. Suryabhan Singh

Department of Chemistry

Guru Ghasidas Vishwavidyalaya

Bilaspur - 495009 (C.G)

FORWARDING CERTIFICATE

This is to certify that **Chitranshi Mandavi** has completed the project work entitled "**Metal Thiolate Structure and Application in Biological System**" under the supervision of **Dr, Suryabhan Singh,** for the partial fulfilment of required degree of **Bachelor of Science** and forwarder the Examiner for evaluation.

I wish her every success in the future life

Signature of Head 27.01.2025

अध्यक्ष / Head
रसायन शास्त्र विभाग
Deptt. of Chemistry
गुरु घासीदास विश्वविद्यालय,
Guru Ghasidas Vishwavidyalaya,
बिलासपुर 495009 (छ.ग.)
Bilaspur 495009 (C.G.)

Date :

Place: Bilaspur

Content

A PROJECT REPORT ON

USE OF METAL COMPLEXES IN MRI

DEPARTMENT OF CHEMISTRY

GURU GHASIDAS VISHWAVIDYSALAYA

(A CENTRAL UNIVERSITY)

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT
FOR THE DEGREE OF B.Sc. CHEMISTRY

SUPERVISOR:

Dr. Suryabhan Singh

Assistant professor

Guru Ghasidas Vishwavidyalaya

Koni, Bilaspur (C.G.)

SUBMITTED BY:

Sneha Singh Rajput

B.sc (Hons) 6th Sem Chemistry

Roll No: 22103158

9/5/25

GURU GHASIDAS VISHWAVIDYALAYA
KONI BILASPUR (C.G)

FORWARDING CERTIFICATE

This is to certify that **SNEHA SINGH RAJPUT** under the supervision of **Dr. SURYABHAN SINGH**, For the Partial Fulfilment of required degree of "Bachelors in Science of Chemistry".

To the best of my knowledge and belief of the project .

1. is original and has not been submitted anywhere for award of any degree.

2. fulfils the requirements of the ordinance relating to that B.sc degree of the university.

I wish her every success in the future.

09.05.2025

Head of Department

Prof. Khemchand Dewangan

अध्यक्ष / Head
रसायन शास्त्र विभाग
Deptt. of Chemistry
गुरु घासीदास विश्वविद्यालय,
Guru Ghasidas Vishwavidyalaya
बिलासपुर 495009 (छ.ग.)
Bilaspur 495009 (C.G.)

CONTENTS

A PROJECT REPORT ON

CARBENE COMPLEXES OF IRIDIUM AND THEIR CATALYTIC PROPERTY

DEPARTMENT OF CHEMISTRY

GURU GHASIDAS VISHWAVIDYALAYA

(A CENTRAL UNIVERSITY)

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF B.Sc. CHEMISTRY

SUPERVISOR:

Dr. Suryabhan Singh

Assistant professor of Department

Guru Ghasidas Vishawavidayala

Koni, Bilaspur (C.G.)

SUBMITTED BY:

Sakshi Tanwar

B.Sc. (Honours) Chemistry

6th semester

Roll No.- 22103148

9.5.25

DEPARTMENT OF CHEMISTRY

GURU GHASIDAS VISHWAVIDYALAYA

KONI, BILASPUR (C.G.)

FORWARDING CERTIFICATE

This is to certify that **SAKSHI TANWAR** under the supervision of **Dr. SURYABHAN SINGH** has completed the project for the partial fulfillment of required degree of "Bachelors of Science in Chemistry". To the best of my knowledge and belief of the project

1. is original and has not been submitted anywhere for award of any degree.
2. fulfils the requirements of the ordinance relating to the B.Sc. degree of the university.

I wish her every success in the future life.

09.05.2025

Head of Chemistry

Head / Head
Dept. of Chemistry
Guru Ghasidas Vishwavidyalaya
Bilaspur 495009 (C.G.)

CONTENTS

Metal Organic Framework as Catalysis

A Project submitted to

Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)

In partial fulfillment

For the award of the degree

Of

Bachelor of Science in

Chemistry

by

Garima Yadav

Under the Guidance of

Dr. Suryabhan Singh

Research center

Department of Chemistry,

Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G)

May 2025

Forwarded to Guru Ghasidas Vishwavidyalaya Bilaspur (CG) India
CERTIFICATE BY THE HEAD OF THE DEPARTMENT

The M.sc project entitled "Metal Organic Framework as Catalysis" Submitted by ***Garima Yadav*** (Roll No. 22103147, Enrollment No.: GGV/22/07047) has been examined by the undersigned as a part of the examination and is hereby recommended for the award of the degree of Bachelor of Science in the Department of Chemistry of Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.).

07.05.2025

Signature of the HOD
Dr. Khemchand Dewangan,
Professor
Department of Chemistry, G.G.V.
Bilaspur (C.G)

अध्यक्ष / Head
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