

**"STUDY THE RADIATION EFFECT OF MICROWAVE TOWER OF SURGUJA
DISTRICT"**



DEPARTMENT OF PHYSICS

DISSERTATION

Submitted in partial of the
Requirement for the degree of

Master of Science

In

Physics

Session- 2022-2023

Supervisor

DR. M. K. MOURYA

Professor

(M.Sc., Ph. D)

Department of Physics

Rajiv Gandhi Government P.G.

College Ambikapur (C.G.)

Submitted By

Name- AARTI YADAV

Class- M.Sc. (Final)

Roll no- 230401001

Enroll. No- RGP GS/21/001


Aarti Yadav
29/2/23

DEPARTMENT OF PHYSICS

RAJEEV GANDHI POST GRADUATE AUTONOMOUS COLLEGE, AMBIKAPUR,
(SARGUJA, CHATTISGARH)

CERTIFICATE

This is to certify that the Dissertation entitled "STUDY THE RADIATION EFFECT OF MICROWAVE TOWER OF SURGUJA DISTRICT" is a bonafide record of independent research work done by Aarti Yadav under my supervision during 2022-2023 submitted to the, Rajeev Gandhi Government P. G. Autonomous college, Ambikapur-497001, Surguja (C.G.) India in partial fulfillment for the award of the degree of M.Sc. Physics and that the dissertation has not previously formed the basis for the award of any other degree or title.


27/10/2023

(Signature of the supervisor)

Dr. M.K. Mourya

Designation- Professor

Department of physics

CONTENTS

Chapter-1: Introduction

- 1.1 Electromagnetic radiation
- 1.2 Electromagnetic Spectrum
- 1.3 Microwave Tower
- 1.4 Microwave Cellular Mobile Phone
- 1.5 Microwave Networking
- 1.6 Microwave Hazardness
- 1.7 Characteristic and Structure of Human Life

Chapter-2:-Outline Survey Microwave Tower in Surguja district

- 2.0 Introduction
- 2.1 Geographical situation of surguja district
- 2.2 Discription of Microwave Tower in different Block and its Radiation to villages

Chapter-3:-Estimation of Hazardness effect from Tower Radiation to Human Cell

- 3.1 Introduction
- 3.2 Type of Hazardness
- 3.3 Length,Hight and Catchment Area of Tower
- 3.4 Calculation of SAR (Specific Absorption Rule) by Human Biological tissues such as Blood,Boones,Muscles etc
- 3.5 Result Analysis

Chapter-4:-Conclusion

Chapter-5:-References

RAJEEV GANDHI GOVT. P.G. COLLEGE AMBIKAPUR SURGUJA(C.G.)



DEPARTMENT OF PHYSICS

A DISSERTATION
entitled

“Microwave propagation through vegetation”

Submitted in partial fulfilment of the

Requirement for the degree of

Master of science in Physics

Session: 2022-2023

Supervisor

M.K. MAURYA

(Assistant Professor)

Dept. of Physics

Submitted by

Geetanjali Bhagat

M.SC. 4th sem. (Physics)

Roll NO. -230401008

Enrol. No. – RGPGS/21/007

21/11/23




DEPARTMENT OF PHYSICS RAJEEV GANDHI
GOVT. AUTO.PG COLLEGE AMBIKAPUR, SURGUJA (CG)

CERTIFICATE

This is to certify that, **Geetanjali Bhagat** has successfully completed the dissertation entitled, "Microwave propagation through vegetation"

For Requirement of the degree of Master of Science in physics during in the session 2022-23 under my supervision.

Date: -


.....
27/07/2023

Place: -

.....



(M.K. MAURYA)

Department of physics

TABLE OF CONTENT

CHAPTER – 01 INTRODUCTION

1.1 Eectromagnetic Radiation	10
1.2 History of Microwave	12
1.3 Microwave	14
1.4 Microwave propagation	17
1.5 Microwave fundamental	21
1.6 Basic property of Microwave	22
1.7 Basic principal of Microwave	22
1.8 Microwave sources	23
1.9 Microwave Frequency band	27
1.10 Microwave Frequency Measurement	29
1.11 Microwave Generators	31
1.12 Vegetation	38
1.13 History of Microwave	39
1.14 Types of Natural Vegetation in India	40
1.15 Medicinal Plants in India	44

CHAPTER – 02 REVIEW OF LITERATURE

2.1 Review of literature of Microwave propagation	51
---	----

CHAPTER – 03 MATERIAL AND METHODS

3.1 Pain gain and prediction equivalent model under vegetation.	57
3.2 Measurment scheme and system.	68

CHAPTER – 04 RESULT And DISCUSSION	72
CHAPTER – 05 CONCLUSION AND SUMMERY	76
CHAPTER - 06 REFERENCE	78

RAJEEV GANDHI GOVT. P.G. COLLEGE AMBIKAPUR SURGUJA



DEPARTMENT OF PHYSICS

“ MICROWAVE DIELECTRIC BEHAVIOUR OF SOIL OF ULTAPANI
AREA OF MAINPAT ”

DISSERTATION

Submitted in Partial Fullfilment of the
reauriment for the degree of
Master of Science in Physics

Session : 2022-23

Supervisor

DR. S.K. SHRIVASTAVA
Department Of Physics
Rajeev Gandhi Govt. P.G.
College, Ambikapur (C.G.)

Submitted By

KAVERI BAIS
M.Sc. 4th Sem. (Physics)
Roll No: 230401013
Enrollment No: RGPGS/21/012

Kaveri Bais
20/10/23

CONTENTS

Chapter 1: Introduction

1.1 Microwaves

1.2 Electromagnetic spectrum

1.3 Properties of microwaves

1.4 Work of microwaves

1.5 Types of microwaves

1.6 Microwaves produced

1.7 Applications and uses of microwaves

1.8 Introduction of dielectric

1.9 Dielectric materials

1.10 Classification of dielectric materials

1.11 Dielectric properties

1.12 Dielectric properties

1.13 Dielectric susceptibility

1.14 Mechanism of electric polarization

1.15 Introduction of soil

1.16 Characteristics of soil

- Physical characteristics
- Chemical characteristics
- Biological characteristics

Chapter 2: Literature Review

Chapter 3: Materials and Methods

3.1 Study area and soil sampling

3.2 Sample preparation and characterization

3.3 Measurement of microwave dielectric properties

3.4 Data analysis

Chapter 4: Results and Discussion

Chapter 5: Conclusion

Chapter 6: Reference

**RAJEEV GANDHI GOVT. AUTO.P.G.
COLLEGE AMBIKAPUR,SURGUJA(C.G)**



A DISSERTATION

Entitled

**“Study of Future concept of non-conventional
energy source in Surguja district”**

Submitted to the department of physics in partially
fulfillment of the requirement for the degree of

MASTER OF SCIENCE IN PHYSICS

SESSION: 2022-23

Supervised By:

Dr.S.K.Shrivastav
professor & (HOD)
Rajeev Gandhi Govt. PG College
Ambikapur (CG)

Guided By

Mr. Javed Akaram
Department of Physics
Rajeev Govt P.G. College
Ambikapur (C.G.)

Submitted By:

Name: - MEENA
M.SC. 4th SEM. PHYSICS
Enrl. No. :- RGPGS/21/016
Roll no. :- 230401017

Handwritten signature and date
22/01/23




DEPARTMENT OF PHYSICS RAJEEV GANDHI
GOVT. AUTO.PG COLLEGE AMBIKAPUR, SURGUJA (CG)

CERTIFICATE

This is to certify that **MEENA** has successfully completed the dissertation entitled, “ **Study of future concept of non conventional energy source in Surguja district**” is bonafide work of him submitted to **Rajeev Gandhi Post Graduate Autonomous College, Ambikapur** or consideration in the partial accomplishment of the degree of physics (M.Sc.).

The original research work carried out by him under my guidance and supervision, in the academic year 2022-23. On the basis of the declaration made by him, I recommend the dissertation for evaluation.


Jayesh Alkaram
Signature of the Supervisor

.....
.....
(Prof. S.K. Srivastava)
Department of physics

Date :-

Place :-

CONTENT

S.N	TOPIC	Page no.
01.	CHAPTER 01	
	1. INTRODUCTION	
	1.1 Energy	01-04
	1.2 Future Perspective For Non - Conventional Source of Energy in India	04-05
	1.3 Non - Conventional of Energy Source	05-35
02.	CHAPTER 02	36
	2. Energy Resources of Chhattisgarh	
	2.1 Coalfields of Chhattisgarh	37-39
	2.2 Thermal Power	39-41
	2.3 Renewable Energy	41-43
	2.4 Energy Policy of Chhattisgarh	43-45
	2.5 Development of Non Conventional Energy	45-46
03.	CHAPTER 03	47
	3.1 Production of Commercial Sources of Energy ...	48-53
	3.2 Consumption of Energy Resources	54-64
04.	CHAPTER 04	65
	4.1 Geography & Environment Background of Surguja	66-68
	4.2 Climate of Surguja District	68-69
05.	CHAPTER 05	70
	5.1 Establishment of Non Conventional Energy Plant In Surguja	71-79
	5.2 Advantages of Non-Conventional Energy Technologies	79-80
06.	CHAPTER 06	81
	Conclusion and Scope for Future work	82-83
07.	References	84-89

**“NONLINEAR OPTICAL ABSORPTION AND
CYCLOTRON-IMPURITY RESONANCE IN
MONOLAYER SILICENE”**



DEPARTMENT OF PHYSICS

DISSERTATION

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

Master of Science in Physics

Session : 2022-2023

Supervisor :

**Miss Shimran Soni
Department of Physics
Rajeev Gandhi Govt.
P.G. College ,
Ambikapur**

Submitted by :

**Nishant Kumar Jaiswal
M.Sc Physics 4th Sem
Roll No. : 230401018
Enrollment No. :
RGPGS/21/017**

Nishant
25/2/23

DEPARTMENT OF PHYSICS

RAJEEV GANDHI GOVT. P.G. COLLEGE , AMBIKAPUR
, CHHATTISGARH

CERTIFICATE

This is to certify that the Dissertation entitled
**“NONLINEAR OPTICAL ABSORPTION AND
CYCLOTRON-IMPURITY RESONANCE IN
MONOLAYER SILICENE”** is a bonafide record of
independent research done under my supervision during 2022-
2023 submitted to the Rajeev Gandhi Govt. P.G. college ,
Ambikapur , Surguja , Chhattisgarh in partial fulfillment for
the award of the degree of M.Sc Physics and that the
dissertation has not previously formed the basis for the award
of any degree or title .



(Signature of the supervisor)

Miss Shimran Soni

Designation –

Department of Physics

CONTENT

Page No.

Chapter - 01 :- Introduction	06
1.1 Brief introduction to silicene	
1.2 Fabrication of Silicene	
1.3 Optical Absorption	
1.4 Nonlinear Optical Absorption in Silicene	
1.5 Cyclotron Resonance	
1.6 Cyclotron-Impurity Resonance in Monolayer Silicene	
Chapter – 02 :- Review of Literature	21
Chapter – 03 :- Methodology	37
Chapter – 04 :- Result and Discussion	44
Chapter – 05 :- Conclusion	54
Chapter – 06 :- References	56

CONTENT

Page No.

Chapter - 01 :- Introduction

06

1.1 Brief introduction to silicene

1.2 Fabrication of Silicene

1.3 Optical Absorption

1.4 Nonlinear Optical Absorption in Silicene

1.5 Cyclotron Resonance

**1.6 Cyclotron-Impurity Resonance in Monolayer
Silicene**

Chapter – 02 :- Review of Literature

21

Chapter – 03 :- Methodology

37

Chapter – 04 :- Result and Discussion

44

Chapter – 05 :- Conclusion

54

Chapter – 06 :- References

56

RAJEEV GANDHI AUTONOMOUS P.G. COLLEGE



AMBIKAPUR

2022-23

DEPARTMENT OF PHYSICS

**"SINGLE PARTICLE TUNNELLING IN SUPERCONDUCTOR
MATERIAL"**

DISSERTATION

**SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIRMENT FOR THE DEGREE OF MASTER OF SCIENCE
IN PHYSICS**

**SUPERVISOR:
DR. S.K. SHRIVASTAVA
(H.O.D.) DEP. OF PHYSICS**

Handwritten signature and date: 20/21/23

**SUBMITTED BY:
PAWAN CHAUDHARY
M.Sc. 4th Sem. Physics
Roll no. 230401019
Enrollment no- RGPGS/21/018**



DEPARTMENT OF PHYSICS

**RAJEEV GANDHI POST GRADUATE AUTONOMOUS COLLEGE,
AMBIKAPUR, (SURGUJA CHATTISGARH)**

Certificate

This is to certify that Pawan Chaudhary has successfully completed the dissertation entitled, "Single particle tunneling in superconductor material" for requirement of the degree of Master of Science in Physics during in the session 2022-23 under my supervision.

Date:

Place - Ambikapur


(Dr. S.K. Srivastava)

Signature of the Supervisor


(Dr. S.K. Srivastava)

Signature of the H.O.D. physics

(Dr. Rizwan Ulah)

Signature of the Principal

CONTENT

CHAPTER :1- INTRODUCTION

1.SUPERCONDUCTOR

1.1 Superconducting Material.....	1-3
1.2 History of superconductor.....	4-6
1.3 Type of superconductor.....	6-9
1.4 Properties of Superconductor.....	9-13
1.5 BCS Theory & cooper pairs.....	13-16
1.6 Meissner Effect.....	17-18
1.7 High Tc – superconductor.....	18-20
1.8 Application of superconductor.....	20-22

2. TUNNELLING.....23-25

2.1 Basic concept of Tunnelling.....	25-27
2.2 Tunnelling Between Superconductor.....	28-29
2.3 Superconductor Tunnelling Junction (STJ).....	29-34
2.4 Quantum Theory of Tunnelling.....	34-36

3. SINGLE PARTICLE TUNNELLING.....37

3.1 Condition for Single Particle Tunnelling	37-38
3.2 Single particle Tunnelling in supercondors.....	38-40

CHAPTER:2- LITERATURE REVIEW.....41-53

CHAPTER:3- MATERIAL & MATHEMATICAL EXPRESSION

3.1. Single Particle Tunnelling.....	54-58
--------------------------------------	-------

3.2 Josephson Superconductor Tunnelling.....58-63

3.3 Tunnelling Probability.....63-67

CHAPTER:4- RESULT & DISCUSSIONS.....68-73

CHAPTER:5- CONCLUSIONS.....74-76

CHAPTER:6- REFERENCES.....77-87

RAJEEV GANDHI GOVT. P.G. COLLEGE AMBIKAPUR SURGUJA



DEPARTMENT OF PHYSICS

“STUDY OF MICROWAVE DIELECTRIC BEHAVIOUR
OF SOIL OF Jaljali Mainpat”

DISSERTATION

Submitted in Partial Fullfilment of the
reairment for the degree of
Master of Science in Physics

Session : 2022-23

Supervisor

DR. S.K. SHRIVASTAVA
Department Of Physics
Rajeev Gandhi Govt. P.G.
College, Ambikapur (C.G.)

Submitted By

PRATIBHA SINGH
M.Sc. 4th Sem. (Physics)
Roll No: 230401020
Enrollment No: RGP GS/21/019


Pratibha Singh
23/2/23

DEPARTMENT OF PHYSICS

**RAJEEV GANDHI POST GRADUATE AUTONOMOUS COLLEGE,
AMBIKAPUR (SARGUJA, CHATTISGARH)**

CERTIFICATE

This is to certify that the Dissertation entitled "STUDY OF MICROWAVE DIELECTRIC BEHAVIOUR OF SOIL OF JALJALI MAINPAT" is a bonafide record of independent research work done by Pratibha Singh under my supervision during 2022-2023 submitted to the, Rajeev Gandhi Government P. G. Autonomous college, Ambikapur-497001, Surguja (CG), India in partial fulfillment for the award of the degree of M.Sc. Physics and that the dissertation has not previously formed the basis for the award of any other degree or title



(Signature of the supervisor)

Dr. S.K. SHRIVASTAVA

Designation - Head of Dept.

Department of Physics

CONTENTS

Chapter 01: INTRODUCTION

- 1.1 Introduction to Microwaves
- 1.2 Microwave sources
- 1.3 Properties of microwave
- 1.4 Production of microwaves
- 1.5 Microwave frequency measurement
- 1.6 Application and uses of microwave
- 1.7 Effects on health
- 1.8 Introduction to dielectric
- 1.9 Dielectric materials
- 1.10 Types of dielectric
- 1.11 Functions of dielectric
- 1.12 Properties of dielectric
- 1.13 Dielectric polarisation

1.14 Dielectric constant

1.15 Dielectric strength

1.16 Microwave dielectric property of soil

1.17 Introduction of soil

1.18 Characteristics of soil

- Physical characteristics
- Chemical characteristics
- Biological characteristics

1.19 Jaljali (Mainpat)

Chapter 02: Review of Literature

Chapter 03: Materials and Method

Chapter 04: Result and Discussion

Chapter 05: Conclusion

Chapter 06: Reference

"Nano Engineered Thermoelectric Material for Waste Heat Recovery"



DEPARTMENT OF PHYSICS

DESSERTATION

Submitted In Partial Of The
Requirement for the Degree Of

Master of Science

In

Physics

SESSION -2022-23


SUPERVISOR

Mr. Javed Ansari Akaram
Department of physics
Rajiv Gandhi Govt. P.G.
College Ambikapur

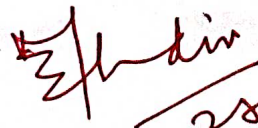
SUBMITTED BY

Name – Reeta Ekka

Class –M.Sc. (Final)

Roll no.- 230401022

Enroll no. –RGPGS/21/021


25/8/23

**RAJEEV GANDHI GOVT. POST GRADUATE
AUTONOMOUS COLLEGE, AMBIKAPUR
(SURGUJA, CHHATTISGARH)**



**DEPARTMENT OF PHYSICS
CERTIFICATE**

I certify that the dissertation entitled "Nano Engineered Thermoelectric Material for Waste Heat Recovery" is bonafide work of him submitted to Rajeev Gandhi Post Graduate Autonomous College, Ambikapur for consideration in the partial accomplishment of the degree of physics (M.Sc.).

The original research work carried out by him under my guidance and supervision, in the academic year 2022-23. On the basis of the declaration made by him, I recommend the dissertation for evaluation.

(Signature of the Candidate)

Name- Rishi Raju

Roll No- 210101012

Date-

.....
(Signature of the Supervisor)

.....

(Signature of H.O.D of Physics)

Date –

Content

Chapter 1 – Introduction.

1.1 Nanotechnology and nonmaterial	1-2
1.2 Thermoelectric materials	2-11
1.3 Strategies for improving ZT	11-15
1.4 TE material synthesis	15-16
1.5 Representative high – performance TE materials	16-18
1.6 Objective	18-19
1.7 Performance of TE Materials	20-23

Chapter 2 – literature review

2. Literature review	24-25
2.1 Review of different thermoelectric material. SnS, SnSe, CuSnS, CuSnSe, based material	26-27
2.2 Reason for choosing composite silicides as Thermodynamic material	28
2.3 Gaps/issue to identify	29

Chapter 3- Methodology

3.1 Material synthesis.	30-33
3.2 Mechanical alloying of silicides	33
3.3 Synthesis of Magnesium silicides.	34
3.4 Synthesis of higher magnesium silicides.	34-35
3.5 Spark plasma sintering (SPS).	34-36
3.6 Characterizations	36-37

Chapter 4- Result and Discussions

4.1 chalcogenide based materials	39-45
4.3 Silicide based materials	46-54
Abstract.	55-56

Chapter 5- Conclusion.

Reference	61-72
-----------	-------

"Information Entropy in Nonlinear Physical System"



DEPARTMENT OF PHYSICS

DESSERTATION

Submitted In Partial Of The
Requirement for the Degree Of

Master of Science

In

Physics

SESSION -2022-23

SUPERVISOR

Mr. Javed Ansari Akram

Department of Physics

Rajiv Gandhi Govt. P.G.

College Ambikapur

SUBMITTED BY

Name – Preeti Xalxo

Class –M.Sc. (Final)

Roll no.- 230401021

Enroll no. –RGPGS/21/020

Handwritten signature and date: Preeti Xalxo, 28/2/23

**RAJEEV GANDHI GOVT. POST GRADUATE
AUTONOMOUS COLLEGE, AMBIKAPUR
(SURGUJA, CHHATTISGARH)**



**DEPARTMENT OF PHYSICS
CERTIFICATE**

I certify that the dissertation entitled “**Information Entropy in Nonlinear Physical System**” is bonafide work of him submitted to **Rajeev Gandhi Post Graduate Autonomous College, Ambikapur** for consideration in the partial accomplishment of the degree of physics (M.Sc.).

The original research work carried out by him under my guidance and supervision, in the academic year 2022-23. On the basis of the declaration made by him, I recommend the dissertation for evaluation.

Jay

.....
(Signature of the Supervisor)

.....
(Signature of H.O.D of Physics)

Date –

CONTENT

CHAPTER 1	PAGE NO.
INTRODUCTION	
1.1 Information theory	1 - 5
1.2 Information entropy	6 - 7
1.3 Relationship to thermodynamics entropy	7 - 8
1.4 Shannon Information entropy	8 - 13
1.5 Quantum Entanglement	13
1.6 Nonlinear Physics	13 - 20
CHAPTER 2	
LITERATURE REVIEW	
2.1 Literature Review	21 - 28
CHAPTER 3	
METHODOLOGY	
3.1.1 Quantum Mechanical System	29 - 35
CHAPTER 4	
RESULT AND DISCUSSION	
4.1 Quantum Information entropy of modified hylleras plus exponential Rosen morse Potential and squeezed states	36 - 42
4.2 Information entropy	42 - 47
4.3 The squeezed states	47 - 53
CHAPTER 5	
QUANTUM INFORMATION ENTROPY OF ISOSPECTRAL ECKART POTENTIAL	
5.1.1 Introduction	54 - 59
5.1.3 Information entropy	59 - 66
5.1.4 The squeezed states for eckart potential	67 - 74
ABSTRACT	75
CONCLUSION	76 - 78
REFERENCE	

RAJEEV GANDHI GOVT. P.G. COLLEGE AMBIKAPUR SURGUJA (C.G.)



DEPARTMENT OF PHYSICS

A DISSERTATION
entitled

“Physio chemical analysis of soil of tea cultivation
area of jashpur”

Submitted in partial fulfilment of the
Requirement for the degree of
Master of science in Physics
Session: 2022-2023

Supervisor

Dr. S.K. Shrivastava

(H.O.D.) Dept. of Physics

Submitted by

Rohit Ku. Pradhan

M.SC. 4th sem. (Physics)

Roll NO. -230401023

Enrol. No. – RGPGS/21/022

Rohit Ku. Pradhan
28/8/23



DEPARTMENT OF PHYSICS RAJEEV GANDHI
GOVT. AUTO.PG COLLEGE AMBIKAPUR, SURGUJA (CG)

CERTIFICATE

This is to certify that, **Rohit Ku. Pradhan** has successfully completed the dissertation entitled, “Physiochemical analysis of soil of tea cultivation area of Jashpur”

For Requirement of the degree of Master of Science in physics during in the session 2022-23 under my supervision.

NAME: ROHIT KUMAR PRADHAN
REG. NO. 2202000101
ROLL NO. 2202000101

Date: -

.....

Place: -

.....

(Prof. S.K. Srivastava)

Department of physics

TABLE OF CONTENT

01)CHAPTER -01 INTRODUCTION

1.1) INTRODUCTION OF SOIL	09
1.2) TYPES OF SOIL	09
1.3) PROPERTIES OF SOIL	11
1.4) IMPORTANCE OF SOIL	13
1.5) SOIL OF CHHATTISGARH	17
1.6) SOIL IN JASHPUR REGION OF CHHATTISGARH	19
1.7) SOIL USED IN TEA PLANTATION	20
1.8) PHYSIO CHEMICAL PROPERTIES OF SOIL	22
1.9) MICROWAVE DIELECTRIC PROPERTY OF SOIL	24
1.10) JASHPUR	26
1.11) SOIL OF JASHPUR	27
1.12) SARUDIH	27
1.13) SOIL OF SARUDIH	27
1.14) TEA	29
1.15) BENIFITS OF TEA	31
1.16) TEA IN CHHATTISGARH	32
1.17) TEA CULTIVATION IN CHHATTISGARH	33
1.18) TEA CULTIVATION IN JASHPUR	34
1.19) TEA CULTIVATION IN SARUDIH	36
02.) CHAPTER -02 REVIEW OF LITERATURE	39

03.) CHAPTER -03 MATERIALS AND METHOD	43
04.) CHAPTER -04 RESULT AND DISCUSSION	50
05.) CHAPTER -05 CONCLUSION	57
06.) CHAPTER -06 REFERENCE	59

RAJEEV GANDHI GOVT. P.G. COLLEGE AMBIKAPUR



AMBIKAPUR, SURGUJA (C.G.)

SESSION - 2022 - 23

A Dissertation

Entitled

"Study the application of acrylic as a energy storage devices "

Submitted to Department of Physics in partial fulfilment of the requirement of the degree of Master of Science in Physics.

Guided By:-

Dr. M. K. Maurya

Assistant Professor

(Dept. of Physics)

Submitted By:-

Tanmay Jha

Master of Physics

IVth Semester

Roll No. - 230401024

M.K. Maurya
28/2/23

Enrollment No. - RGP GS / 21 / 023

RAJEEV GANDHI GOVT. AUTONOMOUS P.G. COLLEGE (SURGUJA, C.G.)

CERTIFICATE



DEPARTMENT OF PHYSICS

RAJEEV GANDHI POST GRADUATE AUTONOMOUS COLLEGE
AMBIKAPUR, SURGUJA CHHATTISGARH.

This is to certify that Tanmay Jha has successfully completed the dissertation entitled, “**Study the application of acrylic as an energy storage device**” for requirement of the degree of Master of Science in Physics during the session 2022-23 under my supervision.

Date - 27/07/2023

Place-Ambikapur


27/07/2023
(Dr. M.K. Maurya)

Department of Physics

TABLE OF CONTENT

S.NO.	TITLE	PAGE NO.
1.	INTRODUCTION 1.1 concept and ideas 1.2 basic terminology 1.3 acrylic and its types 1.4 technique that is used	07-23
2.	LITERATURE REVIEW	24-39
3.	METHODOLOGY APPLIED	40-60
4.	RESULT AND DISCUSSION	61-71
5.	SUMMARY	72-75
6.	REFERENCES	76-83

RAJEEV GANDHI GOVT. P.G. COLLEGE AMBIKAPUR SARGUJA (C.G.)



DEPARTMENT OF PHYSICS

**STUDY OF LIPOPHILIC MOLECULE IN NANO-MEDICINE AND
BLOOD BRAIN BARRIER**

DISSERTATION

**Submitted in partial fulfilment of the
requirements for the degree of
*Master of Science in PHYSICS***

Session: 2022-23

Supervisor

**Dr. M.K. MAURYA
ASST. PROFESSOR
Department of Physics
R.G. Govt. P.G. College,
Ambikapur (C.G.)**

Submitted By

**YAJAT WADHWA
M.Sc. 4th Sem.(Physics)
Roll. No. -230401025
Enrollment No. -
RGPGS/21/024**


Y. Wadhwa
28/7/23

DEPARTMENT OF PHYSICS

RAJEEV GANDHI POST GRADUATE AUTONOMOUS COLLEGE,
AMBIKAPUR (SARGUJA, CHATTISGARH)

CERTIFICATE

This is to certify that the Dissertation entitled “**Study of Lipophilic Molecule in Nano-Medicine and Blood Brain Barrier**” is a bonafide record of independent research work done by Yajat Wadhwa under my supervision during 2022-2023 submitted to the, Rajeev Gandhi Government P. G. Autonomous college, Ambikapur-497001, Surguja (CG), India in partial fulfillment for the award of the degree of M.Sc. Physics and that the dissertation has not previously formed the basis for the award of any other degree or title.


27/10/2023

(Signature of the supervisor)

Dr. M.K. Maurya

Designation - Asst. Professor

Department of Physics

CONTENT

CHAPTER-1 INTRODUCTION	1
1.1 Historical Evolution of Nanotechnology	4
1.2 Generation of Nanotechnology	5
1.3 Approaches in Nanotechnology	7
1.4 Types of Nanoparticles (NPs)	9
1.5 Applications of NPs	13
1.6 Carriers for Drug Delivery	20
1.7 Physically facilitating drug-delivery (PFDD) systems	24
1.8 Lipophilic molecule	30
CHAPTER-2 REVIEW OF LITERATURE	35
CHAPTER-3 METHODS AND MATERIAL	41
CHAPTER-4 RESULTS AND DISCUSSIONS	56
CHAPTER-5 CONCLUSION	66
CHAPTER-6 REFERENCES	68