Department : Pure & Applied Physics		
***Academic Year* : 2021-2022**		
Sr. No.	**Programme Code**	**Name of the Programme**
01.	**B.Sc. (Physics)**	**Dissertation/ Project work followed by seminar (PS/PHY/PD)**

Following students have carried out their Project work/ Internship/ Field Project/Industrial Training for the academic session 2021-22

Sr. No.	Name of the Students	Page No ……. To ……..
1.	Abhijeet Kujur	04 to 08
2.	Abhilash Panday	09 to 13
3.	Abhishek Dewangan	14 to 20
4.	Agendra Sahu	21 to 23
5.	Akash Kumar Tekam	24 to 25
6.	Alauddin	26 to 28
7.	Amitesh Kashyap	29 to 33
8.	Ankit Patel	34 to 38
9.	Avni Gupta	39 to 42
10.	Bhuvneshwar	43 to 46
11.	Deepanwita	47 to 49
12.	Deepshikha Sahu	50 to 53
13.	Devashish Kurrey	54 to 58
14.	Devendra Chandra	59 to 63
15.	Dhavichanrda Dhirhe	64 to 69
16.	Divyansh Panday	70 to 73

17.	Guldeep Gavel	74 to 77
18.	Harshvardhan Patel	78 to 82
19.	Hitesh Baghel	83 to 86
20.	Jittu Dewangan	87 to 91
21.	Kiran Gupta	92 to 95
22.	Kushum Tekam	96 to 100
23.	Mandhya Singh	101 to 104
24.	Manu Kumar Baghel	105 to 108
25.	Monika Rana	109 to 113
26.	Nandini Yadaw	118 to 120
27.	Narayan Chandrakar	121 to 124
28.	Naveen Kumar Deshlahare	125 to 129
29.	Neelanj Sahu	114 to 117
30.	Nidhi Sahu	130 to 135
31.	Nikhil Patel	136 to 140
32.	Omkar Pachori	141 to 145
33.	Omprakash Laser	146 to 151
34.	Piyush Kumar Sao	152 to 157
35.	Pooja Patel	158 to 163
36.	Prashant Kumar Chouhan	164 to 168
37.	Pratishtha Patel	169 to 173
38.	Rahul Shrivash	174 to 179
39.	Rajnish Tandon	180 to 184
40.	Rakesh Painkra	185 to 189
41.	Rupesh Dewangan	190 to 192
42.	Sangeeta Dahari	193 to 198
43.	Satyam Kumar Druw	199 to 203

44.	Shashank Goutam	204 to 210
45.	Shourya Kumar Gupta	211 to 214
46.	Shikha Shukla	215 to 220
47.	Shraddha Tiwari	221 to 225
48.	Shubhangi Dewangan	226 to 229
49.	Siddharth Singh	230 to 234
50.	Simran Manhash	235 to 239
51.	Sulekha	240 to 244
52.	Surya Prakash	245 to 247
53.	Swati Ratnakar	248 to 252
54.	Tukeshwar Sahu	253 to 255
55.	Tushar Patel	256 to 261
56.	Udayan Patel	262 to 266
57.	Uttam Kumar Sahu	267 to 270
58.	Vikash Joshi	271 to 275
59.	Vikram Singh Thakur	276 to 279
60.	Vivek Singh	280 to 283
61.	Yamini Singh Thakur	284 to 287
62.	Yogesh Bajaj	288 to 292

Signature and Seal of the Head

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GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR

Department of Pure & Applied Physics

A Project report on

"Differentiator Circuit"

A Dissertation in Partial Fulfilment for the Degree of

Bachelor of Science

In

Physics

Submitted by

ABHIJEET KUJUR

Roll No.- 19208801

Under the Supervision of

Prof. H.S Tiwari

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

DECLARATION

I hereby declare that the work presented in the project titled "**Differentiator Circuit"** submitted in the partial fulfilment for degree of Bachelor of Science in Physics has been done in the Department of Pure & Applied Physics, Guru Ghasidas Central University, Bilaspur (C.G.), 495009 under the supervision of Prof. **H.S Tiwari** is carried out by me.

Date:

Abhijeet Kujur

B.Sc. (Physics) VI Semester

Roll No.- 19208801

Enroll. No.- GGV/19/7252

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CERTIFICATE

This is to certify that the project titled "**Differentiator Circuit "**

Submitted by **ABHIJEET KUJUR** in the partial fulfilment for the degree of Bachelor of Science in Physics is an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge, the matter embodied in the project report has not been submitted to any other University \ Institute for the award of Degree or Diploma.

Date:

Prof. H.S Tiwari

Department of Pure & Applied Physics

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APPROVAL CERTIFICATE

This is to certify that the project titled "**Differentiator Circuit"**

Submitted by **Mr. ABHIJEET KUJUR** is approved for the degree of Bachelor of Science in Physics.

Date:

Prof. M. N. Tripathi

Head of the Department

Department of Pure & Applied Physics

Guru Ghasidas Central University

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GURU GHASIDAS VISHWAVIDYALAYA

A PROJECT ON RENEWABLE ENERGY SOURCES

Submitted for

PARTIAL FULFILLMENT FOR THE REQUIREMENT IN BSC DEGREE IN PHYSICS

SUBMITTED BY,

ABHILASH PANDEY

BACHELOR OF SCIENCE

PHYSICS HONS.

6th SEMESTER (19208802)

GUIDED BY,

PROF.M.N.TRIPATHI

H.O.D DEPARTMENT OF

AND APPLIED PHYSICS

GGU BILASPUR(C.G)

विभागाध्यक्ष/H.O.D.
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DECLARATION

In this underdesigned project dissertation I solemnly declare that report of the project work entitled " A PROJECT ON RENEWABLE ENEGRY SOURCES " is the actual work carried out during course of my study under the supervision of Dr . M.N. Tripathi sir Department of pure and applied physics . I assert that the statement made conclusions drawn are an outcome of the project t dissertation work . I further declare that to the best of my knowledge and belief that the report does not contain any part of any work which has been submitted for the award of any degree /diploma/certificate in this university / deemed university of India . All preparations of the project dissertation have been duly acknowledged.

Signature of the candidate

Abhilash Pandey

19208802

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FORWADING CERTIFICATE

This is to certify that to **ABHILASH PANDEY** , has carried out the project dissertation in the department of pure and applied physics , Gurughasidas university , bilsapur ,C.G. on the title "A PROJECT ON RENEWABLE ENERGY SOURCES " this project is submitted in the partial fulfilment of the requirement for the degree of B.sc. in

Physics is forwarded to the examiner for evaluation .I wish him success in life .

PROF. M.N.TRIPATHI
H.O.D. Department of
pure and applied physics

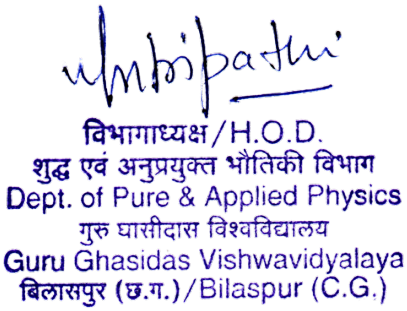
WHAT ARE RENEWABLE ENERGY SOURCES -

A renewable energy source means energy that is sustainable – something that can't run out, or is endless, like the sun. When you hear the term 'alternative energy' it's usually referring to renewable energy sources too. It means sources of energy that are alternative to the most commonly used non-sustainable sources – like coal.

TYPES OF RENEWABLE ENERGY SOURCES –

The major types of renewable energy sources are:

- Biomass
- Wood and wood waste
- Municipal solid waste
- Landfill gas and biogas
- Ethanol
- Biodiesel
- Hydropower
- Geothermal



ABSTRACT

Hydropower , large and small remains by far the most important of the " renewable " for electric power production worldwide. The project on hydropower plant includes objective oriented description of the structure ,principle and working of HYDROPOWER .The application includes

the full functions of hydropower energy. Our main approach is to understand the concept of hydropower and implement it in modern life .

INTRODUCTION -

Hydropower became an electricity source in the late 19th century, a few decades after British-American engineer James Francis developed the first modern water turbine. In 1882, the world's first hydroelectric power plant began operating in the United States along the Fox River in Appleton, Wisconsin.

The Bureau of Reclamation was created in 1902 to develop hydropower and manage water resources in the Western United States. The United States Army Corps of Engineers (USACE) initially became involved in flood control, followed by navigation and later in water management through hydroelectric development in the 1920s. Hydropower's boom began in the 1930s with the commencement of the Hoover Dam on the Colorado River followed by the creation of the Bonneville Power Administration. As part of the economic stimulus recovery after the Great Depression, the New Deal saw hydropower development rapidly expand as a way to increase jobs.

Today's hydropower has come a long way from these early dams. Conventional hydropower, run-of-river, pumped storage, marine hydrokinetics, as well as conduit or canal

GURU GHASIDAS VISHWAVIDYALAYA BILASPUR (C.G.)

A Project report on

"Study of the Astronomical Ground base Telescope"

A Dissertation in Partial Fulfilment for the Degree of

Bachelor of Science

In

Physics

Submitted by

ABHISHEK DEWANGAN

Roll No.- 19208803

Under the Supervision of

DR. PARIJAT THAKUR

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I hereby declare that the work presented in the project titled "**Study of the Astronomical Ground base Telescope"** submitted in the partial fulfilment for degree of Bachelor of Science in Physics has been done in the Department of Pure & Applied Physics, Guru Ghasidas Central University, Bilaspur (C.G.), 495009 under the supervision of ***Dr. Parijat Thakur*** is carried out by me.

Date:

ABHISHEK DEWANGAN

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MMT

South African Large Telescope

Square Kilometre Array (SKA)

Subaru Telescope

Very Large Telescope (VLT)

William Herschel Telescope (WHT)

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GURU GHASIDAS UNIVERSITY BILASPUR, 495009

PROJECT ON THE TOPIC

A review of Material Characterization by XRD

SUBMITTED FOR

Partial fulfillment for the requirement in B.Sc Degree in Physics honours

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CHHATTISGARH

ABSTRACT

x-ray diffraction (XRD), as a nondestructive method, has been widely utilized to attain precise information about the physicochemical attributes of materials (i.e., amorphous/crystalline structures, crystalline lattice parameters, composition profile, etc.). Considering the angstrom range of XRD wavelengths, and their extreme energy for penetrating at an atomic level, this technique has been introduced as an efficient tool to investigate various properties of crystalline material

x-ray powder diffraction is one of the most potential characterization tools and a non-destructive technique for characterizing both organic and inorganic crystalline materials. The method previously used for measuring phase identification,quantitative analysis and to determine structure imperfection of samples from various displines such as geology, polymeric,environmental, pharmaceutical and forensic science. In recent years, the applications have become extended to characterize carbon based materials and their composite properties x-ray diffraction is used widely for quantitative analysis of geological sample but studies which document the accuracy of the methods employed are not numerous

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Material Characterization by X-rays diffraction

CONTENT

- Introduction
- History
- X-rays diffraction
- Bragg's law
- Instrumentation
- XRD working method
- Basics of crystallography
- Application of XRD
- Advantages and disadvantages of XRD
- Conclusion
- References

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“X-ray Diffraction by crystal ”

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR

A Dissertation in Partial Fulfillment for the Degree of

Bachelor of Science

In

Physics

Submitted by

AKASH KUMAR TEKAM

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This is to certify that the project titled **"X-Ray Diffraction by crystal"** Submitted by **AKASH KUMAR TEKAM** in the partial fulfilment for the degree of Bachelor of Science in Physics is an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge, the matter embodied in the project report has not been submitted to any other University \ Institute for the award of Degree or Diploma.

Date:

Dr . Arun Kumar Singh

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GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR

A Review report on

"Thermoelectric Material"

A Dissertation in Partial Fulfilment for the Degree of

Bachelor of Science

In

Physics

Submitted by

ALAUDDIN

Roll No.- 19208806

Under the Supervision of

Dr. JAI SINGH

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This is to certify that the project titled **"Thermoelectric Material"** Submitted by **ALAUDDIN** in the partial fulfilment for the degree of Bachelor of Science in Physics is an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge, the matter embodied in the project report has not been submitted to any other University \ Institute for the award of Degree or Diploma.

Date:

Dr. Jai Singh

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A REVIEW ON

PHOTOVOLTAIC CELL

DEPARTMENT OF PURE & APPLIED PHYSICS

GURU GHASIDAS UNIVERSITY

KONI, BILASPUR (CG)

Submitted By

AMITESH KASHYAP

Roll No. – 19208807

Under The Guidance of

Dr. RK PANDEY

(Assistant Professor)

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CERTIFICATE

This is to certify that the project titled **"Photovoltaic Cell"** submitted by **AMITESH KASHYAP** in the partial fulfilment for the degree of Bachelor of Science in Physics in an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge, the matter embodied in the project report has not been submitted to any other University/Institute for the award of Degree or Diploma.

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
Dept. of Pure & Applied Physics
गुरु घासीदास विश्वविद्यालय
Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Dr. R.K. Pandey

Department of Pure & Applied Physics

Guru Ghasidas University, Koni, Bilaspur (CG)

Department Of Pure & Applied Physics

Guru Ghasidas University, Koni, Bilaspur (CG)

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

APPROVAL CERTIFICATE

This is to certify that the project titled **"Photovoltaic Cell"** submitted by **AMITESH KASHYAP** is approved for the degree of Bachelor of Science in Physics.

Dr. M.N. Tripathi

Head of the Department

Department of Pure & Applied Physics

Guru Ghasidas University, Koni, Bilaspur (CG)

विभागाध्यक्ष/H.O.D.
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ABSTRACT

Photovoltaic is the method of converting sunlight at once into electrical energy by the use of solar cells. Today it is a rapidly growing and increasingly important renewable alternative to conventional fossil fuel electricity generation, but compared to other electricity generating technologies, it is a relative newcomer, with the first practical photovoltaic devices demonstrated in the 1950s. Research and development of photostatic received its first major boost from the space industry in the 1960s which required a power supply separate from "grid" power for satellite applications. These space solar cells were several thousand times more expensive than they are today and the perceived need for an electricity generation method apart from grid power was still a decade away, but solar cells became an interesting scientific variation to the rapidly expanding silicon transistor development with several potentially specialized niche markets. In the 1980s research into silicon solar cells paid off and solar cells began to increase their efficiency. In 1985 silicon solar cells achieved the milestone of 20% efficiency. Over the next decade, the photovoltaic industry experienced steady growth rates of between 15% and 20%, largely promoted by the remote power supply market. The year 1997 saw a growth rate of 38% and today solar cells are recognized not only as a means for providing power and increased quality of life to those who do not have grid access, but they are also a means of significantly diminishing the impact of environmental damage caused by conventional electricity generation in advanced industrial countries. The increasing market for, and profile of photovoltaic means that more applications than ever before are "photovoltaically powered". These applications range from power stations of several megawatts to the ubiquitous solar calculators. PVCDROM aims to provide an overview of terrestrial photovoltaic to furnish the non-specialist with basic information. It is hoped that having used PVCDROM you will understand the principles of photovoltaic devices and system operation, you will be able to identify appropriate applications, and you will be capable of undertaking photovoltaic system design. By gradually increasing the number of people who are familiar with photovoltaic concepts and applications, we hope to increase the use of photovoltaic in appropriate applications.

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A STUDY ON NEUTRON SCATTERING AND APPLICATIONS

Department of Pure and Applied Physics
GURU GHASIDAS VISHWAVIDYALAYA
(A CENTRAL UNIVERSITY)

SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT OF THE DEGREE OF **BACHELOR OF SCIENCE (Honours) in PHYSICS**

Submitted by : Ankit Patel
Roll no. : 19208808
Enrolment no. : GGV/ 19/ 7036

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
Dept. of Pure & Applied Physics
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Supervised by : Dr. M. P. Sharma

DECLARATION

I hereby declare that the work present in project entitle ***"A STUDY ON NEUTRON SCATTERING AND APPLICATIONS"*** *submitted as partial fulfilment of B.Sc. Physics (Hons.), this written submission represents my ideas in my own words. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. The work present in the dissertation is original and will remain intellectual property of the department.*

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

(ANKIT PATEL)
B.Sc. Physics Hons. 6th semester
Roll No:- 19208808
Enrolment no:- GGV/19/7036

FORWARDING CERTIFICATE

This is to certify that ***ANKIT PATEL*** *has carried out the project in Department of Pure and Applied Physics, GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.).*

On the topic ***"A STUDY ON NEUTRON SCATTERING AND APPLICATIONS"****.*

The project is submitted for the partial fulfilment of requirement of the degree of Bachelor of Science in Physics (Hons.) is forwarded to examine for evaluation. I wish him every success in life.

(Dr. M. N. Tripathi)
(Head of Department)
Department of Pure and Applied Physics
GURU GHASIDAS VISHWAVIDYALAYA
BILASPUR (C.G.)

CERTIFICATE

This is to certify that ***ANKIT PATEL*** *bearing Enrollment No.-* ***GGV/19/7036*** *has developed this project titled* ***"A STUDY ON NEUTRON SCATTERING AND APPLICATIONS"*** *for GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.) as partial fulfilment for the award of the degree of Bachelor in Science in Physics (Hons.).*

(Dr. M.P. Sharma)
Assistant Professor
Department of Pure and Applied Physics
GURU GHASIDAS VISHWAVIDYALAYA
BILASPUR (C.G.)

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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गुरू घासीदास विश्वविद्यालय, बिलासपुर
GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR
(A Central University established by the Central University Act 2009 No. 25 of 2009)

A PROJECT ON

STUDY OF DIELECTRIC PROPERTIES OF MATERIALS AND ITS APPLICATIONS

Submitted in
Partial fulfillment of the requirement of the degree of

BACHERLOR OF SCIENCE IN PHYSICS
2022

SUBMITTED TO:

DR. GOVERDHAN REDDY TURPU

ASSISTANT PROFESSOR

SUBMITTED BY:

AVNI GUPTA

ROLL NO.**19208809**

DEPARTMENT OF PURE AND APPLIED PHYSICS

विभागाध्यक्ष/H.O.D.
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

GURU GHASIDAS UNIVERSITY

(A Central University)

DECLARATION

I hereby declare that the entire project work entitled " STUDY OF DIELECTRIC PROPERTIES OF MATRIALS AND ITS APPLICATIONS" submitted inthe partial fulfillment of Bachelor of Science degree in Physics, has been carried out by me at Department of Pure And Applied Physics, Guru Ghasidas Vishwavidyalaya,Bilaspur(C.G.) under the supervision of Dr. Goverdhan Reddy Turpu (Assistant Professor). I tried to give my full effort to reach the most limit of my capability to make the work success.

SUBMITTED BY

AVNI GUPTA

Roll no. : 19208809

BSc. 6th sem Physics Hon's

Guru Ghasidas Vishwavidyalaya

Bilaspur(C.G.)

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

CERTIFICATE

This is to certify that the project work "STUDY OF DIELECTRIC PROPERTIES OF MATERIALS AND ITS APPLICATIONS" has been successfully carried out and submitted in the partial fulfillment of the requirement for the 6th semester of Pure And Applied Physics, Guru Ghasidas Vishwavidyalaya.

It is certified that all correction/suggestion indicated for the project had been incorporated in it. The project has been approved as it satisfies the requirement in respect of procedure and experimental techniques prescribed for this project.

This project is done under the guidance of **"Dr. Goverdhan Reddy Turpu"** by **"Avni Gupta"** of BSc. 6th semester Physics, Guru Ghasidas Vishwavidyalaya.

Prof. M. N. Tripathi

Date : 05/05/22 HEAD OF DEPARTMENT

Place : GGV,Bilaspur Pure And Applied Physics

GGV, Bilaspur(C.G.)

CONTENT

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A REPORT ON

“SCHRODINGER EQUATION IN ONE DIMENTION”

Department of Pure and Applied Physics

Guru Ghasidas central university koni Bilashpur

Session: 2021-2022

Submitted to: -**Prof. P.RAMBABU**

DEPARTMENT OF PURE & APPLIED PHYSICS

GURU GHASIDAS VISHWAVIDYLAYA

Submitted by: - **BHUVNESHWAR**

BSC PHYSICS (HON’S) 6TH SEM

ROLL NO. 19208810

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Department of Pure & Applied Physics

Guru Ghasidas Vishwavidhyalaya,Bilashpur(C.G)

DECLARATION

I hereby declare that the work presented in the project titled "Schrodinger Equation in One Dimension" submitted in the partial fulfillment for degree of Bachelor of Science in Physics has been done in the Department of Pure & Applied Physics, Guru Ghasidas Vishwavidhyalaya,Bilashpur,495009 under the supervision of Pro.P.RAMBABU is carried out by me.

BHUVNESHWAR

Date: B.Sc Physics 6th Sem

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Department of Pure & Applied Physics

Guru Ghasidas Vishwavidhyalaya,Bilashpur(C.G)

CERTIFICATE

This is to certify that the project titled "Schrodinger Equation in One Dimention" submitted by BHUVNESHWAR in the partial fulfillment for the degree of Bachelor of Science in Physics is an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge ,in the project report has not been submitted to any other University.

Date:

विभागाध्यक्ष/H.O.D.
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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Prof. P. Rambabu

Department of Pure & Applied Physics

CONTENT

- Introduction.
- Derivation of the Schrodinger equation.
- Define some values
- Normalization and Probability.
- Expectation value.
- Stationary state.
- Momentum operator.
- Position and Energy operator.
- Hamiltonian operator.
- Application of Schrodinger's equation in 1D problem.

- Define the potential energy.
- Derivation of the 1D problem.
- Wave function.
- Quantization of energy.
- Energy Eigen values.
- Programming of particle in the box problem.
- Reference

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Guru Ghasidas Vishwavidyalaya Bilaspur (C.G.) India

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

DEPARTMENT OF PURE AND APPLIED PHYSICS

Project on:- *CARBON NANOTUBES*

Submitted in partial fulfillment of the requirement for the award of Bachelor of Science Degree

In Physics

To Guru Ghasidas Vishwavidyalaya Bilaspur (C.G) India

By

Deepanwita De

B.Sc. Physics hons 6th semester

Roll No-19208811

Enrolment No-GGV/19/7053

Under the Guidance of

Dr. Pradip Das sir

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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DEPARTMENT OF PURE AND APPLIED PHYSIC

Guru Ghasidas Vishwavidyalaya Bilaspur (C. G.) India

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

CERTIFICATE

This is to certify that **Deepanwita De** has carried out the project on The topic "CARBON NANOTUBES" in the Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya, Bilaspur under my supervision. She worked diligently and Methodically and has collected the literature very sincerely and carefully. 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 her all success in her life & Career.

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Submitted by

Deepanwita De

Supervised by

Dr Pradip Das

Project on

To study the rest mass energy of electron using Compton scattering effect and scintillator detector

Submitted in partial fulfillment of the requirement of the degree of Bachelor of science in Physics

By

DEEPSHIKHA SAHU

ROLL NO. 19208812

Under the supervisor of

Dr. TARKESHWAR TRIVEDI

(Assistant professor)

Department of pure and applied physics

GURU GHASIDAS CENTRAL UNIVERSITY (2021-22)

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
Dept. of Pure & Applied Physics
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

APPROVAL

The project report entitled "To study the rest mass energy of electron using Compton scattering effect and Scintillation" submitted by DEEPSHIKHA SAHU, roll no 19208812 of the Department of Pure and Applied Physics, Central University is approved for the degree of B.Sc. 6th semester physics(Hon).

Dr. TARKESHWAR TRIVEDI

Supervisor

Department of pure and applied physics

Date:

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

CERTIFICATE

This is to be certified that the project dissertation entitled "To study the rest mass energy of electron using Compton scattering effect and scintillator detector" submitted by DEEPSHIKHA SAHU, Department of pure and applied physics, Guru Ghasidas University in partial fulfillment of the requirement for the degree of B.Sc. in physics is an original work carried by her. To my best knowledge, the matter embodied in the project report has not been submitted to any other University/Institute for the award of degree or diploma.

Supervisor:

Dr. TARKESHWAR TRIVEDI

DEPT. OF PURE AND APPLIED PHYSICS

GURU GHASIDAS UNIVERSITY BILASPUR

विभागाध्यक्ष/H.O.D.
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Content:

- Objectives
- Introduction
- Production of radiation
- Interaction of radiation with matter
    - Photoelectric effect
    - Compton scattering effect
    - Pair production
- Radiation detector
- Types of radiation detector
    - Gas phase detector
    - Semiconductor detector
    - Scintillation detector
- Characteristics of scintillation detector
- Disadvantages of scintillation counter
- Analog to digital convertor
- Multichannel analyzer
- Theory
- Experimental setup
- How to measure
- Results and discussion
- Conclusion
- References

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GURU GHASIDAS VISHWAVIDYALAYA
CENTRAL UNIVERSITY , BILASPUR 495009

A PROJECT REPORT ON

"NUCLEAR REACTION ANALYSIS: AN ION BEAM ANALYSIS TECHNIQUE"

FOR PARTIAL FULFILLMENT OF THE DEGREE OF BACHELOR OF SCIENCE IN PHYSICS

BY: DEVASHISH KURREY

ROLL NO:19208813

ENROLLMENT NO:GGV/19/7058

SUPERVISED BY: DR.SHIV POOJAN PATEL

SESSION: 2021-2022

विभागाध्यक्ष/H.O.D.
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DEPARTMENT OF PURE AND APPLIED PHYSICS

HEAD OF DEPARTMENT

CERTIFICATE

THIS IS TO CERTIFY THAT THE PROJECT ENTITLE

"NUCLEAR REACTION ANALYSIS:

AN ION BEAM ANALYSIS TECHNIQUE"

HAS TO BEEN SUBMITTED TO THE DEPARTMENT OF PURE & APPLIED PHYSICS, GURUGHASIDAS UNIVERSITY,

FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF BACHELOR OF SCIENCE IN PURE & APPLIED PHYSICS BY STUDENT OF FINAL YEAR OF BSc. PHYSICS(HONOURS).

NAME:- DEVASHISH KURREY

ROLLNO.19208813

DR.MADHVENDRA NATH TRIPATHI

HEAD OF DEPARTMENT (HOD)

DEPARTMENT OF PURE & APPLIED PHYSICS

GURU GHASIDAS UNIVERSITY, BILASPUR(C.G.)

GUIDE CERTIFICATE

THIS IS TO CERTIFY THAT THE PROJECT ENTITLE

"NUCLEAR REACTION ANALYSIS: AN ION BEAM ANALYSIS TECHNIQUE"

HAS TO BEEN SUBMITTED TO THE DEPARTMENT OF PURE & APPLIED PHYSICS, GURUGHASIDAS UNIVERSITY

FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF BACHELOR OF SCIENCE IN PURE & APPLIED PHYSICS BY STUDENT OF FINAL YEAR OF BSc. PHYSICS (HONOURS).

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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NAME:- DEVASHISH KURREY
ROLLNO.19208813

DR.SHIV POOJAN PATEL
ASSISTANT PROFESSOR
DEPARTMENT OF PURE & APPLIED PHYSICS
GURU GHASIDAS UNIVERSITY, BILASPUR (C.G.)

ABSTRACT

NUCLEAR REACTION ANALYSIS (NRA) is a widely used method for the quantitative determination and depth profiling of light isotopes. This project work gives an introduction about the method. Principle, required equipments, mechanism, reaction kinematics, cross section data, resonant & non resonant types, various filtration methods, some useful nuclear reactions using protons ,deuterons,^{3}He,^{4}He, profiling of some light elements like hydrogen, nitrogen, carbon, oxygen, computer simulation codes etc. are discussed.

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A PROJECT REPORT ON

"AUREUS : THE UV-POWERED SOLAR PANELS"

FOR PARTIAL FULFILLMENT OF THE DEGREE OF BACHELOR OF SCIENCE IN PHYSICS

BY: DEVENDRA CHANDRA

ROLL NO:19208814

SUPERVISED BY: Dr.DINESH UTHRA

SESSION: 2021-2022

DEPARTMENT OF PURE AND APPLIED PHYSICS

GURU GHASIDAS VISHWAVIDYALAYA

CENTRAL UNIVERSITY , BILASPUR 495009

DEPARTMENT OF PURE AND APPLIED PHYSICS

विभागाध्यक्ष/H.O.D.
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गुरु घासीदास विश्वविद्यालय
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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Department Of Pure & Applied Physics

Guru Ghasidas University, Koni, Bilaspur (CG)

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

CERTIFICATE

THIS IS TO CERTIFY THAT THE PROJECT ENTITLE
"AUREUS : THE UV-POWERED SOLAR PANELS"
HAS TO BEEN SUBMITTED TO THE DEPARTMENT OF PURE & APPLIED PHYSICS, GURUGHASIDAS UNIVERSITY,
FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF BACHELOR OF SCIENCE IN PURE & APPLIED PHYSICS BY STUDENT OF FINAL YEAR OF BSc. PHYSICS (HONOURS).

NAME:- DEVENDRA CHANDRA
ROLLNO.19208814
DR.MADHVENDRA NATH TRIPATHI
HEAD OF DEPARTMENT (HOD)
PURE & APPLIED PHYSICS

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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DEPARTMENT OF PURE AND APPLIED PHYSICS

Department Of Pure & Applied Physics

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CERTIFICATE

THIS IS TO CERTIFY THAT THE PROJECT ENTITLE
"THE UV-POWERED SOLAR PANELS"
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FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF BACHELOR OF SCIENCE IN PURE & APPLIED PHYSICS BY STUDENT OF FINAL YEAR OF BSc. PHYSICS (HONOURS).

NAME:- DEVENDRA CHANDRA
ROLL NO.19208814
DR.DINESH UTHRA
ASSISTANT PROFESSOR

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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ABSTRACT

The Aureus is a solar panel system, which is made from agricultural waste. Unlike conventional solar panels, which only work when they face the sun directly, because they depend upon visible light only , Aureus, on the other hand can produce energy even in cloudy days when hardly any sunlight reach us, because it uses the uv rays that undergoes clouds. Therefore, it produces energy around 50% time per preliminary testing, whereas standard solar panels can only do it 15-22%. It is inspired by the physics that is behind Aurora borealis. It is made up of luminescent particles derived from crop waste or vegetable waste. This particles convert uv light into visible radiation, which is reflected to the very edges of the panel. This actinic ray can then be captured and converted into electricity by a string of standard photovoltaic cells, just like the ones found in regular solar panels , which fringe the surface of the cladding. With the assistance of integrated regulating circuits this electricity can then either be stored or used immediately. UV ray is very major in aureas so it is talked about in this thesis . Aurora borealis played another major in the Aureus project so some of its basic facts and why do it occur is being discussed here. At the end how it is different from conventional solar panels and application of Aureus is discussed.

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GURU GHASIDAS UNIVERSITY, BILASPUR

A Central University Established by Central Universities Act 2009 No. 25 of 2009

PROJECT

"A REVIEW ON SUPERCONDUCTIVITY"

GUIDED BY

Dr. Alka Singh

Assistant Professor –Physics

Department of pure and applied physics

SUBMITTED BY

Dhavichandra Dhirhe

B.Sc. Hons Physics VI Sem.

Roll No. 19208815

विभागाध्यक्ष/H.O.D.
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DEPARTMENT OF PURE AND APPLIED PHYSICS

Guru Ghasidas Vishwavidyalaya, Bilaspur

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

X-RAY DIFFRACTION

B.SC(HONOURS) IN PHYSICS

SESSION 2019 – 2022

Under the supervission of :

Dr. Shalinta Tigga

Assistant professor

DEPARTMENT OF PURE AND APPLIED PHYSICS

Guru Ghasidas university, Bilaspur (C.G.)

Submitted By :-

Divyansh Pandey

B.sc(honours) Physics 6th sem.

Roll No. 19208816

Enrollment no. GGV / 19 / 7069

विभागाध्यक्ष/H.O.D.
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DEPARTMENT OF PURE AND APPLIED PHYSICS

Guru Ghasidas Vishwavidyalaya, Bilaspur

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

CERTIFICATE

This is to certify that the project titled

"X-RAY DIFFRACTION"

Submitted by **DIVYANSH PANDEY** in the partial fulfilments for the degree of Bachelor of Science in Physics is an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge, the matter embodied in the project report has not been submitted to any other University \ Institute for the award of Degree or Diploma.

Date:

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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DR. SHALINTA TIGGA

Department of pure & Applied Physics

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DEPARTMENT OF PURE AND APPLIED PHYSICS

Guru Ghasidas Vishwavidyalaya, Bilaspur

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

APPROVAL CERTIFICATE

This is to certify that the project titled

"**X-RAY DIFFRACTION**"

Submitted by **Mr. DIVYANSH PANDEY** is approved for the degree of Bachelor of Science in Physics.

Date:

Prof. M. N. Tripathi
विभागाध्यक्ष / Head
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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GURU GHASIDAS VISHWAVIDYALAYA

BILASPUR (C.G.)

A Project report on

"STUDY OF 2 ELECTRON SYSTEM AND HELIUM ATOM"

A Dissertation in Partial Fulfilment for the Degree of

Bachelor of Science

In

Physics(Honour'S)

Department of Pure & Applied Physics

Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.),49500, India

Submitted by

GULDEEP GAVEL

Roll No.- 19208818

GGV/1920/7075

Guided by

D.r R VIJAY KUMAR

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Department of Pure & Applied Physics

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

CERTIFICATE

This is to certify that the project titled "**Study of 2 ELECTRON SYSTEM AND HELIUM ATOM"** Submitted by **GULDEEP GAVEL** in the partial fulfilment for the degree of Bachelor of Science in Physics is an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge, the matter embodied in the project report has not been submitted to any other University \ Institute for the award of Degree or Diploma.

Date:

Dr. R VIJAY KUMAR

Department of pure & Applied Physics

Guru Ghasidas Central University, Bilaspur 495009

विभागाध्यक्ष/H.O.D.
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Department of Pure & Applied Physics

Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) India

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

APPROVAL CERTIFICATE

This is to certify that the project titled "**Study of 2 ELECTRON SYSTEM AND HELIUM ATOM"** Submitted by **Mr. GULDEEP GAVEL**is approved for the degree of Bachelor of Science in Physics.

Date:

Dr. M. N. Tripathi

Head of the Department

Department of Pure & Applied Physics

Guru Ghasidas Vishwavidyalaya

Bilaspur, 495009

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1) INTRODUCTION TO QUANTUM MECHANICS
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GURU GHASIDAS VISHWAVIDYALAYA

Bilaspur,Chhattisgarh

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

A

PROJECT REPORT

On

MAJOR TELESCOPES IN SPACE

Submitted for

partial fulfilment of the requirement for the

Bachelor of science in Physics

Submitted by
Harshvardhan Patel
B.Sc.- VI semester

Supervised by
Dr. Bivash Dolai

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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DEPARTMENT OF PURE AND APPLIED PHYSICS

Approval Sheet

This report "Major telescopes in Space" by HARSHVARDHAN PATEL is approved for the degree of Bachelor of Science (Physics Honours)

Date

Dr. Bivash Dolai

Assistant Professor

Department of Pure & Applied Physics,

GGV, Bilaspur (C.G.)

विभागाध्यक्ष/H.O.D
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Forwarding Certificate

This is to certify that HARSHVARDHAN PATEL has carried out the project in Department of Pure and Applied Physics, GURU GHASIDAS UNIVERSITY, BILASPUR (C.G.). On the topic: "Major Telescopes in Space."
The project is submitted for the partial fulfilment of requirement of the degree Bachelor in in Physics (Honours) forwarded examiner for evaluation. I wish him every success in life.

Dr. M.N. Tripathi
Head of Department
Department of Pure and Applied Physics,
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G)

Certificate

This is certify that HARSHVARDHAN PATEL bearing Enrolment No. - GGV/19/7080 has developed this project titled ''MAJOR TELESCOPES IN SPACE'' for Guru Ghasidas University, Bilaspur (C.G.) as partial fulfilment for the award of the degree of Bachelor in Science in Physics.

Supervised By:
Dr. Bivash Dolai
Assistant Professor
Department of Pure and Applied Physics
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)

Date:

विभागाध्यक्ष/H.O.D.
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Project on

Green synthesis characterization and application of nanoparticles by plant extracts

Submitted in partial fulfillment of the requirement of the degree

Of

Bachelor of Science in Physics

Submitted by

Hitesh Kumar Baghel

Roll no. – 19208822

Under the supervision of

Dr. Sandhya Yadav

Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)

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

Department of pure and applied physics

Session 2021-22

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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Certificate

This is to be certified that Hitesh Kumar Baghel , student of B.Sc. honours physics VI semester department of pure and applied physics, Guru Ghasidas Vishwavidyalaya Bilaspur, have completed his project entitled " **Green synthesis characterization and application of nano particles by plant extracts**". During this project he has learned about nanoparticles. I wish him all success in his life and carrier.

Dr. Sandhaya Yadav

(Assistant Professor)

Department of Pure and applied physics

GGV Bilaspur (C.G)

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Forwarding Certificate

This is to certify that **Hitesh Kumar Baghel** has carried out the project in Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya, (C.G.), on the Topic, **Green synthesis characterization and application of nanoparticles by plant extracts.** This project is submitted for the partial fulfillment of requirements of the Degree of B.Sc. in Physics is forwarded to examiner for evaluation.

I wish him very success in life.

विभागाध्यक्ष / H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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DR. M. N. Tripathi
Associate Professor
Head of the department
PURE ANDAPPLIEDPHYSICS, G.G.V.
BILASPUR CHHATTISGARH.

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GURU GHASIDAS VISHVWAVIDYALAYA, BILASPUR (C.G.)

A Project Report on

"Study of the Proton Exchange Membrane Fuel Cell (PEMFC)"

A Dissertation in Partial Fulfillment for the Degree of

Bachelor of Science in Physics

Submitted by

JITTU DEWANGAN

ROLL NO. – 19208823

Under the Supervision of

Dr. Anish Bhattacharya

Department of Pure and Applied Physics

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

Session 2021 - 22

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Department of Pure and Applied Physics

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

CERTIFICATE

This is to certify that **Jittu Dewangan** student of B.Sc. (honors) Physics, Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) has completed his project entitled "Study of the Proton exchange membrane fuel cell (PEMFC)". I recommended the Project report to be forwarded for the evolution. I wish him all success in his life and career.

Date –

Dr. Anish Bhattacharya

(Assistant Professor)

Department of Pure and Applied Physics

Guru Ghasidas Vishwavidyalaya, Bilaspur, 495009

विभागाध्यक्ष/H.O.D.
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Department of Pure and Applied Physics

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

FORWARDING CERTIFICATE

This is to certify that **Jittu Dewangan** student of B.Sc. (honors) Physics has carried out the Project in the Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) on the topic "Study of the Proton exchange membrane fuel cell (PEMFC)". This Project is submitted in partial fulfillment for the Degree of B.Sc. in Physics and is forwarded to the examiner for the evaluation.

I wish him every success in his life.

Dr. Madhvendra Nath Tripathi
Associate Professor
(Head of Department)

Department of Pure and Applied Physics

Guru Ghasidas Vishwavidyalaya, Bilaspur, 495009

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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Lithium Ion Battery

Project report submitted in partial fulfillment

of the requirement for the

Award of Bachelor of Science Degree

in

Pure and Applied Physics

By

Kiran Gupta

Roll Number- 19208824

Under the Guidance of

Dr. Md. Faruck Abdullah

Pure and Applied Physics

Guru Ghasidas Vishwavidyalaya Bilaspur (C.G.) India

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

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Department of Pure and Applied Physics

Guru Ghasidas Vishwavidyalaya Bilaspur (C. G.) India

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

FORWARDING CERTIFICATE

This is to certify that **Kiran Gupta** as carried out the following project entitled as **Lithium-Ion Battery** this project is submitted for the partial fulfillment of requirements of the degree of B.Sc. in Physics is forwarded to examiners for Evaluation.

Kiran Gupta

Roll. No. – 19208824

Physics Honors.

B.Sc. VI Semester,

Dr. Md. Faruck Abdullah

Assistant professor

Department of Pure and Applied Physics.

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Department of Pure and Applied Physics

Guru Ghasidas Vishwavidyalaya Bilaspur (C. G.) India

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

CERTIFICATE

This is to certify that **Kiran Gupta** has carried out the project on the topic **"Lithium Ion Battery"** in the Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya, Bilaspur under my supervision. She worked diligently and methodically and has collected the literature very sincerely and carefully. 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 her all success in her life & Career.

Submitted by

Kiran Gupta

Supervised by

Dr. Md. Faruck Abdullah

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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CONSTRUCTION AND APPLICATION OF HEAT SENSOR

By

Kusum Tekam

Roll No.- 19208825

Enrollment No. –GGV/19/7102

A Dissertation submitted to the

Department of Pure and Applied Physics

Guru Ghasidas Vishwavidyalaya

In Partial Fulfillment of the Requirements for the

Degree of Bachelor of Science

April 2022

Under the Superviser of

Mr. Divya Prakash Sarvanash sir

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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गुरु घासीदास विश्वविद्यालय
Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

CERTIFICATE

This is to certify that the thesis entitled ,**"Construction and application of heat sensor"** submitted by **Kusum Tekam** the partial fulfillment for the requirements for the award of Bachelor of Science Degree in Physics at Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya (A Central University), Bilaspur (C.G.),495009, INDIA is an authentic work carried out by her under my supervision and guidance.

Mr .Divya Prakash Sarvansh Sir

Date-.....

Department of Pure & Applied Physics

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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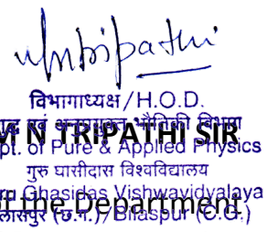
APPROVAL CERTIFICATE

This is the certify that the project entitled "**Construction and Application of Heat senso**r" submitted by **Kusum Tekam** is approved for the award of Bachelor of Science (Hon's) in Physics.



DR. I.V.N TRIPATHI SIR

Head of the Department

Department of Pure and applied physics

Guru Ghasidas Vishwavidyalaya, Bilaspuer (C.G)

Date- …….

ABSTRACT

Convenience and safeguarding our daily appliances have become an important issue when dealing with an advancement and growth of an economy. This research focus on the construction and application of a heat sensor. The circuit works by monitoring temperature from an external input and comparing the temperature level with that of a present temperature value. The power output of the circuit is cut off or switched OFF or an alarm is triggered ON if the temperature of the external input is equal to or, greater than the present temperature value. The methodology involves the application of linear precision temperature sensors i.e., they generate a voltage that is directly proportional to the temperature. Basically the system is constructed using temperature sensors and comparators. The system is powered using a 12V power supply. The results of the tests showed that the power of output of the circuit is switched OFF hence switching OFF the heating device or an alarm is triggered ON when the device exceeded a present temperature level. The general operation of the system and performance is dependent on the temperature difference between the present temperature value and external temperature intended to be monitored.

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DEPARTMENT OF PURE AND APPLIED PHYSICS

Guru Ghasidas Vishwavidyalaya Bilaspur (C.G.) India

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

Project on

" RADIOACTIVITY AND IT'S APPLICATION"

Submitted in partial fulfilment of the requirement

For the

Award of Bachelor of Science Degree

In

Physics

To

Guru Ghasidas Vishwavidyalaya Bilaspur (C.G) India

By

Mandhya Singh

Roll no. 19208826

Enrolment no. GGV/19/7111

Under the Guidance of

Mr. Ravindra Kumar

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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DEPARTMENT OF PURE AND APPLIED PHYSICS

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FORWARDING CERTIFICATE

This is to certify that Mandhya Singh has carried out the following project entitled as "RADIOACTIVITY AND IT'S APPLICATION ".This project is submitted for the partial fulfilment of requirements of the degree of B.Sc. in Physics is forwarded to examiners for Evaluation.

MANDHYA SINGH
Roll. No. – 19208826.
B.Sc. Physics Honours
VI Semester.

MR. RAVINDRA KUMAR
Assistant professor (ad-hoc)
Department of pure and Applied physics

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DEPARTMENT OF PURE AND APPLIED PHYSIC

Guru Ghasidas Vishwavidyalaya Bilaspur (C. G.) India

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

CERTIFICATE

This is to certify that Mandhya Singh has carried out the project on The topic "RADIOACTIVITY AND IT'S APPLICATION" in the Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya, Bilaspur under my supervision. She worked diligently and Methodically and has collected the literature very sincerely and carefully. 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 her all success in her life & Career.

Submitted by

Mandhya Singh

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Supervised by

Mr. Ravindra Kumar

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

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

"RENEWABLE ENERGY AND EMERGING TECHNOLOGIES"

A Dissertation in Partial fulfilment for the Degree of

Bachelor of Science in Physics

Submitted by

MANU KUMAR BAGHEL

Roll NO. – 19208827

Under the Supervision of

Professor

DR. P.K. BAJPAI

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Department of Pure & Applied Physics

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

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

CERTIFICATE

This is to certify that the project titled **"RENEWABLE ENERGY AND EMERGING TECHNOLOGIES"** Submitted by **MANU KUMAR BAGHEL** in the partial fulfilment for the degree of Bachelor of Science in Physics is an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge, the matter embodied in the project report has not been submitted to any other University \ Institute for the award of Degree or Diploma.

विभागाध्यक्ष/H.O.D.
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Dept. Of pure applied physics

GGV. Bilaspur. (C.G.)

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GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR

Department of Pure & Applied Physics

A Project report on

"Electron Microscopy"

A Dissertation in Partial Fulfilment for the Degree of

Bachelor of Science

in

Physics

Submitted by

Monika Rana

Roll No.- 19208828

Under the Supervision of

Dr. H. S. Tiwari

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Department of Pure & Applied Physics

GURU GHASIDAS VISHWAVIDYALAYA, Bilaspur (C.G.) India

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

DECLARATION

I hereby declare that the work presented in the project titled "**Electron Microscopy"** submitted in the partial fulfilment for degree of Bachelor of Science in Physics has been done in the Department of Pure & Applied Physics, Guru Ghasidas Central University, Bilaspur (C.G.), 495009 under the supervision of Dr. H. S. Tiwari is carried out by me.

Date:

Monika Rana

B.Sc. (Physics) VI Semester

Roll No.- 19208828

Enroll. No.- GGV/19/7119

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

CERTIFICATE

This is to certify that the project titled "**Electron Microscopy " s**ubmitted by **MONIKA RANA** in the partial fulfilment for the degree of Bachelor of Science in Physics is an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge, the matter embodied in the project report has not been submitted to any other University \ Institute for the award of Degree or Diploma.

Date:

Dr. H. S. Tiwari

Department of Pure & Applied Physics

Guru Ghasidas Central University, Bilaspur, 495009

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APPROVAL CERTIFICATE

This is to certify that the project titled "**Electron Microscopy" s**ubmitted by **Mr. MONIKA RANA** is approved for the degree of Bachelor of Science in Physics.

Date:

Prof. M. N. Tripathi
Head of the Department
Department of Pure & Applied Physics
Guru Ghasidas Central University
Bilaspur, 495009

CONTENT

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Department of pure and applied physics

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

A project report on

STRUCTURAL ANALYSIS OF CERAMICS,RECENT ADVANCES

A Dissertation in Partial Fulfillment for the degree of

Bachelor of Science

In

PHYSICS

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Under the Supervision of: ***PROF P.K. BAJPAI***

*Submitted by –****NEELANJ SAHU*** *Roll Number - 18208024*

Department of Pure and Applied Physics

Guru Ghasidas Vishwavidyalaya, Bilaspur(C.G.) India

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

DECLARATION

I hereby declare that the work presented in the project titled "**STRUCTURAL ANALYSIS OF CERAMICS,RECENT ADVANCES**" submitted in the partial fulfillment for degree of Bachelor of Science in Physics has been done in the Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya, Bilaspur(C.G.), under the supervision of **PROF P.K. BAJPAI** is carried out by me.

Date –

NEELANJ SAHU ,B.SC. (Physics) VIth semester

Roll Number – 18208024

Enrollment Number – GGV/18/7103

विभागाध्यक्ष/H.O.D.
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Department of Pure and Applied Physics

Guru Ghasidas Vishwavidyalaya, Bilaspur(C.G.) India

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

CERTIFICATE

This is certified that the Project titled **"STRUCTURAL ANALYSIS OF CERAMICS,RECENT ADVANCES"**submitted by **NEELANJ SAHU** in the partial fulfillment for the degree of Bachelor in Physics is an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge, the matter embodied in the project report has not been submitted to any other university/Institute for the award of Degree of Diploma.

Date –

PROF P.K. BAJPAI

Department of Pure and Applied Physics

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

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PROJECT ON

“A REVIEW ON PHOTOVOLTIC CELL”

Submitted in partial fulfillment of the requirement of the degree of Bachelor of Science

IN PHYSICS

By

NANDINI YADAV

ROLL NO. 19208829

Under the supervisor of

Dr. M. N. TRIPATHI

(H.O.D PHYSICS DEPARTMENT)

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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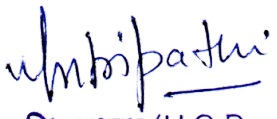
ABSTRACT

This is review based on solar cell (also called as photovoltic cell)

Photovoltaics is the process of converting sunlight directly into electricity using solar cells .

Today it is a rapidly growing and increasingly important renewable alternative to conventional fossil fuel electricity generation, but compared to other electricity generating technologies, it is a relative newcomer, with the first practical photovoltaic devices demonstrated in the 1950s. Research and development of photovoltaics received its first major boost from the space industry in the 1960s which required a power supply separate from "grid" power for satellite applications. These space solar cells were several thousand times more expensive than they are today and the perceived need for an electricity generation method apart from grid power was still a decade away, but solar cells became an interesting scientific variation to the rapidly expanding silicon transistor development with several potentially specialized niche markets. In the 1980s research into silicon solar cells paid off and solar cells began to increase their efficiency. In 1985 silicon solar cells achieved the milestone of 20% efficiency. Over the next decade, the photovoltaic industry experienced steady growth rates of between 15% and 20%, largely promoted by the remote power supply market. The year 1997 saw a growth rate of 38% and today solar cells are recognized not only as a means for providing power and increased quality of life to those who do not have grid access, but they are also a means of significantly diminishing the impact of environmental damage caused by conventional electricity generation in advanced industrial countries.The increasing market for, and profile of photovoltaics means that more applications than ever before are "photovoltaically powered". These applications range from power stations of several megawatts to the ubiquitous solar calculators. PVCDROM aims to provide an overview of terrestrial photovoltaics to furnish the non-specialist with basic information. It is hoped that having used PVCDROM you will understand the principles of photovoltaic devices and system operation, you will be able to identify appropriate applications, and you will be capable of undertaking photovoltaic system design. By gradually increasing the number of people who are familiar with photovoltaic concepts

CONTENT



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

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

"Steller photometry using CCDs"

A Dissertation in Partial fulfilment for the Degree of

Bachelor of Science in Physics

Submitted by

NARAYAN CHANDRAKAR

Roll NO. – 19208830

Under the Supervision of

DR. PARIJAT THAKUR

Department of Pure & Applied Physics, Guru Ghasidas Vishwavidalaya, Bilaspur (C.G.), 495009, India

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Department of Pure & Applied Physics

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

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

CERTIFICATE

This is to certify that the project titled **"Steller photometry using CCDs"** Submitted by **NARAYAN CHANDRAKAR** in the partial fulfilment for the degree of Bachelor of Science in Physics is an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge, the matter embodied in the project report has not been submitted to any other University \ Institute for the award of Degree or Diploma.

.

Date:

DR. PARIJAT THAKUR

Department of pure & Applied Physics

Guru Ghasidas Vishwavidyalaya

Koni, Bilaspur, 495009 (C. G), India

विभागाध्यक्ष/H.O.D.
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GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR

Department of Pure & Applied Physics

A Project report on

"Studies and characterization of $BaSO_4$: Eu nanophosphor"

A Dissertation in Partial Fulfilment for the Degree of

Bachelor of Science

In

Physics

Submitted by

NAVIN KUMAR DESHLAHARA

Roll No.- 19208831

Under the Supervision of

Prof. R.P Patel

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Department of Pure & Applied Physics

Guru Ghasidas Central University, Bilaspur (C.G.) India

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

DECLARATION

I hereby declare that the work presented in the project titled "**Studies and characterization of $BaSO_4$:Eu nanophosphor"** submitted in the partial fulfilment for degree of Bachelor of Science in Physics has been done in the Department of Pure & Applied Physics, Guru Ghasidas Central University, Bilaspur (C.G.), 495009 under the supervision of Prof. **R.P Patel** is carried out by me.

Date:

Navin Kumar Deshlahara

B.Sc. (Physics) VI Semester

Roll No.- 19208831

Enroll. No.- GGV/19/7127

विभागाध्यक्ष/H.O.D.
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Department of Pure & Applied Physics

Guru Ghasidas Central University, Bilaspur (C.G.) India

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

CERTIFICATE

This is to certify that the project titled "**Studies and characterization of $BaSO_4$:Eu nanophosphor "**

Submitted by **NAVIN KUMAR DESHLAHARA** in the partial fulfilment for the degree of Bachelor of Science in Physics is an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge, the matter embodied in the project report has not been submitted to any other University \ Institute for the award of Degree or Diploma.

Shiv

DR. Shiv Poojan Patel

Prof. R.P Patel

Department of Pure & Applied Physics

Guru Ghasidas Central University, Bilaspur, 495009

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
Dept. of Pure & Applied Physics
गुरु घासीदास विश्वविद्यालय
Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Department of Pure & Applied Physics

Guru Ghasidas Central University Bilaspur (C.G.) India

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

APPROVAL CERTIFICATE

This is to certify that the project titled "**Studies and characterization of $BaSO_4$:Eu nanophosphor"**

Submitted by **Mr. NAVIN KUMAR DESHLAHARA** is approved for the degree of Bachelor of Science in Physics.

Date:

Prof. M. N. Tripathi

Head of the Department

Department of Pure & Applied Physics

Guru Ghasidas Central University

Bilaspur, 495009

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

CONTENT

- Introduction to nanophosphors
- $BaSO_4$: Eu nanophosphor
- Different techniques for synthesis of nanophosphors
- Synthesis of $BaSO_4$:Eu nanophosphor
- Characterization techniques for nanophosphors
- Characterization of $BaSO_4$:Eu nanophosphor
- Conclusion
- References

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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

HEAT TRANSFER IN BIOMATERIALS

Department of Pure and Applied Physics

Guru Ghasidas Vishwavidyalaya, Bilaspur

(C.G.) India

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

Under the Guidance of

Dr. Arun Kumar Singh

Associate Professor,

Guru Ghasidas Vishwavidyalaya,

Bilaspur (C.G.)

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
Dept. of Pure & Applied Physics
गुरु घासीदास विश्वविद्यालय
Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Submitted by

Nidhi Sahu

B.Sc.(Hons.) Physics

Roll No. ; 19208832

Enroll. No. ;GGV/19/7129

DECLARATION

I the undersigned solemnly declare that the project report "**HEAT TRANSFER IN BIOMATERIALS**" is based on my own work carried out during the course of our study under the supervision of **Dr. Arun Kumar Singh Sir, Associate Professor, Guru Ghasidas Vishwavidyalaya** .

I assert the statements made and conclusions drawn are an outcome of my research work. I further certify that

I. The work contained in the report is original and has been done by me under the general supervision of my supervisor.
II. The work has not been submitted to any other Institution for any other degree/diploma/certificate in this university or any other University of India or abroad.
III. We have followed the guidelines provided by the university in writing the report.
IV. Whenever we have used materials (data, theoretical analysis, and text) from other sources, we have given due credit to them in the text of the report and giving their details in the references.

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Name ; Nidhi Sahu

Roll No. ; 19208832

Enrollment No.; GGV/19/7129

FORWARDING CERTIFICATE

This is to certify that NIDHI SAHU, has carried out the project dissertation in the Department of pure and applied physics, Guru Ghasidas University, Bilaspur, C.G. on the topic "HEAT TRANSFER IN BIOMATERIALS"

This project is submitted in the partial fulfillment of the requirement for the
degree of B.Sc. in Physics is forwarded to examiner for evaluation. I wish her success in life.

Date:

Dr. M. N. Tripathi
Head of Department
Department of pure and applied physics
Guru Ghasidas University
Bilaspur (C.G.)

CERTIFICATE

This is to certify that the project dissertation entitled "**HEAT TRANSFER IN BIOMATERIALS"** submitted by NIDHI SAHU, department of pure and applied physics, Guru Ghasidas University, Bilaspur, C.G. in partial fulfillment of the requirement for the degree of B.Sc. in Physics is an original work carried by her.

To my best knowledge, the matter embodied in the project report has not been submitted to any other University/Institute for the award of degree or Diploma.

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Dr. Arun Kumar Singh

Supervisor
Dr. Arun Kumar Singh
Associate Professor
Department of pure and applied physics
Guru Ghasidas University
Bilaspur (C.G.)

ABSTRACT

Nature has its own ways to teach people and make them aware of its importance. From the “radiation” coming from sun to the melting of ice-cream at room temperature, we can see and we are the part of a phenomenon “HEAT TRANSFER”.

The biomaterial is in itself a material designed to interact with the body.

This project titled as “HEAT TRANSFER IN BIOMATERIALS” focuses on “How can we define **heat transfer** within biomaterial?”

To study about Heat transfer property, here we have defined the types of biomaterials (on the basis of fundamental element they are made up)

After it, we have discussed about the Heat transfer. Here we have mainly focused on the “Conduction”.

There is a lot of modals for “Heat Transfer in biomaterials”. Here we have discussed about a fundamental model and “Pennes Bio heat Transfer Model”

There is a bunch of physical properties with the help of which we can define heat transfer phenomenon. Here we have discussed about heat transfer by the help of “Fourier’s Law of Heat Conduction”, “Thermal Conductivity” and “Thermal Diffusivity”

Biomaterials have made a lot of medical issues easy to solve. When we will come know more about it after it we could do more batter in this field.

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

CONTENT

- **Introduction**
- **Biomaterial and it's type**
  - Metallic Biomaterials
  - Ceramic Biomaterials
  - Polymeric Biomaterials
  - Composite Biomaterials
  - Biodegradable Biomaterials
- **Heat Transfer**
  - Conduction
  - Heat Transfer Mechanism in Biomaterials
- **Thermal Models**
  - Pennes Bio heat Transfer Model
- **Fourier's Law of Heat Conduction**
  - Thermal Conductivity
  - Thermal Diffusivity
- **Conclusion**
- **Reference**

विभागाध्यक्ष/H.O.D.
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A REVIEW ON FULLRENCE AND ITS APPLICATIONS

Department of Pure and Applied Physics

GURU GHASIDAS VISHWAVIDYALAYA

(A CENTRAL UNIVERSITY)

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT OF THE DEGREE OF

BACHELOR OF SCIENCE (HONOURS) IN PHYSICS

Submitted by :- Nikhil Patel

Roll no. :- 19208833

Enrollment no. :- GGV/19/7132

Supervised by :- Dr. Jai Singh

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

DECLARATION

I hereby declare that the work present in project entitle **"A REVIEW ON FULLRENCE AND ITS APPLICATIONS"**

submitted as partial fulfillment of B.Sc. Physics (Hons.), this written submission represents my ideas in my own words. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission.

The work present in the dissertation is original and will remain intellectual property of the department.

विभागाध्यक्ष/H.O.D.
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NIKHIL PATEL

B.Sc. Physics hons. 6th semester

Roll No:- 19208833

Enrollment no:- GGV/19/7132

FORWARDING CERTIFICATE

This is to certify that **NIKHIL PATEL** has carried out the project in the Department of Pure and Applied Physics, GURU GHASIDAS UNIVERSITY, BILASPUR (C.G.).

On the topic **"A REVIEW ON FULLRENCE AND ITS APPLICATIONS".**

The project is submitted for the partial fulfillment of requirement of the degree of Bachelor of Science in Physics (Hons.) is forwarded to examine for evaluation. I wish him every success in life.

Jai Singh

Dr. Jai Singh
Department of Pure and Applied Physics
GURU GHASIDAS UNIVERSITY, BILASPUR (C.G.)

विभागाध्यक्ष/H.O.D.
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CERTIFICATE

This is to certify that **NIKHIL PATEL** bearing Enrollment No.- **GGV/19/7132** has developed this project titled **"A REVIEW ON FULLRENCE AND ITS APPLICATIONS"** for Guru Ghasidas University, Bilaspur (C.G.) as partial fulfillment for the award of the degree of Bachelor in Science in Physics (Hons.).

.

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Supervised By:
Dr. Jai Singh
Department of Pure and Applied Physics
GURU GHASIDAS UNIVERSITY, BILASPUR
(C.G.)

CONTENT

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR

Department of Pure & Applied Physics

A Project report on

"Ferroelectric properties of Materials"

A Dissertation in Partial Fulfilment for the Degree of

Bachelor of Science

In

Physics

Submitted by

OMKAR PACHORI

Roll No.- 19208835

Under the Supervision of

Dr. M.P. SHARMA

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
Dept of Pure & Applied Physics
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Department of Pure & Applied Physics

Guru Ghasidas Central University, Bilaspur (C.G.) India

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

DECLARATION

I hereby declare that the work presented in the project titled "**Ferroelectric properties of Materials**" submitted in the partial fulfilment for degree of Bachelor of Science in Physics has been done in the Department of Pure & Applied Physics, Guru Ghasidas Central University, Bilaspur (C.G.), 495009 under the supervision of **Dr. M.P. Sharma** is carried out by me.

Omkar Pachori

B.Sc. (Physics) VI Semester

Roll No.- 19208835

Enroll. No.- GGV/19/7137

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Department of Pure & Applied Physics

Guru Ghasidas Central University, Bilaspur (C.G.) India

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

CERTIFICATE

This is to certify that the project titled **"Ferroelectric properties of Materials"** Submitted by **Omkar Pachori** in the partial fulfilment for the degree of Bachelor of Science in Physics is an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge, the matter embodied in the project report has not been submitted to any other University \ Institute for the award of Degree or Diploma.

Dr. M.P. Sharma

Department of Pure & Applied Physics

Guru Ghasidas Central University, Bilaspur, 495009

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Department of Pure & Applied Physics

Guru Ghasidas Central University Bilaspur (C.G.) India

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

APPROVAL CERTIFICATE

This is to certify that the project titled **"Ferroelectric properties of Materials"** Submitted by **Mr. OMKAR PACHORI** is approved for the degree of Bachelor of Science in Physics.

Prof. M.N. TRIPATHI

Head of the Department

Department of Pure & Applied Physics

Guru Ghasidas Central University

Bilaspur, 495009

CONTENTS

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
Dept. of Pure & Applied Physics
गुरु घासीदास विश्वविद्यालय
Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

PROJECT ON

“A REVIEW ON OPTICAL MICROSCOPE, ELECTRON MICROSCOPE AND SCANNING ELECTRON MICROSCOPE”

Submitted in partial fulfillment of the requirement of the degree of Bachelor of Science

IN PHYSICS

By

OMPRAKASH LASER

ROLL NO. 19208836

Under the supervisor of

Dr. T. G. REDDY

(Assistant professor)

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
Dept. of Pure & Applied Physics
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Department of pure and applied physics

GURU GHASIDAS UNIVERSITY (2020-21)

APPROVAL

The project report entitled "A REVIEW ON OPTICAL MICROSCOPE, ELECTRON MICROSCOPE AND SCANNING ELECTRON MICROSCOPE" submitted by OMPRAKASH LASER , Roll no 19208836 of the Department of Pure and Applied Physics, Central University Is approved for the degree of B.Sc. 6th semester Physics (Hons').

Dr. T. G. REDDY

Supervisor

(Pure and Applied Physics)

Date:

Time:

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
Dept. of Pure & Applied Physics
गुरु घासीदास विश्वविद्यालय
Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

DECLARATION

I declare that this written submission represents my idea in my own and where others idea or words have been included.

I have adequately cited and referenced the original sources. I also words declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data in my submission.

I also declare that this is my original work and was not submitted anywhere else.

Dr. M. N. TRIPATHI

(Head of dept. of Pure and Applied Physics)

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

OMPRAKASH LASER

(Name of Student)

Roll no. - 19208836

CERTIFIED BY GUIDE

This is to certify that **OMPRAKASH LASER** bearing enrollment no GGV/19/7138 has developed this project titled "**A REVIEW ON OPTICAL MICROSCOPE, ELECTRON MICROSCOPE AND SCANNING ELECTRON MICROSCOPE"** for GURU GHASIDAS UNIVERSITY as partial fulfillment for the B.Sc. 6th semester of Department of Pure and Applied Physics.

It is certified that all the correction & suggestion indicated for the project has been incorporated in it.

This project is done under the guidance of Dr. T. G. REDDY (Dept. of Pure and Applied Physics).

विभागाध्यक्ष/H.O.D.
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Dept. of Pure & Applied Physics
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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Dr. T. G. REDDY

(Department of Pure and Applied Physics)

Contents

Current Applications

- **Scientific Research**
- **Industry**
- **Natural Resources**
- **Forensic Science**

Future Applications

- **Diagonosis of Cancer**
- **Rapid detection of infectious agents**
- **Enviromental Scanning Electron Microscopy**

Reference

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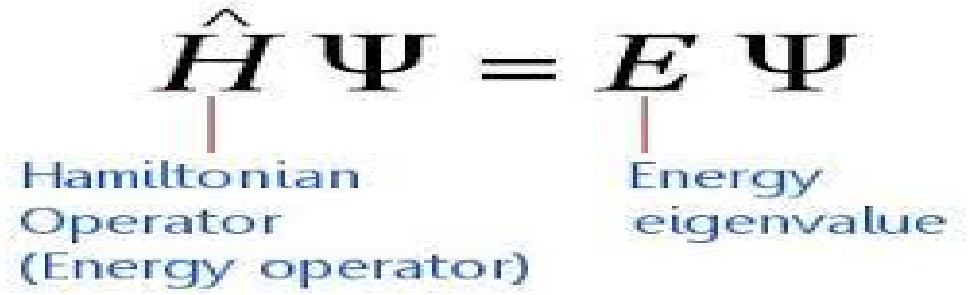
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR



REVIEW REPORT ON

SCHRODINGER WAVE EQUATION

For the and Partial Fulfilment

of the requirement for the Degree of

B.Sc. Hons. In PhysicS

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

GUIDED BY

Mr. P. Rambabu Sir

(Assistant Professor)

SUBMITTED BY

Piyush Kr. Sao (B.Sc. Hons Physics VI Sem)

Dept. of Pure And Applied Physics

DEPARTMENT OF PURE AND APPLIED PHYSICS

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)

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

DECLARATION

I hereby declare that the project work entitled "SCHRODINGER EQUATION IN 2-DIMENSIONS" submitted to the Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya Bilaspur (C.G.) India, is a record of an original work done by me under the guidance of Mr. P. RAMBABU Sir. This project is submitted in the partial fulfilment for the award of the degree of Bachelor of Science in Physics. The results embodied in this thesis have not been submitted to any other University or Institute for the award of any degree or diploma.

Dr. M.N. Tripathi
Head of Department,
Dept. of Pure And Applied Physics
19208837

Piyush Kumar Sao
(Name of Student)
Roll No.-

B.Sc. Hons. Physics
6th Sem.

DEPARTMENT OF PURE AND APPLIED PHYSICS

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)

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

FORWARDING CERTIFICATE

This is to certify that **Piyush Kumar Sao** has carried out the following project entitled as "**SCHRODINGER EQUATION IN 2- DIMENSION**". This project is submitted for the partial fulfilment of requirements of the degree of B.Sc. in Physics is forwarded to examiners for Evaluation.

PIYUSH KUMAR SAO

Roll No. -19208837

B.Sc. Hons. Physics VI Sem.

Mr. P. Rambabu Sir

Assistant Professor,

Dept. of Pure And Applied Physics.

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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DEPARTMENT OF PURE AND APPLIED PHYSICS

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)

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

CERTIFICATE

This is to certify that the project titled **“Schrodinger Equation in 2-Dimensions”** Submitted by **Piyush Kr. Sao** in the partial fulfilment for the degree of Bachelor of Science in Physics is an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge, the matter embodied in the project report has not been submitted to any other University \ Institute for the award of Degree or Diploma.

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

THANK YOU,

PIYUSH KR. SAO

CONTENT:-

- Introduction
- Need of Schrodinger Equation
- Use of Schrodinger Equation
- The 1-D wavefunction
- Schrodinger Equation In Two Dimension
- Wavefunction
- Application of the Schrodinger Equation in Two Dimension
- Representation of Particle in 2- Dimensions
- Modification of the Equation from one Dimensional to Two Dimensional equation.

- Applying Boundary Conditions
- Calculation of Wavefunction and Energy
- Coding Part

INTRODUCTION :-

The Schrodinger wave equation can be defined as the **Linear Partial Differential Equation** which is responsible for governing the **Quantum Mechanical System** and its **Wave Function.** This equation was first coined by Erwin Schrodinger in 1925 and the equation was named after him and this was published in 1926. He was awarded with the **Nobel Prize in Physics in 1933.** This discovery was a important milestone in the progressment of the quantum mechanics.

Conceptually, the Schrodinger Equation is said to be quantum equivalent of second law of newton in the Classical Mechanics. If we have set a known initial conditions then Newton's second law will predict the path of the body through it would progress its motion. We can find out evolution of a wave function over time of an isolated physical system , the quantum characterisation of the system.

1. There are some fact that should be keep in mind and these are:-

1. There must be **unitary** time-evolution operator.
2. This must be generated by exponential term of self adjoint

GURU GHASIDAS UNIVERSITY

BILASPUR, 495009

A PROJECT on Light Emitting Diode

SUBMITTED FOR

Partial fulfillment for the requirement in B.Sc. Degree in Physics

SUBMITTED BY :-

POOJA PATEL

BACHELOR OF SCIENCE

PHYSICS HONS.

6th SEMESTER (19208838)

SUPERVISED BY :-

D. PRADIP DAS SIR

DEPT. OF PURE & APPLIED PHYSICS, G.G.U. BILASPUR CHHATTISGARH

Declaration

In this undersigned project dissertation I solemnly declare that the report of the project work entitled "A PROJECT ON LIGHT EMITTING DIODE" is the actual work carried out during the course of my study under the supervision of Dr. PRADIP DAS Sir, Department of Pure and Applied Physics I assert that the statements made and conclusions drawn are an outcome of the project dissertation work. I further declare that to the best of my knowledge and belief that the report does not contain any part of any work which has been submitted for the award of any other degree/diploma/certificate in this University/deemed University of India. All helps received and citations used for the preparation of the project dissertation have been duly acknowledged.

(SIGNATURE OF CANDIDATE)

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This is to certify that POOJA PATEL, has carried out the project dissertation in the Department of Pure and Applied Physics, Guru Ghasidas University, Bilaspur, C.G. on the title "A PROJECT On LIGHT EMITTING DIODE". This project is submitted in the partial fulfillment of the requirement for the degree of B.Sc. in Physics is forwarded to examiner for evaluation. I wish him success in life.

Date:

PROF. M.N.TRIPATHI
Head of Department
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Certificate

This is to certify that the project dissertation entitled "A PROJECT on Light Emitting Diode" submitted by POOJA PATEL, Department of Pure And Applied Physics, Guru Ghasidas University,
Bilaspur, C.G. in partial fulfillment of the requirement for the degree of B.Sc. in Physics is an original work carried by him. To my best knowledge, the matter embodied in the project report has not been submitted to any other University/Institute for the award of degree or Diploma.

SUPERVISOR:
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Acknowledgements

First and foremost I want to thank my family for their support. I would like to express my special thanks of gratitude to

my teacher and supervisor Dr. PRADIP DAS Sir as well as our H.O.D. Prof. M.N.TRIPATHI SIR who gave me the golden opportunity to do this wonderful project on the topic, which will help me in doing a lot of research in future and I came to know about so many new things.

Finally I am also grateful to all those who directly or indirectly helped me for successfully completing this report.

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ABSTRACT

The work on LED includes objective oriented description of the structure, function and working principle of LED along with historical overview and application. Application mainly includes in the full function of LED in modern age. It also includes a brief description of how it works, the terminology used in this reference.

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Our main approach is to make a journey from the historical background of LED to the most advanced application like the LED light developed by 3M lighting and usage of LED in the field of optical fibre system, how it brighten the world and how we can live peacefully with it, benefits and loss.

INTRODUCTION

Light is the source of each and every form of life. Beginning from the history of human raise it was the most important phenomena of all is to make light more efficient and user friendly sources. But now necessity has increased and scientists and engineers had been working together to make the light sources more efficient. To maintain this journey LEDs are introduced in the early 1950's. In the 1990 the BLUE LED has been invented with a new era. And LEDs became more popular in the fields of medical science, engineering and so on.

PROJECT ON

"LIQUID DROP MODEL"

Submitted in partial fulfilment of the requirement of the degree of Bachelor of Science

IN PHYSICS

By

PRASHANT KUMAR

CHOUHAN

ROLL NO. 19208839

Under the supervisor of

Dr. TARKESHWAR

TRIVEDI SIR

(Assistant professor)

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APPROVAL

The project report entitled "LIQUID DROP MODEL" submitted by PRASHANT KUMAR CHOUHAN, roll no 19208839 of the Department of Pure and Applied Physics, Central University Is approved for the degree of B.Sc. 6th semester Physics (Hons').

Dr. TARKESHWAR TRIVEDI

Supervisor

(Pure and Applied Physics)

Date: Time:

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DECLARATION

I declare that this written submission represents my idea in my own and where others idea or words have been included.

I have adequately cited and referenced the original sources. I also words declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data in my submission.

I also declare that this is my original work and was not submitted anywhere else.

Dr. M.N.T. SIR
Head of dept. of Pure and Applied Physics

PRASHANT KUMAR CHOUHAN
(Name of Student)
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CERTIFIED BY GUIDE

This is to certify that ***PRASHANT KUMAR CHOUHAN*** *bearing enrollment no GGV/19/7150 has developed this project titled* ***"LIQUID DROP MODEL"*** *for GURU GHASIDAS UNIVERSITY as partial fulfillment for the B.Sc. 6th semester of Department of Pure and Applied Physics.*

It is certified that all the correction & suggestion indicated for the project has been incorporated in it.

This project is done under the guidance of Dr. TARKESHWAR TRIVEDI SIR (Dept. of Pure and Applied Physics).

Dr. TARKESHWAR TRIVEDI SIR

(Department of Pure and Applied Physics)

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RUTHERFORD BACKSCATTERING SPECTROMETRY : AN ION BEAM ANALYSIS TECHNIQUE

Department of Pure and Applied Physics
GURU GHASIDAS VISHWAVIDYALAYA
(A CENTRAL UNIVERSITY)

SUBMITTED IN PARTIAL FULFILMENT OF THREQUIREMENT OF THE DEGREE OF **BACHELOR OF SCIENCE(HONOURS) IN PHYSICS**

Submitted by :- Pratishtha Patel
Roll No -19208840
Enrollment No.- GGV/19/7155

Supervised by:- Dr. S.P.Patel
Assistant Professor
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DECLARATION

I hereby declare that the work present in project entitle "**Rutherford Backscattering Spectrometry: An Ion Beam Analysis Technique"** submitted as partial fulfillment of B.Sc. Physics (Hons.), this written submission represents my ideas in my own words. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. The work present in the dissertation is original and will remain intellectual property of the department.

PRATISHTHA PATEL
B.Sc. Physics hons. 6th semester
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On the topic
"Rutherford Backscattering Spectroscopy: An Ion Beam Analysis Technique".

The project is submitted for the partial fulfillment of requirement of the degree of Bachelor of Science in Physics (Hons.) is forwarded to examine for evaluation. I wish him every success in life.

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This is to certify that PRATISHTHA PATEL bearing Enrollment No.- GGV/19/7115 has developed this project titled "Rutherford Backscattering Spectroscopy: An Ion Beam Analysis Technique" for Guru Ghasidas University, Bilaspur (C.G.) as partial fulfillment for the award of the degree of Bachelor in Science in Physics (Hons.).

Supervised By:
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ELECTRICAL ENERGY FROM SOUND ENERGY

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS OF THE DEGREE

OF

BACHELOR OF SCIENCE IN PHYSICS

Submitted by:

RAHUL SHRIWAS

Roll No. – 19208841

Under the supervision of:

Dr. Dinesh Uthra

Department of Pure and Applied Physics

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Session:-(2021-22)

Forwarding Certificate

This is to certify that RAHUL SHRIWAS has carried out the project in Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya, (C.G.), on the Topic, "ELECTRICAL ENERGY FROM SOUND ENERGY". This project is submitted for the partial fulfillment of Requirements of the Degree of B.Sc. in Physics is forwarded to examiner for evaluation.

I wish Him Every Success in Life.

Prof Dinesh Uthra

Assistant professor
PURE AND APPLIED PHYSICS, GGV,
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Certificate

This is to be certified that RAHUL SHRIWAS student of B.Sc. VI Semester, Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya Bilaspur , have completed his Project entitled **" ELECTRICAL ENERGY FROM SOUND ENERGY"**. He has submitted his Project Report for the partial fulfillment of the curriculum of the Degree of B.Sc. Physics (VI Sem) from GGV. During this project work he has learned about speakers, piezoelectric crystal , sensors , inverter and LM2596S DC to dc buck converter. I recommend the project report to be forwarded for evaluation. I wish him all success in his life and career.

Date:- -28/03/2022

Dr. Dinesh Uthra

(Assistant professor)

Department of pure and applied physics

GGV, Bilaspur, (C.G.)

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Declaration

I hereby declare that the work present in the project entitled **"ELECTRICAL ENERGY FROM SOUND ENERGY"** submitted as partial fulfillment of B.Sc. Electronics have been performed in the Department of Pure And Applied Physics, Guru Ghasidas Vishwavidyalaya, Bilaspur under the supervision of **Dr. Dinesh Uthra** , Department of Pure & Applied Physics GGV Bilaspur, (C.G.).

RAHUL SHRIWAS

B.Sc. VI Semester, Physics

Roll no.:- 19208841

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Conversion of Noise Pollution into Electrical Energy

ABSTRACT:- Noise is often defined as unwanted sound, but technically noise is the perception of a series of compressions and rarefactions of the air above and below normal atmospheric pressure. It generates the vibration of air particles. Vibration refers to the oscillating movement of any object. Noise is the form of pollution which is not restricted till industries only, sources of noise includes vehicle fleets, housing colonies, loud music in marriages/celebrations, louds peakers used in political rallies, industrial appliances, generators, loudspeakers at spiritual places, airport and railway tracks etc. Continuous exposure to high noise has been observed to affect the human health. Various control methodologies are used to minimize the human exposure to high level of sound. This is based on the oscillation created by the sound wave which can be further converted to electricity by the use of magnetic field. We will use louds peaker (transducer) to work opposite as its normal working, instead of converting electrical signal into sound it converts sound wave into electrical energy. A number of other ways are also available for such conversion such as Piezometers and piezoelectric devices, but the efficiency of these processes have not been found satisfactory. Therefore, through this project we aim to devise a device which can convert noise from louds peaker into electricity. Noise pollution is waste and no one want it and if this waste form of sound could be converted and used, then it will be very beneficial for mankind. We all consider noise as a form of sound pollution but with technological advancement and great research work going on, it is possible now to

convert this universally distributed pollution into useful form energy such as thermal energy and electrical energy.

Key word: noise pollution, electrical energy, piezoelectric material.

I. INTRODUCTION

In our daily life there is greater need of electricity, without the electricity many of our work will shut down and stuck at the same point. There is a greater need and huge amount of electricity is required so various methods are adopted for the production of electricity. But use of electricity art high rate and devastation also, thus requires the alternate a source of energy that not only produce the electricity but become a convenient way to produce high electric energy advantageous. New and creative method are used produce electricity is something different and valuable .It has disclosed the new dimensions in the field of electricity. We always eager to find out and also hoe noise pollution can be used to convert into electricity. The “law of conservation of energy” states that energy cannot be created nor be destroyed. Under the consideration of this law the technological giants have discovered numerous sources to extract energy from them and use it as a source of power for conventional use. There are various so called eco-friendly sources of energy that we have discovered till the present artificial era. Some of them are implemented to great extent under the suitable circumstances to overcome the short run of the energy due to technological boom that has led the energy needs to its apex. Solar energy is one in the list that came

GURU GHASIDAS VISHWAVIDHYALAYA, BILASPUR

A project report on

"SOLAR POWER"

A Dissertation in Partial Fulfillment for the degree of

Bachelor of Science

In

PHYSICS

Under the Supervision of

Dr. ALKA SINGH

Submitted by – ***RAJNISH TANDON***

Roll Number - 1820884

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DECLARATION

I hereby declare that the work presented in the project titled "**SOLAR POWER"** submitted in the partial fulfillment for degree of Bachelor of Science in Physics has been done in the Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.), under the supervision of Dr. **ALKA SINGH** is carried out by me.

Date –

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CERTIFICATE

This is certified that the Project titled **"SOLAR POWER"** submitted by **RAJNISH TANDON** in the partial fulfillment for the degree of Bachelor in Physics is an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge, the matter embodied in the project report has not been submitted to any other university/Institute for the award of Degree of Diploma.

Date –

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APPROVAL CERTIFICATE

This is to certify that the project titled **"SOLAR POWER"** submitted by **Mr. RAJNISH TANDON** is approved for the degree of Bachelor of Science in Physics.

Date –

Dr. **M.N. TRIPATHI**
Head of the Department
of Pure and Applied Physics
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CONTENT »

- **Introduction of Solar Power**
- **History**
- **Government projects**
- **Performance in India and other countries**
- **Challenges**
- **Solar power plant**
- **Efficiency**
- **Advantages**
- **Disadvantages**
- **Future applications**
- **References**

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GURU GHASIDAS VISHWAVIDHYALAYA, BILASPUR

A project report on

"RADIOACTIVITY AND LAW OF RADIOACTIVE DECAY"

A Dissertation in Partial Fulfillment for the degree of

Bachelor of Science

In

PHYSICS

Under the Supervision of *Submitted by –**RAKESH PAINKRA***

Dr. SHALINTA TIGGA *Roll Number - 19208843*

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DECLARATION

I hereby declare that the work presented in the project titled "**Radioactivity and Law of Radioactive Decay"** submitted in the partial fulfillment for degree of Bachelor of Science in Physics has been done in the Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.), under the supervision of Dr. **SHALINTA TIGGA** is carried out by me.

Date –

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RAKESH PAINKRA

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CERTIFICATE

This is certified that the Project titled **"Radioactivity and Law of Radioactive Decay"** submitted by **RAKESH PAINKRA** in the partial fulfillment for the degree of Bachelor in Physics is an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge, the matter embodied in the project report has not been submitted to any other university\Institute for the award of Degree of Diploma.

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Dr. **Shalinta Tigga**

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This is to certify that the project titled **"Radioactivity and Law of Radioactive Decay"** submitted by **Mr. RAKESH PAINKRA** is approved for the degree of Bachelor of Science in Physics.

Date –

Dr. M.N. TRIPATHI
Head of the Department
Department of Pure and Applied Physics

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

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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

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

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

"SOLAR CELL AND GENERATION"

A Dissertation in Partial fulfilment for the Degree of

Bachelor of Science in Physics

Submitted by

RUPESH DEWANGAN

Roll NO. – 19208844

Under the Supervision of

Dr.VIJAYA KUMAR

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Department of Pure & Applied Physics,

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Department of Pure & Applied Physics

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

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

CERTIFICATE

This is to certify that the project titled "**Solar Cell and Generation**" Submitted by **RUPESH DEWANGAN** in the partial fulfilment for the degree of Bachelor of Science in Physics is an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge, the matter embodied in the project report has not been submitted to any other University \ Institute for the award of Degree or Diploma.

.

Date:

Dr.VIJAYA KUMAR

Department of pure & Applied Physics

Guru GhasidasVishwavidyalaya

Koni,Bilaspur, 495009 (C. G), India

विभागाध्यक्ष/H.O.D.
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GURU GHASIDAS VISHWAVIDYALAYA

Bilaspur , Chhattisgarh

*(*Central University Established by the Central Universities Act,2009 No.25 of 2009*)*

A

PROJECT REPORT

On

PLASMA LENSES : PROMISE SMALLER ACCELERATORS

Submitted for

Partial fulfilment of the requirement for the

Degree of bachelor's of Science in Physics

Submitted by

Name – Sangeeta Dehari

B.Sc. – VI Semester

Roll No. - 19208845

Supervised by

Dr. Bivash Dolai

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

DEPARTMENT OF PURE AND APPLIED PHYSICS

Approval Sheet

This report "Plasma lenses: promise smaller accelerators" by SANGEETA DEHARI is approved for the degree of Bachelor of Science (Physics Honours)

.....
.....

Dr. Bivash Dolai

Date: 04/05/2022

Assistant Professor

Physics Department of Pure & Applied Physics,

GGV,Bilaspur (C.G.)

.....
.....

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Declaration

I declare that this written submission represents my ideas in my own words and where other's ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the University and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

(Name Of Student)

Sangeeta Dehari

(Roll No.)

19208845

Date:04/05/2022

विभागाध्यक्ष/H.O.D.
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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Forwarding Certificate

This is to certify that SANGEETA DEHARI has carried out the project in Department of Pure and Applied Physics, GURU GHASIDAS UNIVERSITY, BILASPUR (C.G.). On the topic: "Plasma lenses : promise smaller accelerators." The project is submitted for the partial fulfilment of requirement of the degree Bachelor in in Physics (Honours) forwarded examiner for evaluation.I wish here very success in life.

Dr. M.N. Tripathi

Head of Department

Department of Pure and Applied Physics,

Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G)

Certificate

This is certify that SANGEETA DEHARI bearing Enrolment No. - GGV/19/7183 has developed this project titled ''PLASMA LENSES: PROMISE SMALLER ACCELERATORS.'' for Guru Ghasidas University, Bilaspur (C.G.) as partial fulfilment for the award of the degree of Bachelor in Science in Physics.

Supervised By:

Dr. Bivash Dolai

Assistant Professor

Department of Pure and Applied Physics

Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

GURU GHASIDAS VISHWAVIDYALAYA

Bilaspur, Chhattisgarh

(Central University Established by the Central Universities Act, 2009 No. 25 of 2009)

A

PROJECT REPORT

On

ELECTRON MICROSCOPY

Submitted for
Partial fulfilment of the requirement for the

Degree of
Bachelor of Science in Physics

Submitted by

Name: -Satyam Kumar Dhruw
Roll No: -- 19208846
B.Sc. –VI Semester

Supervised by

Dr. Sandhya Yadav
Assistant Professor

Department of Pure & Applied Physics

2021-2022

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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गुरु घासीदास विश्वविद्यालय
Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Certificate

This is to be certified that **Mr. Satyam Kumar Dhruw,** student of B.Sc. VI Semester, Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya Bilaspur, have completed his Project entitled "ELECTRON MICROSCY**".** He has submitted his Project Report for the partial fulfillment of the curriculum of the Degree of Masters of Science (VI Sem.) from GGV. During this project work he has learned about the Electron microscope, its functions, its type, working and applications. I recommend the project report to be forwarded for evaluation. I wish him all success in his life and career.

Date: - 04/05/2022

Dr. Sandhya Yadav

Assistant Professor
Department of Pure & Applied Physics
GGV, Bilaspur

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
Dept. of Pure & Applied Physics
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Forwarding Certificate

This is to certify that ***Mr. Satyam Kumar Dhruw*** has carried out the project in Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya, CG, on the Topic, ***"ELECTRON MICROSCOPY".*** This project is submitted for the partial fulfillment of Requirements of the Degree of B.Sc. in Physics is forwarded to examiner for evaluation.

I wish him every success in life.

HOD

विभागाध्यक्ष / H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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बिलासपुर (छ.ग.) Bilaspur (C.G.)

DR. MN TRIPATHI
(Associate professor)
DEPARTMENT OF PURE & APPLIED PHYSICS
BILASPUR, CHHATTISGARH

Declaration

I hereby declare that the work present in the project entitled ***"ELECTRON MICROSCOPY"*** submitted as partial fulfillment of BSc. Physics have been performed in the Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya, Bilaspur under the supervision of **Dr. Sandhya Yadav**, Assistant Professor, Department of Pure & Applied Physics G.G.V. Bilaspur, CG.

Name- Satyam Kumar Dhruw
B.Sc. VI Sem. Physics

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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CENTRAL UNIVERSITY BILASPUR ,495009

A PROJECT REPORT ON
"APPLICATION OF NANOPARTICLES IN PHOTOLUMINESCENCE"
FOR PARTIAL FULFILLMENT OF THE DEGREE OF BACHELOR OF SCIENCE IN PHYSICS

SUPERVISED BY: DR. ANISH BHATTACHARYA

BY: SHASHANK GAUTAM

ROLL NO: 19208847

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

SESSION: 2021-2022

DEPARTMENT OF PURE AND APPLIED PHYSICS

HEAD OF DEPARTMENT

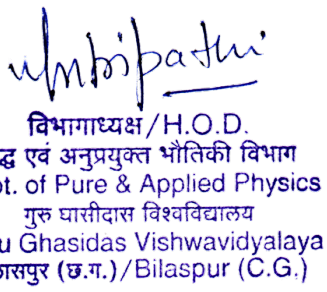
CERTIFICATE

THIS IS TO CERTIFY THAT THE PROJECT ENTITLE
"APPLICATION OF NANOPARTICLES IN PHOTOLUMINESCENCE"
HAS TO BEEN SUBMITTED TO THE DEPARTMENT OF
PURE & APPLIED PHYSICS, GURUGHASIDAS UNIVERSITY,

FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF BACHELOR OF SCIENCE IN PURE & APPLIED PHYSICS BY STUDENT OF FINAL YEAR OF B. Sc. (PHYSICS)

DR. MADHVENDRANATH TRIAPATHI
(Associate Professor)
PURE & APPLIED PHYSICS

NAME: - SHASHANK GAUTAM
ROLL NO. – 19208847



GUIDE CERTIFICATE

THIS IS TO CERTIFY THAT THE PROJECT ENTITLE
"APPLICATION OF NANOPARTICLE IN PHOTOLUMINESCENCE" HAS TO BEEN SUBMITTED TO THE DEPARTMENT OF PURE & APPLIED PHYSICS, GURUGHASIDAS UNIVERSITY,

FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF BACHELOR OF SCIENCE IN PURE & APPLIED PHYSICS BY STUDENT OF FINAL YEAR OF B.Sc. (PHYSICS)

SHASHANK GAUTAM
19208847

DR. ANISH BHATTACHARYA
PURE & APPLIED PHYSICS

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
Dept. of Pure & Applied Physics
गुरु घासीदास विश्वविद्यालय
Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

SELF DECLARATION

I HEREBY DECLARE THAT THE DISCUSSED ENTITLE "APPLICATION OF NANOPARTICLE IN PHOTOLUMINESCENCE" BEING SUBMITTED BY ME TOWARDS THE PARTIAL FULFILLMENT OF DEGREE OF BACHELORS OF SCIENCE PHYSICS, IN THE DEPARTMENT OF PURE & APPLIED PHYSICS IS A PROJECT CARRIED BY ME UNDER THE SUPERVISION OF **DR. ANISH BHATTACHARYA** & HAVE NOT BEEN SUBMITTED ANYWHERE ELSE.

NAME.SHASHANK GAUTAM
ROLLNO.19208847

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

ABSTRACT

Department of Physics, Bachelor of Science
"APPLICATION OF NANOPARTICLES IN PHOTOLUMINESCENCE"

Nanoparticles are a wide class of materials that include particulate substances, which have at least one dimension between 1 to 100 nanometers. These particles are so small in size to be detected via naked eyes, thus nanoparticles can exhibit significantly different physical and chemical properties to their larger material counterparts. One such application of nanoparticle is in photoluminescence.

Photoluminescence is an optical phenomenon in which emission of light takes place from any form of matter after the absorption of photons. It is one type of luminescence and is initiated by photons that excite electrons to a higher energy level in an atom. Photoluminescence is a common technique used to characterize the optoelectronic properties of semiconductor and other materials. Here in this project work I have studied about the wide range use of nanoparticles in photoluminescence. Investigations on Luminescence in India seems to have started in 1920. Luminescent nanomaterial serves various applications in every field but it has attracted a special attention in the field of Biomedical application.

विभागाध्यक्ष/H.O.D.
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

A Review on Solar Cell

Project report submitted in partial fulfillment

of the requirement for the

Award of Bachelor of Science Degree

In

Pure and Applied Physics

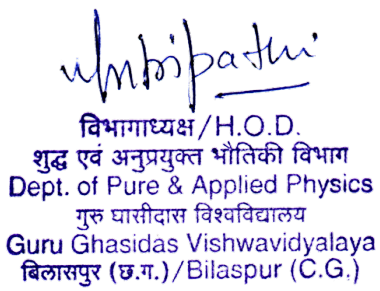
By

Shaurya Kumar Gupta

Roll Number- 19208848

Under the Guidance of

Dr. Md. Faruck Abdullah



Pure and Applied Physics

Guru Ghasidas Vishwavidyalaya Bilaspur (C.G.) India

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

Acknowledgement

It’s not possible to prepare a project report without the assistance and encouragement of other people .this one is certainly no exception. On very outset of this report, I would like to extend my sincere and heartfelt obligation towards all the personages who have helped me in this endeavor. Without their active guidance, help, cooperation and encouragement, I would not have made headway in project.

I am thankful and pay my gratitude to my GUIDE Dr. Faruck Abdullah Sir.

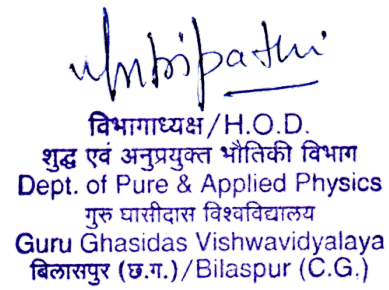
I also extend my gratitude to dept of Pure and Applied Physics.

At last but not the least gratitude goes to all of my friends who has directly or indirectly helped me to complete this project report.

Any omission in this brief acknowledgement does not mean lack of gratitude.

Thank you

Shaurya Kumar Gupta



Abstract

The light from the Sun is a non-vanishing renewable source of energy which is free from environmental pollution and noise. It can easily compensate the energy drawn from the non-renewable sources of energy such as fossil fuels and petroleum deposits inside the earth. The fabrication of solar cells has passed through a large number of improvement steps from one generation to another. Silicon based solar cells were the first generation solar cells grown on Si wafers, mainly single crystals. Further development to thin films, dye sensitized solar cells and organic solar cells enhanced the cell efficiency. The development is basically hindered by the cost and efficiency. In order to choose the right solar cell for a specific geographic location, we are required to understand fundamental mechanisms and functions of several solar technologies that are widely studied.

Photovoltaic is the process of converting sunlight directly into electricity using solar cells. Today, it is a rapidly growing and increasingly important renewable alternative to conventional fossil fuel electricity generation, but compared to other electricity generating technologies, it is a relative newcomer.

CONTENT

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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

GURU GHASIDAS VISHWAVIDYALAYA

BILASPUR, 495009

PROJECT ON THE TOPIC

Neutron Activation Analysis

SUBMITTED FOR

Partial fulfillment for the requirement in B.Sc. Degree in Physics

SUBMITTED BY:

SHIKHA SHUKLA

BSC PHYSICS HONS. 6TH SEM.

(19208849)

SUPERVISED BY:

Mr. DIVYA PRAKASH

SARVANSH SIR

DEPT. OF PHYSICS GGU, BILASPUR

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

DECLARATION

In this undersigned project dissertation I solemnly declare that the report of the project work entitled "Neutron Activation Analysis" is the study work carried out during the course of my study under the supervision of Mr. Divya Prakash Sarvansh Sir, Department of Pure and Applied Physics. I further declare that to the best of my knowledge and belief that the report does not contain any part of any work which has been submitted for the award of any other degree/diploma/certificate in this University/Deemed University of India. All helps received and citations used for the preparation of the project dissertion have been duly acknowledged. The work presented in this dissertation remains the intellectual property of the Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.), 495006, INDIA.

SHIKHA SHUKLA
B.Sc. Physics Honors VIth semester
Enrollment no.- GGV/19/7102
Roll no.-19208849

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
Dept. of Pure & Applied Physics
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

FORWARDING CERTIFICATE

THIS IS TO CERTIFY THAT SHIKHA SHUKLA HAS CARRIED OUT THE PROJECT STUDY WORK IN THE DEPARTMENT OF PURE AND APPLIED PHYSICS, GURU GH SIDAS VISHWAVIDYALAYA, BILASPUR, CHHATTISGARH ON TITLE "NEUTRON ACTIVATION ANALYSIS". THIS PROJECT IS SUBMITTED IN THE PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF B.Sc. IN PHYSICS IS FORWARDED TO THE EXAMINER FOR EVALUATION. I WISH HER SUCCESS IN LIFE.

DATE:

Dr. M.N. TRIPATHI

Head of Department

Department of Pure And

Applied Physics

Guru Ghasidas University,

Bilaspur (C.G.)

विभागाध्यक्ष/H.O.D.
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

CERTIFICATE

This is to certify that the project dissertation entitled "Study on Neutron Activation Analysis" submitted by Shikha Shukla, Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya, Bilaspur, Chhattisgarh, in partial fulfillment of the requirement for the degree of B.Sc. in Physics honors is a study work carried by her. To my best knowledge the matter embodied in the project report has not been submitted to any other degree/diploma/certificate in this University/Deemed or other University of India.

SUPERVISOR:

Mr. Divya Prakash Sarvansh Sir

DEPT. OF PURE AND

APPLIED PHYSICS

GGU, BILASPUR , C.G.

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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

ABSTRACT

Department of Physics, Bachelor of Science

Neutron Activation Analysis

Neutron Activation Analysis (NAA) is a multi-elemental analysis technique, which helps in quantitative and qualitative analysis of major, minor, trace and rare elements, more precisely 'determination of concentration of elements in vast amount of materials'.

In Neutron ACTIVATION analysis, the neutron excites the sample so that the treated sample emits gamma rays. The characteristic properties of the gamma rays are then studied for analysis of the sample. It works on the principle of converting various elements of the sample into radioactive isotopes by irradiating the sample with neutrons in a nuclear reactor or ion accelerator.

In the conventional neutron activation analysis, the elemental concentrations are normally determined from the comparison ratios between the measured specific activities of the sample and the standard reference material. An advantage in the comparison ratio method is that the systematic error due to neutron self-shielding and multi-scattering effects is canceled out, and the correction factors can be ignored.

An important research work in the procedure under this method is the characteristic information regarding the neutron source, such as thermal and epithermal neutron fluxes, and epithermal spectrum shape-factor. These neutron spectrum parameters are experimentally determined by using the activation foils, in which the corrections for all neutron effects that cause systematic errors should be taken into account.

In this project work I have provided a comprehensive overview of physical principles, procedures, types, analysis and some practical applications of Neutron Activation Analysis, along with its advantages and disadvantages.

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
Dept. of Pure & Applied Physics
गुरु घासीदास विश्वविद्यालय
Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Guru Ghasidas Vishwavidyalaya Bilaspur (C. G.) India

Department of Pure and Applied Physics

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

PROJECT ON

"SYNTHESIS OF NANOMATERIAL"

Submitted in partial fulfilment of the requirement of the degree of Bachelor of Science

IN PHYSICS

By

SHRADDHA TIWARI

B.Sc.(Physics Honours) 6th semester

Roll No. -19208850

Enrollment no- GGV/19/7195

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
Dept. of Pure & Applied Physics
गुरु घासीदास विश्वविद्यालय
Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Under the guidance of :

Mr. Ravindra Kumar

Department of pure and applied physics

GURU GHASIDAS UNIVERSITY (2021-22)

Department of Pure and Applied Physics

Guru Ghasidas Vishwavidyalaya Bilaspur (C. G.) India

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

DECLARATION

I hereby declare that the project work entitled **"SYNTHESIS OF NANOMATERIAL"** submitted to the Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya Bilaspur (C.G.) India, is a record of an original work done by me under the guidance of **Mr. Ravindra Kumar**. This project is submitted in the partial fulfilment for the award of the degree of Bachelor of Science in Physics. The results embodied in this thesis have not been submitted to any other University or Institute for the award of any degree or diploma.

Dr. M .N. TRIPATHI

Head of Dept. of Pure

& Applied Physics

SHRADDHA TIWARI

(Name of student)

Roll no- 19208850

B.Sc. 6th Sem Physics Honours

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
Dept. of Pure & Applied Physics
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Department of Pure and Applied Physics

Guru Ghasidas Vishwavidyalaya Bilaspur (C. G.) India

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

FORWARDING CERTIFICATE

This is to certify that Shraddha Tiwari has carried out the following project entitled as **"SYNTHESIS OF NANOMATERIAL".** This project is submitted for the partial fulfilment of requirements of the degree of B.Sc. in Physics is forwarded to examiners for Evaluation.

Shraddha Tiwari

Roll. No. – 19208850

B. Sc. Physics Honours

VI Semester

Mr. Ravindra Kumar

Assistant professor (ad-hoc)

Department of pure &

applied Physics

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Department of Pure and Applied Physics

Guru Ghasidas Vishwavidyalaya Bilaspur (C. G.) India

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

CERTIFICATE

This is to certify that **Shraddha Tiwari** has carried out the project on the topic **"SYNTHESIS OF NANOMATERIAL"** in the Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya, Bilaspur under my supervision. She worked diligently and Methodically and has collected the literature very sincerely and carefully. 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 her all success in her life & Career.

Submitted by

Shraddha Tiwari

Supervised by

Mr. Ravindra Kumar

Assistant Professor(ad-hoc)

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

CONTENT -

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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गुरु घासीदास विश्वविद्यालय, बिलासपुर
GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR
(A Central University established by the Central University Act 2009 No. 25 of 2009)

A PROJECT ON

NANOSPONGE TO COMBATE CLIMATE CHANGE AND POLLUTION

Submitted in
Partial fulfillment of the requirement of the degree of

BACHERLOR OF SCIENCE IN PHYSICS
2022

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
Dept. of Pure & Applied Physics
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

SUBMITTED TO:

DR. P. K. BAJPAI
PROFESSOR

SUBMITTED BY:

SHUBHANGI DEWANGAN
ROLL NO.**19208851**

DEPARTMENT OF PURE AND APPLIED PHYSICS

GURU GHASIDAS UNIVERSITY

(A Central University)

DECLARATION

I hereby declare that the entire project work entitled "NANOSPONGE TO COMBATE CLIMATE CHANGE AND POLLUTION" submitted in the partial fulfillment of Bachelor of Science degree in Physics, has been carried out by me at Department of Pure And Applied Physics, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) under the supervision of Dr. P. K. BAJPAI (Professor). I tried to give my full effort to reach the most limit of my capability to make the work success.

SUBMITTED BY

SHUBHANGI DEWANGAN

Roll no. : 19208851

BSc. 6th sem Physics Hon's

Guru Ghasidas Vishwavidyalaya

Bilaspur (C.G.)

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
Dept. of Pure & Applied Physics
गुरु घासीदास विश्वविद्यालय
Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

CERTIFICATE

This is to certify that the project work "NANOSPONGE TO COMBATE CLIMATE CHANGE AND POLLUTION" has been successfully carried out and submitted in the partial fulfillment of the requirement for the 6th semester of Pure And Applied Physics, Guru Ghasidas Vishwavidyalaya.

It is certified that all correction/suggestion indicated for the project had been incorporated in it. The project has been approved as it satisfies the requirement in respect of procedure and experimental techniques prescribed for this project.

This project is done under the guidance of **"Dr. P. K. Bajpai"** by **"Shubhangi Dewangan "** of BSc. 6th semester Physics, Guru Ghasidas Vishwavidyalaya.

Prof. M. N Tripathi

Date : 05/05/2022 HEAD OF DEPARTMENT

Place : GGV, Bilaspur Pure And Applied Physics

GGV, Bilaspur(C.G.)

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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CONTENT

DIELECTRIC PROPERTY OF MATERIALS

Department of Pure and Applied Physics
GURU GHASIDAS VISHWAVIDYALAYA
(A CENTRAL UNIVERSITY)

SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT OF THE DEGREE OF **BACHELOR OF SCIENCE (Honors) in PHYSICS**

Submitted by: Siddharth Singh
Roll no.- 19208853
Enrolment no. : GGV/ 19/ 7207

Supervised by : Dr. H.S. TIWARI

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

DECLARATION

I hereby declare that the work present in project entitle "A STUDY ON DIELECTRIC PROPERTY OF MATERIALS" submitted as partial fulfilment of B.Sc. Physics (Hons.), this written submission represents my ideas in my own words. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. The work present in the dissertation is original and will remain intellectual property of the department.

(SIDDHARTH SINGH)
B.Sc. Physics Hons. 6th semester
Roll No:- 19208853
Enrolment no:- GGV/19/7207

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

FORWARDING CERTIFICATE

This is to certify that SIDDHARTH SINGH has carried out the project in Department of Pure and Applied Physics, GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.).

On the topic "A STUDY ON DIELECTRIC PROEPERTY OF MATERIALS".

The project is submitted for the partial fulfilment of requirement of the degree of Bachelor of Science in Physics (Hons.) is forwarded to examine for evaluation. I wish him every success in life.

(Dr. M. N. Tripathi)
(Head of Department)
Department of Pure and Applied Physics
GURU GHASIDAS VISHWAVIDYALAYA
BILASPUR (C.G.)

विभागाध्यक्ष/H.O.D.
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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

CERTIFICATE

This is to certify that SIDDHARTH SINGH bearing Enrollment No.- GGV/19/7207 has developed this project titled "A STUDY ON DIELECTRIC PROPERTY OFF MATERIALS" for GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.) as ***partial fulfilment for the award of the degree of Bachelor in Science in Physics(Hons.).***

(Dr.H.S.Tiwari)
Associate Professor
Department of Pure and Applied Physics
GURU GHASIDAS VISHWAVIDYALAYA
BILASPUR (C.G.)

विभागाध्यक्ष/H.O.D.
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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

CONTENT

- Introduction & Types
- Polarization (relation between E,D & P)
- Properties
- Dielectric constant
- Loss & breakdown
- Difference between dielectric & insulator
- Applications
- Current & future aspects
- Conclusion

विभागाध्यक्ष/H.O.D.
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GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR

Department of Pure & Applied Physics

A Project report on

"Renewable Energy"

A Dissertation in Partial Fulfilment for the Degree of

Bachelor of Science

In

Physics

Submitted by

SIMRAN MANHAS

Roll No.- 19208854

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Under the Supervision of

Prof. Dr. M. N. Tripathi (HOD)

Department of Pure & Applied Physics

Guru Ghasidas Central University, Bilaspur (C.G.) India

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

DECLARATION

I hereby declare that the work presented in the project titled "**Renewable Energy"** submitted in the partial fulfilment for degree of Bachelor of Science in Physics has been done in the Department of Pure & Applied Physics, Guru Ghasidas Central University, Bilaspur (C.G.), 495009 under the supervision of Prof. **M. N. Tripathi** is carried out by me.

Date:

Simran Manhas

B.Sc. (Physics) VI Semester

Roll No.- 19208854

Enroll. No.- GGV/19/7208

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Department of Pure & Applied Physics

Guru Ghasidas Central University, Bilaspur (C.G.) India

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

CERTIFICATE

This is to certify that the project titled "**Renewable Energy "**

Submitted by **SIMRAN MANHAS** in the partial fulfilment for the degree of Bachelor of Science in Physics is an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge, the matter embodied in the project report has not been submitted to any other University \ Institute for the award of Degree or Diploma.

Date:

Prof. M. N. Tripathi

Department of Pure & Applied Physics

Guru Ghasidas Central University, Bilaspur, 495009

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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(A central University Established by the Central Universities Act 2009 No.25 of 2009)

APPROVAL CERTIFICATE

This is to certify that the project titled "**Renewable Energy"**

Submitted by **SIMRAN MANHAS** is approved for the degree of Bachelor of Science in Physics.

Date:

Prof. M. N. Tripathi

Head of the Department

Department of Pure & Applied Physics

Guru Ghasidas Central University

Bilaspur, 495009

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Department of Pure and Applied Physics

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR

A Review On

"Stellar Evolution"

A Dissertation in Partial Fulfilment for the Degree of

Bachelor of Science

In

Physics

Submitted by

SULEKHA

Roll No. - 19208855

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
Dept. of Pure & Applied Physics
गुरु घासीदास विश्वविद्यालय
Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Under the Supervision of

DR. PARIJAT THAKUR

(Associate professor)

Department of Pure & Applied Physic

GURU GHASIDAS VISHWAVIDYALAYA

BILASPUR (C.G.) 450009

Department of Pure & Applied Physics

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)

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

DECLARATION

I hereby declare that the work presented in the project titled " **Stellar Evolution"** submitted in the partial fulfilment for degree of Bachelor of Science in Physics has been done in the Department of Pure & Applied Physics, GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.), 495009 under the supervision of **DR. PARIJAT THAKUR** is carried out by me.

Date: 04-05-2022

SULEKHA

B.Sc. (Physics) 6th semester

Roll No. - 19208855

Enroll. No. - GGV/19/7214

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Department of Pure & Applied Physics

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

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

CERTIFICATE

This is to certify that the project titled "**Stellar Evolution"** submitted by **SULEKHA** in the partial fulfillment for the degree of Bachelor of Science in Physics is an authentic work carried out by her under my supervision and guidance.

To the best of my knowledge, the matter embodied in the project report has not been submitted to any other University \ Institute for the award of Degree or Diploma.

Date: 04-05-2022

DR. PARIJAT THAKUR

(Associate professor)

Department of pure & Applied Physics

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR, 495009 (C.G.)

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Department of Pure & Applied Physics

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

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

APPROVAL CERTIFICATE

This is to certify that the project titled **"Stellar Evolution"** submitted by **SULEKH**A is approved for the degree of Bachelor of Science in Physics.

Date: 04-05-2022

DR. M. N. TRIPATHI

Head of the Department

Department of Pure & Applied Physics

GURU GHASIDAS VISHWAVIDYALAYA BILASPUR , (C.G.)

विभागाध्यक्ष/H.O.D.
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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

CONTENT:

विभागाध्यक्ष/H.O.D.
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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

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

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

"Studies of strontium ortho silicate (Sr2SiO4) with rare earth doped Dy3+ Nano phosphor and its XRD characterization and Thermoluminescence".

A Dissertation in Partial fulfilment for the Degree of

Bachelor of Science in Physics

Submitted by

SURYA PRAKASH

Roll NO. – 19208856

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
Dept. of Pure & Applied Physics
गुरु घासीदास विश्वविद्यालय
Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Under the Supervision of

Dr. R.P. PATEL

Department of Pure & Applied Physics, Guru Ghasidas Vishwavidalaya, Bilaspur (C.G.), 495009, India

Department of Pure & Applied Physics

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

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

CERTIFICATE

This is to certify that the project titled "**Studies of strontium ortho silicate (Sr2SiO4) with rare earth doped Dy3+ nano phosphor and its XRD characterization and Thermo-luminescence.**" Submitted by SURYA PRAKASH in the partial fulfilment for the degree of Bachelor of Science in Physics is an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge, the matter embodied in the project report has not been submitted to any other University \ Institute for the award of Degree or Diploma.

Date:

Dr. R. P. PATEL
Department of pure & Applied Physics
Guru Ghasidas Vishwavidyalaya
Koni, Bilaspur, 495009 (C. G), India

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

CONTENT

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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DEPARTMENT OF PURE AND APPLIED PHYSICS

Guru Ghasidas Vishwavidyalaya Bilaspur (C.G.) India

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

Project on

" SUPERCAPACITOR "

Submitted in partial fulfilment of the requirement

For the

Award of Bachelor of Science Degree

In

Physics

To

Guru Ghasidas Vishwavidyalaya Bilaspur (C.G) India

By

Swati Ratnakar

Roll no. 19208857

Enrolment no. GGV/19/7221

Under the Guidance of

Dr. Arun Kumar Singh

विभागाध्यक्ष/H.O.D.
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DEPARTMENT OF PURE AND APPLIED PHYSICS

Guru Ghasidas Vishwavidyalaya Bilaspur (C. G.) India

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

DECLARATION

I hereby declare that the project work entitled "SUPERCAPACITOR" submitted to the Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya Bilaspur (C.G.) India , is a record of an original work done by me under the Guidance of Dr. Arun Kumar Singh. This project is submitted in the partial fulfilment for the award of the degree of Bachelor of Science in Physics. The results embodied in this thesis have not been submitted to any other University or Institute for the award of any degree or diploma.

Dr. M. N. TRIPATHI
Head of Dept. of Pure & Applied Physics

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SWATI RATNAKAR
(Name of student)
Roll No.19208857

DEPARTMENT OF PURE AND APPLIED PHYSICS

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

FORWARDING CERTIFICATE

This is to certify that Swati Ratnakar has carried out the following project entitled as "SUPERCAPACITOR".This project is submitted for the partial fulfilment of requirements of the degree of B.Sc. in Physics is forwarded to examiners for Evaluation.

SWATI RATNAKAR

Roll. No. – 19208857.

B.Sc. Physics Honours

VI Semester.

विभागाध्यक्ष/H.O.D.
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Dr. ARUN KUMAR SINGH

Associate Professor

Department of pure applied

Applied Physics.

DEPARTMENT OF PURE AND APPLIED PHYSICS

Guru Ghasidas Vishwavidyalaya Bilaspur (C. G.) India

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

CERTIFICATE

This is to certify that Swati Ratnakar has carried out the project on The topic "SUPERCAPACITOR" in the Department of Pure and Applied Physics, Guru Ghasidas Vishwavidyalaya, Bilaspur under my supervision. She worked diligently and Methodically and has collected the literature very sincerely and carefully. 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 her all success in her life & Career.

Submitted by

Swati Ratnakar

Supervised by

Dr. Arun Kumar Singh

विभागाध्यक्ष/H.O.D.
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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Green Synthesis Of Gold Nanoparticle Using Leaf Extract Of Ocimum Sanctum (Tulsi)

By

Tukeshwar sahu

Roll no. – 19208859

Project guide: Dr. Jai Singh

Department of pure and applied physics

Session 2021-22

Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)

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Certificate

This is to be certified that mr. tukeshwar sahu , student of Bsc honours physics VI semester department of pure and applied physics, Guru Ghasidas Vishwavidyalaya Bilaspur, have completed his project entitled " Green synthesis of gold nanoparticles using leaf extract of ocimum sanctum". During this project he has learned about nanoparticles. I wish him all success in his life and carrier.

Dr. Jai Singh Sir

Department Of Pure And Applied Physics

Ggv Bilaspur
(C.G.)

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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

A Project on

THIN-FILM SOLAR CELL

Submitted By

Tushar Patel

Roll No. – 19208860

Under The Guidance of

Dr. RK PANDEY

(Assistant Professor)

DEPARTMENT OF PURE & APPLIED PHYSICS

GURU GHASIDAS UNIVERSITY

KONI, BILASPUR (CG

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Department Of Pure & Applied Physics

Guru Ghasidas University, Koni, Bilaspur (CG)

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

DECLARATION

I hereby declare that the work presented in the project titled **"Thin-film Solar Cell"** submitted in the partial fulfilment for degree of Bachelor of Science in physics has been done in the Department of Pure & Applied Physics, Guru Ghasidas University, Koni, Bilaspur (CG), 495009 under the supervision of **Dr**. **R.K. Pandey** is carried out by me.

Date:

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TUSHAR PATEL

BSc Physics (Hons.), 6th Sem.

Roll No. – 19208860

En. No. – GGV/19/7228

Department Of Pure & Applied Physics

Guru Ghasidas University, Koni, Bilaspur (CG)

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

CERTIFICATE

This is to certify that the project titled **"Thin film solar Cell"** submitted by **TUSHAR PATEL** in the partial fulfilment for the degree of Bachelor of Science in Physics in an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge, the matter embodied in the project report has not been submitted to any other University/Institute for the award of Degree or Diploma.

Date:

Dr. R.K. Pandey

Department of Pure & Applied Physics

Guru Ghasidas University, Koni, Bilaspur (CG)

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Department Of Pure & Applied Physics

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

APPROVAL CERTIFICATE

This is to certify that the project titled **"Thin film solar Cell"** submitted by **TUSHAR PATEL** is approved for the degree of Bachelor of Science in Physics.

Date:

Dr. M.N. Tripathi

Head of the Department

Department of Pure & Applied Physics

Guru Ghasidas University, Koni, Bilaspur (CG)

ABSTRACT

Thin film solar is the method of converting sunlight at once into electrical energy by the use of solar cells. Today it is a rapidly growing and increasingly important renewable alternative to conventional fossil fuel electricity generation, but compared to other electricity generating technologies, it is a relative newcomer, with the first practical thin film solar devices demonstrated in the 1950s. Research and development of photovoltaics received its first major boost from the space industry in the 1960s which required a power supply separate from "grid" power for satellite applications. These space solar cells were several thousand times more expensive than they are today and the perceived need for an electricity generation method apart from grid power was still a decade away, but solar cells became an interesting scientific variation to the rapidly expanding silicon transistor development with several potentially specialized niche markets. In the 1980s research into silicon solar cells paid off and solar cells began to increase their efficiency. In 1985 silicon solar cells achieved the milestone of 20% efficiency. Over the next decade, the Thin film solar industry experienced steady growth rates of between 15% and 20%, largely promoted by the remote power supply market. The year 1997 saw a growth rate of 38% and today solar cells are recognized not only as a means for providing power and increased quality of life to those who do not have grid access, but they are also a means of significantly diminishing the impact of environmental damage caused by conventional electricity generation in advanced industrial countries. The increasing market for, and profile of photovoltaics means that more applications than ever before are "photovoltaically powered". These applications range from power stations of several megawatts to the ubiquitous solar calculators. PVCDROM aims to provide an overview of terrestrial photovoltaics to furnish the non-specialist with basic information. It is hoped that having used PVCDROM you will understand the principles of Thin film solar devices and system operation, you will be able to identify appropriate applications, and you will be capable of undertaking Thin film solar system design. By gradually increasing the number of people who are familiar with Thin film solar concepts and applications.

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CONTENTS

A STUDY ON GRAPHENE QUANTUM DOTS AND ITS APPLICATIONS

Department of Pure and Applied Physics
GURU GHASIDAS VISHWAVIDYALAYA
(A CENTRAL UNIVERSITY)

SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT OF THE DEGREE OF BACHELOR OF SCIENCE (Honours) IN PHYSICS

Submitted by: - Udayan Patel
Roll no. : - 19208861
Enrollment no.: - GGV/19/7229

Supervised by: - Dr. M.P. Sharma
Assistant Professor
Department of Pure & Applied Physics
GGV, Bilaspur

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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

DECLARATION

I hereby declare that the work present in project entitle **"A STUDY ON GRAPHENE QUANTUM DOTS AND ITS APPLICATIONS"** submitted as partial fulfillment of B.Sc. Physics (Hons.), this written submission represents my ideas in my own words. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission .The work present in the dissertation is original and will remain intellectual property of the department.

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(UDAYAN PATEL)
B.Sc. Physics hons. 6th semester
Roll No:- 19208861
Enrollment no:- GGV/19/7229

FORWARDING CERTIFICATE

This is to certify that **UDAYAN PATEL** has carried out the project in Department of Pure and Applied Physics, GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.).

On the topic **"A STUDY ON GRAPHENE QUANTUM DOTS AND ITS APPLICATIONS".** The project is submitted for the partial fulfillment of requirement of the degree of Bachelor of Science in Physics (Hons.) is forwarded to examine for evaluation. I wish him every success in life.

(Dr. M. N. Tripathi)
(Head of Department)
Department of Pure and
Applied Physics
GURU GHASIDAS
VISHWAVIDYALAYA
BILASPUR (C.G.)

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CERTIFICATE

This is to certify that **UDAYAN PATEL** bearing Enrollment No.- **GGV/19/7229** has developed this project titled **"A STUDY ON GRAPHENE QUANTUM DOTS AND ITS APPLICATIONS"** for GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.) as partial fulfillment for the award of the degree of Bachelor in Science in Physics (Hons.).

(Dr. M.P. Sharma)
Assistant Professor
Department of Pure and Applied Physics
GURU GHASIDAS
VISHWAVIDYALAYA
BILASPUR (C.G.)

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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

A PROJECT ON

TIGHT BINDING MODEL FOR GRAPHENE

Submitted in
Partial fulfillment of the requirement of the degree of

BACHELOR OF SCIENCE
2022

SUBMITTED TO:
PACHINEELA RAMBABU
PROFESSOR
ROLL NO.19208864
DEPARTMENT – PHYSICS

SUBMITTED BY:
UTTAMA SAHU

DEPARTMENT OF PURE AND APPLIED PHYSICS

GURU GHASIDAS UNIVERSITY

(A CENTRAL UNIVERSITY)

(2021-2022)

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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

DECLARATION

I hereby declare that the entire project work entitled "TIGHT BINDING MODEL FOR GRAPHENE" submitted in the partial fulfillment of Bachelor of Science degree in Physics, has been carried out by me at Department of Pure And Applied Physics, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) under the supervision of Dr. Pachineela Rambabu(Professor). I tried to give my full effort to reach the most limit of my capability to make the work success.

SUBMITTED BY

UTTAMA SAHU

BSC SIXTH SEM PHYSICS HONOURS

GURU GHASIDAS VISHWAVIDYALAYA

BILASPUR (CG)

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

CERTIFICATE

This is to certify that the project work "TIGHT BINDING MODEL FOR GRAPHENE" has been successfully carried out and submitted in the partial fulfillment of the requirement for the sixth semester of Pure And Applied Physics, Guru Ghasidas Vishwavidyalaya.

It is certified that all correction/suggestion indicated for the project had been incorporated in it. The project has been approved as it satisfies the requirement in respect of procedure and experimental techniques prescribed for this project.

This project is done under the guidance of " Dr. Pachineela Rambabu" by "Uttama Sahu" of BSc. 6th semester Physics, Guru Ghasidas Vishwavidyalaya.

Pachineela Rambabu

(Professor)

Pure And Applied Physics

GGV, Bilaspur(C.G.)

Date : 04/05/2022

Place : GGV,Bilaspur

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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

GURU GHASIDAS UNIVERSITY

BILASPUR, 495009

A PROJECT on Magnetic Resonance Imaging

SUBMITTED FOR

Partial fulfillment for the requirement in B.Sc. Degree in Physics

SUBMITTED BY :-

VIKAS JOSHI

BACHELOR OF SCIENCE

PHYSICS HONS.

6th SEMESTER (19208865)

SUPERVISED BY :-

Dr. PRADIP DAS SIR

DEPT. OF PURE AND

APPLIED PHYSICS

G.G.U BILASPUR (C.G.)

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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Declaration

In this undersigned project dissertation I solemnly declare that the report of the project work entitled "A PROJECT ON MRI (MAGNETIC RESONANCE IMAGING)" is the actual work carried out during the course of my study under the supervision of Dr. PRADIP DAS Sir, Department of Pure and Applied Physics I assert that the statements made and conclusions drawn are an outcome of the project dissertation work. I further declare that to the best of my knowledge and belief that the report does not contain any part of any work which has been submitted for the award of any other degree/diploma/certificate in this University/deemed University of India. All helps received and citations used for the preparation of the project dissertation have been duly acknowledged.

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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

(SIGNATURE OF CANDIDATE)

VIKAS JOSHI

19208865

G.G.U. BILASPUR (C.G.)

Forwarding Certificate

This is to certify that VIKAS JOSHI, has carried out the project dissertation in the Department of Pure and Applied Physics, Guru Ghasidas University, Bilaspur, C.G. on the title "A PROJECT On MAGETIC RESONANCE IMAGING". This project is submitted in the partial fulfillment of the requirement for the degree of B.Sc. in Physics is forwarded to examiner for evaluation. I wish him success in life.

Date:

PROF. M.N.TRIPATHI

Head of Department

Department of Pure And Applied Physics

Guru Ghasidas University

Bilaspur (C.G.)

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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Certificate

This is to certify that the project dissertation entitled "A PROJECT on MAGNETIC RESONANCE IMAGING" submitted by VIKAS JOSHI, Department of Pure And Applied Physics, Guru Ghasidas University, Bilaspur, C.G. in partial fulfillment of the requirement for the degree of B.Sc. in Physics is an original work carried by him. To my best knowledge, the matter embodied in the project report has not been submitted to any other University/Institute for the award of degree or Diploma.

SUPERVISOR:

DR. PRADIP DAS

DEPT. OF PURE AND APPLIED PHYSICS

GGU, BILASPUR , C.G.

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Study on shielding material to protect from beta and gamma radiation

BY

VIKRAM SINGH THAKUR

ROLL NO. 19208866

PROJECT GUIDE: DR. TARKESHWAR TRIVEDI

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Department of pure and applied physics

session 2021-22

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

Certificate

This is to be certified that Mr. Vikram singh thakur,student of bsc VI semester, Department of pure and applied physics, Guru ghasidas vishvavidyalaya Bilaspur, have completed his project entitled"Study on radiation shielding to protect from beta and gamma radiation".I wish him all success in his life and carrier.

Dr. Tarkeshwar Trivedi

(Assistant professor)

Physics Department ggv

Bilaspur

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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Forwarding Certificate:

This is to certify that Mr. Vikram singh thakur, student of bsc honors VI Sem has successfully completed his project on 'study on radiation shielding to protect from beta and gamma radiation' under the guidance of dr.Tarkeshwar trivedi.

Dr. M. N. Tripathi

(Head of department)

Physics Department, GGV

Bilaspur

Content:

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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PROJECT ON

“Electron Microscopy”

Submitted in partial fulfilment of the requirement of the degree of Bachelor of Science

IN PHYSICS

By

VIVEK SINGH

ROLL NO. 19208867

Under the supervisor of

DR.S. P. PATEL

(Assistant professor)

विभागाध्यक्ष/H.O.D.
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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Department of pure and applied physics

GURU GHASIDAS UNIVERSITY (2021-22)

DECLARATION

I declare that this written submission represents my idea in my own and where others idea or words have been included.

I have adequately cited and referenced the original sources. I also words declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data in my submission.

I also declare that this is my original work and was not submitted anywhere else.

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बिलासपुर (छ.ग.) / Bilaspur (C.G.)

Dr. M.N. TRIPATHI
Head of dept. of Pure and Applied Physics

VIVEK SINGH
(Name of Student)
Roll no.-19208867

CERTIFIED BY GUIDE

This is to certify that VIVEK SINGH bearing enrollment no GGV/19/7240 has developed this project titled "**ELECTRON MICROSCOPY"** for GURU GHASIDAS UNIVERSITY as partial fulfillment for the B.Sc. 6th semester of Department of Pure and Applied Physics.

It is certified that all the correction & suggestion indicated for the project has been incorporated in it.

This project is done under the guidance of Dr. S. P. PATEL (Dept. of Pure and Applied Physics).

Dr. S. P. PATEL

(Department of Pure and Applied Physics)

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Contents

GURU GHASIDAS VISHWAVIDYALAYA

CENTRAL UNIVERSITY, BILASPUR – 495009

A PROJECT REPORT ON

"HYDROELECTRIC POWER"

FOR PARTIAL FULLFILMENT OF THE DEGREE

OF BACHELOR OF SCIENCE (B.SC) IN PHYSICS

BY- YAMINI SINGH RAJPUT

ROLL NO – 19208868

SUPERVISOR- DR. DINESH UTHRA

SESSION- 2021-22

DEPARTMENT OF PURE AND APPLIED PHYSICS

विभागाध्यक्ष/H.O.D.
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Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

HEAD OF DEPARTMENT CERTIFICATE

THIS IS TO CERTIFY THAT THE PROJECT ENTITLE "HYDROELECTRIC POWER" HAS TO

BEEN SUBMITTED TO THE PURE AND APPLIED PHYSICS, GURU GHASIDAS UNIVERSITY, FOR THE PARTIAL FULLFILMENT OF THE REQUIRMENT FOR THE AWARD OF THE DEGREE OF BACHELOR OF SCIENCE IN "PURE AND APPLIED PHYSICS" BY STUDENT OF FINAL YEAR B.SC (PHYSICS)

NAME- YAMINI SINGH RAJPUT
ROLL NO- 19208868
DR. M N TRIPATHI
HOD (HEAD OF DEPARTMENT)

विभागाध्यक्ष/H.O.D.
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बिलासपुर (छ.ग.)/Bilaspur (C.G.)

SELF DECLARATION

I HEARBY DECLARE THAT THE DISCUSSION ENTITLED TO STODY WORKING OF "HYDROELECTRIC POWER" BEING SUBMITTED BY ME TOWARDS THE PARTIAL FULLFILMENT OF DEGREE OF BACHELOR OF SCIENCE, IN THE DEPARTMENT OF PURE AND APPLIED PHYSICS IS A PROJECT WORK CARRIED BY US UNDER THE SUPERVISOR OF DR. DINESH UTHRA AND HAVE NOT BEEN SUBMITTED ANYWHERE ELSE. WE WILL BE SOLELY RESPONSIBLE IF ANY KIND OF PLAGIARISM IS FOUND.

YAMINI SINGH RAJPUT

(19208868)

विभागाध्यक्ष/H.O.D.
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GUIDE CERTIFICATE

THIS IS TO CERTIFY THAT THE PROJECT ENTITLE "HYDROELECTRIC POWER" HAS TO BEEN SUBMITTED TO THE DEPARTMENT OF PURE AND APPLIED PHYSICS, GURU GHASIDAS UNIVERSITY, FOR THE PARTIAL FULLFILMENT OF THE REQUIRMENT FOR THE AWARD OF THE DEGREE OF BACHELOR OF SCIENCE IN "PURE AND APPLIED PHYSICS" BY THE STUDENT OF FINAL YEAR B.SC (PHYSICS)

NAME- YAMINI SINGH RAJPUT

ROLL NO- 19208868

DR. DINESH UTHRA

ASST. PROFESSOR

विभागाध्यक्ष/H.O.D.
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A REPORT ON

"PHOTO ELECTRIC EFFECT"

Department of Pure and Applied Physics

Guru Ghasidas central university koni Bilashpur

Session: 2021-2022

Submitted to: -**ALKA MAM**

Submitted by: - **YOGESH BAJAJ**

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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DEPARTMENT OF PURE & APPLIED PHYSICS **BSC**

PHYSICS (HON'S) 6TH SEM

GURU GHASIDAS VISHWAVIDYLAYA **ROLL NO. 19208870**

Department of Pure & Applied Physics

Guru Ghasidas Vishwavidhyalaya,Bilashpur(C.G)

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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DECLARATION

I hereby declare that the work presented in the project titled "PHOTOELECTRIC EFFECT" submitted in the partial fulfillment for degree of Bachelor of Science in Physics has been done in the Department of Pure & Applied Physics, Guru Ghasidas Vishwavidhyalaya,Bilashpur,495009 under the supervision of ALKA MAM is carried out by me.

YOGESH BAJAJ

Date: B.Sc Physics 6th semester

विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
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Department of Pure & Applied Physics

Guru Ghasidas Vishwavidhyalaya,Bilashpur(C.G)

CERTIFICATE

This is to certify that the project titled "PHOTOELECTRIC EFFECT" submitted by YOGESH BAJAJ in the partial fulfillment for the degree of Bachelor of Science in Physics is an authentic work carried out by him under my supervision and guidance.

To the best of my knowledge ,in the project report has not been submitted to any other University.

Date

Alka mam

Department of Pure & Applied Physics

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ACKNOWLEDGEMENT

I wish to express my deep sense of gratitude and indebtedness to my guide Alka mam for introducing the present topic and for his inspiring guidance, constructive criticism and valuable suggestion through this project. Without them passionate participation and input,this project would be incomplete.

I would also like to give my sincere gratitude to my friends and classmates for some useful discussions and help.

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THANK YOU

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