

**ANTICANCER ACTIVITY AND MODE OF
INTERACTION OF SOME COPPER, ZINC AND
CADMIUM COMPLEXES: A DFT STUDY**



Submitted by

DIPANKAR DAS

M.Tech (2nd Semester)

Roll No: PT-221-838-0002

Session 2022-2024

Under the Guidance of

Dr. BIPUL BEZBARUAH

Assistant Professor

Department of Applied Sciences

Gauhati University, Guwahati-14, Assam



Gauhati University
Department of Applied Sciences
Gopinath Bordoloi Nagar, Guwahati-781014
Assam, India

Dr. Bipul Bezbaruah
Assistant Professor

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Ref.....

Date: 26th June, 2023

CERTIFICATE

This is to certify that “ **Dipankar Das** ” bearing Roll No: “ **PT-221-838-0002** ” has carried out the project work on “ *Anticancer activity and mode of interaction of some Copper, Zinc and Cadmium complexes: A DFT Study* ” under my supervision and has compiled this report reflecting the candidates work in the semester long project. The candidate did this project during the whole semester under my supervision, and the analysis, results, claims etc. are all related to his studies and works during the semester.

I recommend submission of this project report as a part of partial assessment of syllabus of M.Tech, 2nd semester in Material Science and Technology in the Department of Applied Sciences, Gauhati University.

Bipul Bezbaruah
26/06/2023
Bipul Bezbaruah

**PRIMARY TECHNIQUES FOR CHARACTERIZATION OF
METAL COMPLEXES DERIVED FROM 1, 4 – BIS (2-
HYDROXY-4, 6-DIMETHYLBENZYL)PIPERAZINE**

**Under The Guidance Of
Dr. Debajani Basumatary
Assistant Professor**

**Department Of Applied Sciences (Chemical Science Division)
Gauhati University Institute Of Science And Technology**



**Submitted By
Biki Deka
2nd Semester**

M.Tech In Material Science And Technology

Roll No: PT-221-838-0001

**Department Of Applied Sciences
Gauhati University Institute Of Science And Technology**

CERTIFICATE

This is to certify that Mr. Biki Deka bearing Roll No: PT-221-838-0001 has carried out his project work titled under my supervision "**PRIMARY TECHNIQUES FOR CHARACTERIZATION OF METAL COMPLEXES DERIVED FROM 1, 4 - BIS (2-HYDROXY-4, 6-DIMETHYLBENZYL)PIPERAZINE**" which is submitted to the Department of Applied Sciences, Gauhati University for the partial fulfillment of second Semester M.Tech degree.



26/6/2023

Dr. Debajani Basumatary
Assistant Professor
Dept. of Applied Sciences
(Chemical Science Division)
Gauhati University Institute of Science
And Technology
Jalukbari,
Guwahati-781014,
Assam,
India

Project Report

On

**“Nanocrystalline YBCO Superconductor synthesized
using citrate based solution technique and its Characterization”**

As 2nd semester course requirement of

**Master of Technology (M.Tech) in
Materials Science and Technology (MST)**



By

Manash Pratim Sarma

Roll No: PT-221-838-0003

Under the supervision of

Dr. Suparna Bhattacharjee

Assistant Professor,

DEPARTMENT OF APPLIED SCIENCES,

GAUHATI UNIVERSITY

June 2023



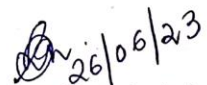
DEPARTMENT OF APPLIED SCIENCES
GAUHATI UNIVERSITY

GOPINATH BARDOLOI NAGAR, GUWAHATI-781014, ASSAM, INDIA

E-mail: suparna@gauhati.ac.in

CERTIFICATE

It is hereby certified that, Manash Pratim Sarma, Roll No: PT-221-838-0003, M.Tech (MST), second semester student, Department of Applied Sciences, Gauhati University, Guwahati, Assam, has carried out this project work, entitled "*Nanocrystalline YBCO Superconductor synthesized using citrate based solution technique and its Characterization*", under my guidance and supervision, during the period 09.02.2023 to 09.06.2023, in the Department of Applied Sciences, Gauhati University. The project report includes result of his own work and to the best of my knowledge; these results have not been submitted to any other University/Institution, for any other degree.


(Dr. Suparna Bhattacharjee)
Assistant Professor,
Department of Applied Sciences,
(Physical Science Division)
Gauhati University
Guwahati-781014, Assam

Dr Suparna Bhattacharjee
Assistant Professor
Department of Applied Sciences
Gauhati University
Guwahati-14, Assam

Project report on
**“Singular Value Decomposition” on micro
structure image use of 9cr steel**

UNDER THE GUIDANCE OF

DR. ARCHANA BORA

ASSISTANT PROFESSOR

DEPARTMENT OF APPLIED SCIENCES (PHYSICAL SCIENCE DIVISION)

GAUHATI UNIVERSITY INSTITUTE OF SCIENCE AND TECHNOLOGY



SUBMITTED BY

MANAB JYOTI PHUKAN

SECOND SEMESTER

M.TECH IN MATERIAL SCIENCE AND TECHNOLOGY

ROLL NO: PT-221-838-0004

DEPARTMENT OF APPLIED SCIENCES

GAUHATI UNIVERSITY INSTITUTE OF SCIENCE AND TECHNOLOGY

CERTIFICATE

This is to certify that Mr. Manab Jyoti Phukan bearing Roll No: PT-221-838-0004 has carried out his project work titled under my supervision "^{Use of} **Singular Value Decomposition on microstructure images ~~use~~ of 9cr steel**" which is submitted to the Department of Applied Sciences for the partial fulfillment of second Semester M.TECH degree.



Dr. Archana Bora

Assistant Professor

Dept. of Applied Sciences
(Physical Science Division)

Gauhati University Institute of Science And Technology

Jalukbari,
Guwahati-781014,
Assam,
India.

**STUDY OF 1, 4-BIS(2-HYDROXY-3, 6-DIMETHYLBENZYL)-
PIPERAZINE AND ITS METAL COMPLEXES BY VARIOUS
ANALYTICAL INSTRUMENTATIONS AND TECHNIQUES**

A DISSERTATION

**SUBMITTED IN PARTIAL FULFILLMENT FOR THE
AWARD OF DEGREE OF MASTER OF TECHNOLOGY**

IN

MATERIAL SCIENCE AND TECHNOLOGY



Submitted by;

LAPIR MOSES

Roll Number. PT-211-838-0005

Registration Number: 21084480

Session 2021-23

DEPARTMENT OF APPLIED SCIENCES

GAUHATI UNIVERSITY

GUWAHATI, ASSAM, 781014

INDIA

June 2023



DEPARTMENT OF APPLIED SCIENCES
GAUHATI UNIVRSITY
GOPINATH BARDOLOI NAGAR, GUWAHATI 781014,
ASSAM, INDIA.

Dr. Debajani Basumatary,
Assistant Professor.

Email: debbasumatary@gauhati.ac.in

TO WHOM IT MAY CONCERN

This is to certify that the dissertation entitled "**Study of 1, 4-bis(2-hydroxy-3, 6-dimethylbenzyl)-piperazine and its metal complexes by various analytical instrumentations and techniques**" embodies the result of investigations carried out by **Mr. Lahir Moses** under my supervision and guidance. It is further certified that this work is the result of his own investigation and the whole or part of it has not been submitted to any University or Institution for award of degree.

Date:

Your Faithfully

Dr. Debajani Basumatary,
Assistant Professor,
Department of Applied Sciences,
Chemical Science Division,
Gauhati University,
Guwahati, 781014
Assam (India).

**SYNTHESIS, CHARACTERIZATION AND ELECTROCHEMICAL APPLICATION
OF DIFFERENT SHAPES OF CERIUM OXIDE NANOMATERIALS**



**REPORT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT
FOR THE DEGREE OF**

MASTER OF TECHNOLOGY

IN

MATERIAL SCIENCE AND TECHNOLOGY

By

Gitarthi Gogoi

Roll no. PT-211-838-0003

UNDER THE GUIDANCE OF

Prof. Pranjal Saikia

Professor, Department of Applied Sciences, Gauhati University

DEPARTMENT OF APPLIED SCIENCE

GAUHATI UNIVERSITY

GUWAHATI, INDIA

JUNE - 2023



GAUHATI UNIVERSITY
DEPARTMENT OF APPLIED SCIENCES
Gopinath Bordoloi Nagar, Jalukbari, Guwahati-781014

Date: 24 / 06 / 2023

CERTIFICATE

This is to certify that “**Gitarthi Gogoi**” bearing Roll No: “**PT-211-838-0003**” has carried out the project work “**Synthesis, characterization and electrochemical application of different shapes of cerium oxide nanomaterials**” under my supervision and has compiled this report reflecting the candidates work in the semester long project. The candidate did this project during the whole semester under my supervision, and the analysis, results, claims etc. are all related to his/her studies and works during the semester.

I recommend submission of this project report as a part of partial assessment of syllabus of M.Tech, 4th semester in Material Science and Technology in the department of Applied Sciences, Gauhati University.

Pranjal
24/06/23

Prof. Pranjal Saikia

Prof. (Dr.) Pranjal Saikia
Dept. of Applied Sciences
(Chemical Science Division)
Gauhati University
Guwahati - 14, Assam, India

TD-DFT analysis of stacking interaction of Acriflavine in different solvents



Project Report Submitted to

Department of Applied Sciences, Gauhati University

*For the fulfilment of the requirements of, Master of Technology
(M.Tech) in Material Science & Technology (MST)*

Session 2022-2023

Submitted by

Derazuddin Ahmed

M.Tech (4th Semester)

GU Enrolment No.: 21043594 (2021-2022)

Roll No: PT-211-838-0002

Under the guidance of

DR. BIPUL BEZBARUAH

Assistant Professor

Department of Applied Sciences

Gauhati University, Guwahati-14, Assam



Gauhati University
Department of Applied Sciences
Gopinath Bordoloi Nagar, Guwahati-781014
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bipulbezbaruah@gauhati.ac.in

Dr. Bipul Bezbaruah
Assistant Professor

Ref.....

Date: 24/06/2023

It is hereby certified that **Derazuddin Ahmed**, M.Tech MST. 4th semester, bearing Roll no. "PT-211-838-0002" Department Of Applied Sciences, **Gauhati University** has successfully completed his project work on "**TD-DFT analysis of stacking interaction of Acriflavine in different solvents**" under my guidance. He has fulfilled all the requirement for the degree of master of technology in materials science and technology in the Department of Applied Sciences. Gauhati University.

The project work is the result of his investigation on the said topic. I wish him all success in life.

Bipul Bezbaruah
24/6/2023
Bipul Bezbaruah

**TiO₂ AND ZnS BASED NANOCOMPOSITES SYNTHESIZED
BY CHEMICAL AND MICROWAVE TECHNIQUES AND
THEIR TEMPERATURE RESPONSE**

A Dissertation submitted in partial fulfillment of

the requirements for the degree of

Master of Technology

In

Materials Science and Technology (MST)

by

Mrinal Kanti Das

Roll No. – PT-211-838-0006

Under the Guidance of

Dr. Suparna Bhattacharjee

Assistant Professor



Department of Applied Sciences

Gauhati University

June, 2023



DEPARTMENT OF APPLIED SCIENCES

GAUHATI UNIVERSITY

GOPINATH BORDOLOI NAGAR, GUWAHATI-781014, ASSAM, INDIA

E-mail: suparna@gauhati.ac.in

CERTIFICATE

It is hereby certified that, **MRINAL KANTIDAS**, Roll No. PT-211-838-0006, M.Tech (MST), fourth semester student, Department of Applied Sciences, Gauhati University, Guwahati, Assam, has carried out this project work, entitled "*TiO₂ and ZnS based Nanocomposites synthesized by Chemical and Microwave Techniques and their Temperature Response*", under my guidance and supervision, during the period **25.01.2023** to **23.06.2023**, in the Department of Applied Sciences, Gauhati University. The project report includes result of his own work and to the best of my knowledge; these results have not been submitted to any other University/Institution, for any other degree.

Dr. Suparna Bhattacharjee
24/06/23
(Dr. Suparna Bhattacharjee)

Assistant Professor,

Department of Applied Sciences,

(Physical Science Division)

Gauhati University

Guwahati - 781014, Assam

Dr. Suparna Bhattacharjee
Assistant Professor
Department of Applied Science
Gauhati University
Guwahati-14, Assam

Multicollinearity and Regression Model For Predicting Fatigue Strength of Steel

Contents

A project report submitted by

Mrinal Kumar Adhikary

Roll no- PT-211-838-0007

in partial fulfilment for the award of the degree of

Master of Technology

in

Material Science & Technology



Under the guidance of

Dr. Archana Bora

Assitant Professor, Gauhati University

DEPARTMENT OF APPLIED SCIENCES

GAUHATI UNIVERSITY

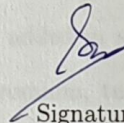
JUNE 2023

Certificate

This is to certify that the project report entitled *Multicollinearity and Regression Model for Predicting Fatigue Strength of Steel* submitted to the Department of Applied Sciences, Gauhati University for the partial fulfillment for the award of the degree of Master of Technology in Materials Science and Technology, is a bona fide work carried out by Mr. Mrinal Kumar Adhikary, Roll no. PT-211-838-0007, under my supervision and guidance.

All help received by him from various sources has been duly acknowledged. No part of these report has been submitted elsewhere for award of any other degree.

Date: 24/6/23



Signature of the supervisor

Place: Guwahati 781 014

**SYNTHESIS AND CHARACTERIZATION OF POLYVINYL
ALCOHOL (PVA) HYBRID HYDROGELS FOR CADMIUM
TELLURIDE INTEGRATION TO EVALUATE THE SWELLING
AND ELECTROCHEMICAL PROPERTIES**



A PROJECT REPORT SUBMITTED TO THE DEPARTMENT OF APPLIED
SCIENCES, GAUHATI UNIVERSITY FOR THE PARTIAL FULFILLMENT
OF THE DEGREE OF MASTER OF TECHNOLOGY (M. TECH) IN
MATERIAL SCIENCE AND TECHNOLOGY: JUNE-2023

SUBMITTED BY

Ankur Jyoti Nath
Roll No: PT-211-838-0001
Reg. No: 21043593 of 2021-22

Under the guidance of

Prof. Pranjal Saikia
Professor
Department of Applied Sciences,
Gauhati University, Guwahati-14

Dr. Samiul Hoque
Scientific Officer
Department of Applied Sciences,
Gauhati University, Guwahati-14



Gauhati University

Department of Applied Sciences

Gopinath Bordoloi Nagar, Jalukbari, Guwahati-781014

CERTIFICATE

To whom it may concern

This is to certify that **Ankur Jyoti N ath**, a student of M. Tech 4th semester, Gauhati University (Roll No.PT-211-838-0001) has carried out a project on entitled **“SYNTHESIS AND CHARACTERIZATION OF POLYVINYL ALCOHOL (PVA) HYBRID HYDROGELS FOR CADMIUM TELLURIDE INTEGRATION TO EVALUATE THE SWELLING AND ELECTROCHEMICAL PROPERTIES”** under our supervision Department of Applied Sciences, Gauhati University for the partial fulfilment of his Master of Technology (M. Tech). He was very sincere, punctual during his project time. He has successfully completed his project work within the certain time. The work is original and it’s not been submitted in any other universities/institutes for any other degree.

We wish him every success in his future life.

Pranjal
24/6/23
Prof. Pranjal Saikia

Professor

Department of Applied Sciences,

Gauhati University

Guwahati-14

Prof. (Dr.) Pranjal Saikia
Dept. of Applied Sciences
(Chemical Science Division)
Guwahati University
Guwahati - 14, Assam, India

Samiul Hoque
24.06.2023
Dr.Samiul Hoque

Scientific Officer

Department of Applied Sciences,

Gauhati University

Guwahati-14

Dr. Samiul Hoque
Scientific Officer
Department of Applied Sciences
Guwahati University
Guwahati-14, Assam