



THANTHAI PERIYAR GOVERNMENT ARTS AND SCIENCE COLLEGE  
(Autonomous)

TIRUCHIRAPPALLI-620 023.

PG & RESEARCH DEPARTMENT OF PHYSICS

**CERTIFICATE**

This is to certify that the project work entitled "SYNTHESIS AND CHARACTERIZATION OF UNDOPED AND Ni-DOPED ZnO NANOPARTICLES" is a bonafide project work done by E.ARUN (Reg.No:20PPH01), PG & Research Department of Physics, Thanthai Periyar Government Arts and Science College (Autonomous\*\*\*), Affiliated to Bharathidasan University, Tiruchirappalli in partial fulfilment of the requirements for the award of degree of MASTER OF SCIENCE IN PHYSICS, during the academic year 2021-2022.

Signature of the Head of the department

HEAD

PG & RESEARCH DEPARTMENT OF PHYSICS  
THANTHAI PERIYAR GOVERNMENT  
ARTS AND SCIENCE COLLEGE (AUTONOMOUS)  
TIRUCHIRAPPALLI - 620 023.

  
Signature of the guide

Examiner

- (i) 02/6/22
- (ii) 02/6/2022



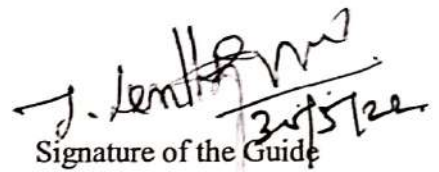
## CERTIFICATE

This is to certify that the project work entitled 'OZONE DEPLETION AND CRISIS ANALYSIS IN GLOBAL LEVEL' submitted to Thanthai Periyar Government Arts And Science College (Autonomous) affiliated to Bharathidasan University in partial fulfilment for the award of degree of MASTER OF SCIENCE IN PHYSICS, is a bonafide record of a project work done by Mr BALASUBRAMANIAN K (Reg. No. 20PPH02), under my supervision and guidance.



Head of the Department

P G & RESEARCH DEPARTMENT OF PHYSICS  
THANTHAI PERIYAR GOVERNMENT  
ARTS AND SCIENCE COLLEGE (AUTONOMOUS)  
TIRUCHIRAPPALLI - 620 023.



Signature of the Guide

1.  02/6/22

2.  2/6/2022



**Prof. S. Lalitha. M. Sc., M. Phil., Ph. D.,**

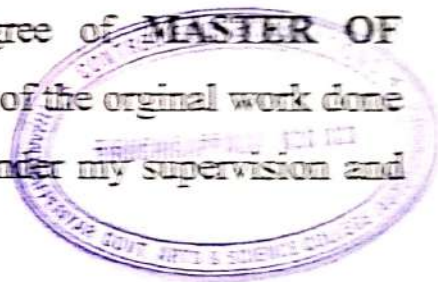
Associate Professor of Physics,

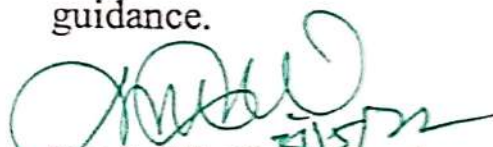
PG and Research Department of Physics,

Thanthai Periyar Government Arts and Science College (Autonomous and Reaccredited), Tiruchirappalli-620 023.

**CERTIFICATE**

This is to certify that the project work entitled "VIBRATIONAL SPECTROSCOPIC STUDY OF DIMETHYLISOPHTHALATE" submitted to **THANTHAI PERIYAR GOVERNMENT ARTS AND SCIENCE COLLEGE**, (Autonomous and Re accredited). Affiliated to Bharathidasan University, Thiruchirappalli-23 in partial fulfillment for the requirement for the award of the degree of **MASTER OF SCIENCE IN PHYSICS**, is a bonafide record of the original work done by **T.DHANABAL** (Reg.No:20PPH03) and under my supervision and guidance.



  
Head of the Department

PG & RESEARCH DEPARTMENT OF PHYSICS  
THANTHAI PERIYAR GOVERNMENT  
ARTS AND SCIENCE COLLEGE (AUTONOMOUS)  
TIRUCHIRAPPALLI - 620 023.

Signature of the Guide

  
(S. LALITHA)

submitted for the Viva-Voice examination held on ..... 02/6/22

Examiners

1.  02/6/22

2.  02/06/2022.





THANTHAI PERIYAR GOVERNMENT ARTS AND SCIENCE  
COLLEGE (Autonomous)  
(Govt. owned & Nationally Re - Accredited by NAAC with 'A' grade)  
Affiliated to Bharathidasan University  
Race course Road, Khajamalai, Tiruchirappalli - 620 023, India.

Phone: 0431 - 2420079(Off.) Fax: 0431 - 2332010(Off.)

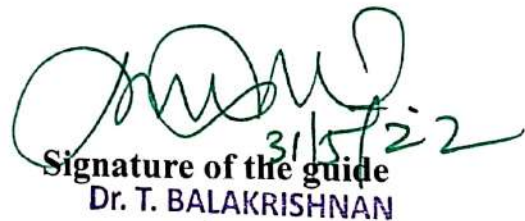
Dr. T. BALAKRISHNAN M.Sc., M.Phil. B.Ed., Ph.D.,  
Head & Associate Professor of Physics

**CERTIFICATE**

This is to certify that the project work entitled "PREPARATION, STRUCTURAL, OPTICAL AND PHOTOLUMINESCENCE PROPERTIES OF CuS THIN FILM" submitted to THANTHAI PERIYAR GOVERNMENT ARTS AND SCIENCE COLLEGE (Autonomous) affiliated to Bharathidasan university in partial fulfilment for the award of degree of MASTER OF SCIENCE IN PHYSICS, is a bonafide record of a project work done by Mr. M. KAVIYARASAN (Reg. No. 20PPH04), under my supervision and guidance.

  
Head of the Department

PG & RESEARCH DEPARTMENT OF PHYSICS  
THANTHAI PERIYAR GOVERNMENT  
ARTS AND SCIENCE COLLEGE (AUTONOMOUS)  
TIRUCHIRAPPALLI - 620 023.  
Examiner

  
Signature of the guide  
Dr. T. BALAKRISHNAN

M.Sc., B.E.d., M.Phil., Ph.D.,  
ASSOCIATE PROFESSOR AND HEAD  
PG & RESEARCH DEPARTMENT OF PHYSICS  
THANTHAI PERIYAR GOVERNMENT  
ARTS AND SCIENCE COLLEGE (AUTONOMOUS)  
TIRUCHIRAPPALLI - 620 023.

1.  02/6/22

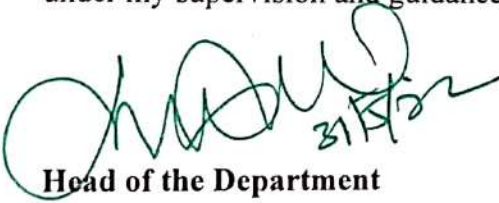
2.  2/6/22



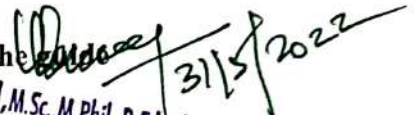
## CERTIFICATE

This is to certify that the project work entitled 'GROWTH AND CHARACTERISATION OF ISOPHTHALIC DIHYDRAZIDE EITH TRICOLOROACETIC ACID ' submitted to Thanthai Periyar Government Arts And Science College (Autonomous) affiliated to Bharathidasan university in partial fulfillment for the award of degree of MASTER OF SCIENCE IN PHYSICS, is a bonafide record of a project work done by **MR. M.KESAVAN (Reg. No. 20PPH05)**, under my supervision and guidance.



  
Head of the Department

HEAD  
PG & RESEARCH DEPARTMENT OF PHYSICS  
TANTHAI PERIYAR GOVERNMENT  
ARTS AND SCIENCE COLLEGE (AUTONOMOUS)  
TIRUCHIRAPPALLI - 620 023.

  
Signature of the **D.P. ARUNAGIRI, M.Sc., M.Phil., B.Ed., Ph.D.,**  
Assistant Professor  
PG and Research Department of Physics  
Thanthai Periyar Government Arts and  
Science College (Autonomous)  
Tiruchirappalli-620 023, Tamil Nadu.

### Examiner

1.  02/6/22

2.  12/6/2022



**Dr. R. JOHN XAVIER, M.Sc., Ph.D.,**

Assistant Professor


PG & Research Department of Physics

Thanthai Periyar Government Arts And Science College (Autonomous)

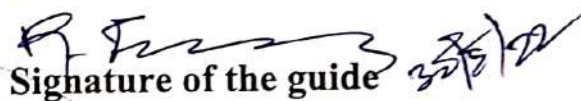
Tiruchirappalli-620 023



**CERTIFICATE**

This is to certify that the project work entitled 'ANALYSIS OF MOLECULAR STRUCTURE, VIBRATIONAL SPECTRA AND NLO STUDIES OF PENTA CHLORO NITROBENZENE' submitted to Thanthai Periyar Government Arts And Science College (Autonomous) affiliated to Bharathidasan university in partial fulfilment for the award of degree of **MASTER OF SCIENCE IN PHYSICS**, is a bonafide record of a project work done by **Mr.S. MAHENDIRAN (Reg. No. 20PPH06)**, under my supervision and guidance.

  
HEAD 31/5/22  
**Head of the Department**  
PG & RESEARCH DEPARTMENT OF PHYSICS  
THANTHAI PERIYAR GOVERNMENT  
ARTS AND SCIENCE COLLEGE (AUTONOMOUS)  
TIRUCHIRAPPALLI - 620 023.  
**Examiner**



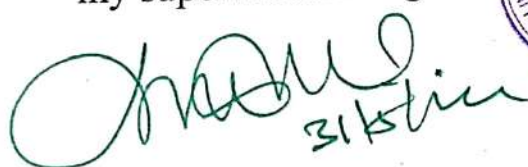
  
Signature of the guide 31/5/22

1.  02/6/22
2.  2/6/22

Dr. A. SAKTHIVELU M.Sc., M.Phil., Ph.D.,  
Assistant Professor,  
PG and Research Department of Physics,  
Thanthai Periyar Government Arts & Science College  
(Autonomous and Re-Accredited),  
Tiruchirappalli-620 023.

### CERTIFICATE

This is to certify that the project work entitled “**SYNTHESIS, PROCESSING AND CHARACTERIZATION OF NANOCRYSTALLINE TITANIUM DIOXIDE**” submitted to **THANTHAI PERIYAR GOVERNMENT ARTS & SCIENCE COLLEGE**, (Autonomous and Re Accredited). Affiliated to Bharathidasan University, in partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN PHYSICS**, is a bonafide record of a project work done by **M.MATHIVANAN** (Reg.No:20PPH07) under my supervision and guidance.

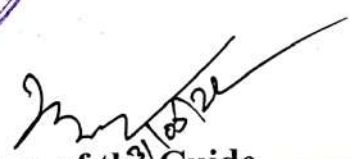


**Head of the Department**

HEAD

PG & RESEARCH DEPARTMENT OF PHYSICS  
THANTHAI PERIYAR GOVERNMENT  
ARTS AND SCIENCE COLLEGE (AUTONOMOUS)  
TIRUCHIRAPPALLI - 620 023.



  
Signature of the Guide

(A.SAKTHIVELU)

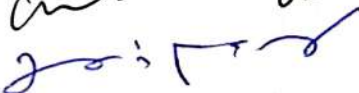
Submitted for the Viva-Voce examination held on 21/11/22

**Examiners**

1



2



**Dr. R.SHANAJ BEGUM. M.SC., M. Phil., PGDCA., Ph.D.,**  
**Assistant Professor of Physics,**  
**PG and Research Department of Physics,**  
**Thanthal Periyar Government Arts and Science College,**  
**Tiruchirappalli-620 023.**

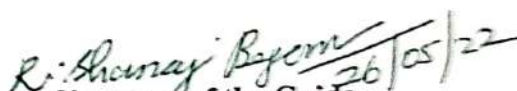
### **CERTIFICATE**

This is to certify that the project work entitled **"MOBILE PHONE DETECTOR"** submitted to **Thanthal Periyar Government Arts and Science College , affiliated to Bharathidasan University**, in partial fulfillment for the award of the degree of **MASTER OF SCIENCE IN PHYSICS** is a bonafide record of a project work done by **M.MOHAMED HUSSAIN (Reg.No:20PPH08)** under my supervision and guidance.



  
**Head of the Department**

**PG & RESEARCH DEPARTMENT OF PHYSICS**  
**THANTHAL PERIYAR GOVERNMENT**  
**ARTS AND SCIENCE COLLEGE (AUTONOMOUS)**  
**TIRUCHIRAPPALLI - 620 023.**

**Submitted for the Viva-Voice examination held on.....**

  
**Signature of the Guide**  
**(R.SHANAJ BEGUM)**

**Examiner**

1.  02/06/22
2.  02/06/22





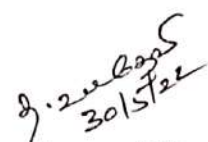
Dr.T. UMA DEVI,  
Assitant Professor of Physics,  
PG and Research Department of Physics,  
Thanthai Periyar Government Arts & Science College  
(Autonomous and Re-Accredited),  
Tiruchirappalli-620 023.

### CERTIFICATE

This is to certify that the project work entitled "CRYSTAL GROWTH AND CHARACTERIZATION OF L-ALANINE LITHIUM CHLORIDE" submitted to THANTHAI PERIYAR GOVERNMENT ARTS & SCIENCE COLLEGE, (Autonomous and Re Accredited). Affiliated to Bharathidasan University, in partial fulfillment of the requirements for the award of the degree of MASTER OF SCIENCE IN PHYSICS, is a bonafide record of a project work done by P.MOHAN (Reg.No:20PPH09) under my supervision and guidance.



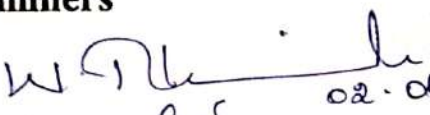

Head of the Department  
PG & RESEARCH DEPARTMENT OF PHYSICS  
THANTHAI PERIYAR GOVERNMENT  
ARTS AND SCIENCE COLLEGE (AUTONOMOUS)  
TIRUCHIRAPPALLI - 620 023.



Signature of the Guide  
(T.UMA DEVI)

Submitted for the Viva-Voce examination held on 2/6/22.....

#### Examiners

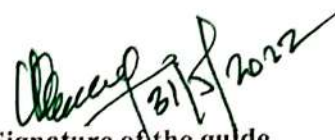
1  02.06.22  
2  2/6/22

### CERTIFICATE

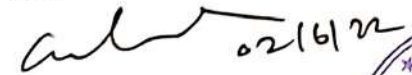

This is to certify that the project work entitled "CRYSTAL GROWTH AND CHARACTERIZATION OF ADIPIC DIHYDRAZIDE WITH 5- NITRO SALICYLALDEHYDE" submitted to THANTHAI PERIYAR GOVERNMENT ARTS AND SCIENCE COLLEGE (Autonomous) affiliated to Bharathidasan University in partial fulfillment for the award of degree of MASTER OF SCIENCE IN PHYSICS, is a bonafide record of a project work done by Mr. K. MUGESHKANNA (Reg. No. 20PPH10), under my supervision and guidance.

  
Head of the Department  
HEAD

PG & RESEARCH DEPARTMENT OF PHYSICS  
THANTHAI PERIYAR GOVERNMENT  
ARTS AND SCIENCE COLLEGE (AUTONOMOUS)  
TIRUCHIRAPPALLI - 620 023.

  
Signature of the guide  
Dr.C.ARUNAGIRI, M.Sc., M.Phil., B.Ed., Ph.D.,  
Assistant Professor  
PG and Research Department of Physics  
Thanthai Periyar Government Arts &  
Science College (Autonomous)  
Tiruchirappalli-620 023, Tamil Nadu.

#### Examiner

1.  02/6/22
2.  2/6/2022




Prof. Dr. S. RAJESWARI. M. Sc., M. Phil., Ph. D,  
Associate Professor of Physics,  
PG and Research Department of Physics,  
Thanthai Periyar Government arts and science College (Autonomous  
and Re-Accredited),  
Tiruchirappalli-620 023,

### CERTIFICATE

This certify that the project work entitled "EFFECT OF ISOTOPE SUBSTITUENTS IN VIBRATION OF FORMIC ACID – DFT STUDY" submitted to THANTHAI PERIYAR ARTS AND SCIENCE COLLEGE TIRUCHIRAPPALLI-23, (Autonomous and Re-Accredited). Affiliated to Bharathidasan University, in partial fulfillment for the award of the degree of MASTER OF SCIENCE IN PHYSICS, is a bonafide record of a project work done by (Reg.No:20PPH11) under my supervision and guidance.

  
Head of the Department


PG & RESEARCH DEPARTMENT OF PHYSICS  
THANTHAI PERIYAR GOVERNMENT  
ARTS AND SCIENCE COLLEGE (AUTONOMOUS)  
TIRUCHIRAPPALLI - 620 023,

  
Signature of the Guide

(S. RAJESWARI)

Submitted for the Viva-Voice examination held on ..22/06/2022 .

#### Examiners

1.  02.06.22
2. S. Rajeswari





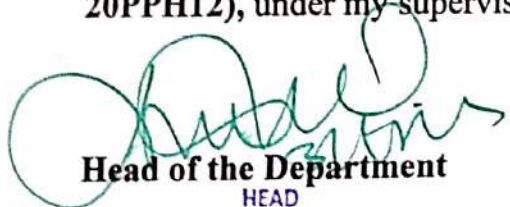
THANTHAI PERIYAR GOVERNMENT ARTS AND SCIENCE  
COLLEGE (Autonomous)  
(Govt. owned & Nationally Re - Accredited by NAAC with 'A' grade)  
Affiliated to Bharathidasan University  
Race course Road, Khajamalai, Tiruchirappalli - 620 023, India.

Phone: 0431 - 2420079(Off.) Fax: 0431 - 2332010(Off.)

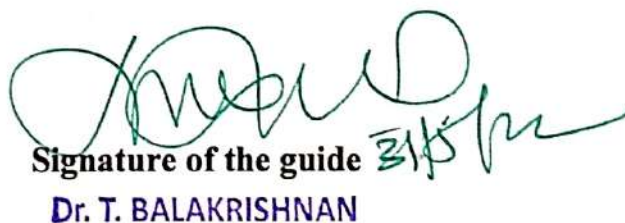
Dr. T. BALAKRISHNAN M.Sc., M.Phil. B.Ed., Ph.D.,  
Head & Associate Professor of Physics

**CERTIFICATE**

This is to certify that the project work entitled "CRYSTAL GROWTH, SPECTROSCOPY, THERMAL AND ETCHING STUDIES OF GLYCINE POTASSIUM TETRAFLUOROBORATE SINGLE CRYSTAL" submitted to THANTHAI PERIYAR GOVERNMENT ARTS AND SCIENCE COLLEGE (Autonomous) affiliated to Bharathidasan university in partial fulfilment for the award of degree of MASTER OF SCIENCE IN PHYSICS, is a bonafide record of a project work done by Mr. J. SANTHOSH (Reg. No. 20PPH12), under my supervision and guidance.

  
Head of the Department  
HEAD

P G & RESEARCH DEPARTMENT OF PHYSICS  
THANTHAI PERIYAR GOVERNMENT  
ARTS AND SCIENCE COLLEGE (AUTONOMOUS)  
TIRUCHIRAPPALLI - 620 023.  
**Examiner**

  
Signature of the guide  
Dr. T. BALAKRISHNAN

M.Sc., B.E.d., M.Phil., Ph.D.,  
ASSOCIATE PROFESSOR AND HEAD  
P G & RESEARCH DEPARTMENT OF PHYSICS  
THANTHAI PERIYAR GOVERNMENT  
ARTS AND SCIENCE COLLEGE (AUTONOMOUS)  
TIRUCHIRAPPALLI - 620 023.

1.  02/6/22

2.  2/6/22



J.SENTHIL KUMAR Ph.D.,  
Assitant Professor of Physics,  
PG and Research Department of Physics,  
Thanthai Periyar Government Arts & Science College,  
(Autonomous and Re-Accredited),  
Tiruchirappalli-23.

### CERTIFICATE

This is to certify that the project work entitled "THERMAL PROPERTIES OF SODIUM SULFANILATE DIHYDRATE SINGLE CRYSTAL FOR OPTICAL WINDOW APPLICATION" submitted to Thanthai Periyar Government Arts & Science College, (Autonomous and Re Accredited). Affiliated to Bharathidasan University, in partial fulfillment of the requirements for the award of the degree of MASTER OF SCIENCE IN PHYSICS, is a bonafide record of a project work done by M.SATHIYAMOORTHY (Reg.No.20PPH13) under my supervision and guidance.

  
Head of the Department

HEAD

PG & RESEARCH DEPARTMENT OF PHYSICS  
THANTHAI PERIYAR GOVERNMENT  
ARTS AND SCIENCE COLLEGE (AUTONOMOUS)  
TIRUCHIRAPPALLI - 620 023.

  
Signature of the Guide

Submitted for the Viva-Voce examination held on .02/06/2022

### Examiners

1.  02/6/22

2.  02/6/22



Prof. G. TAMILSELVI, M. Sc., M. Phil.,  
Associate Professor of Physics,  
PG and Research Department of Physics,  
Thanthai Periyar Government Arts & Science College  
(Autonomous and Re-Accredited), Tiruchirappalli-620023

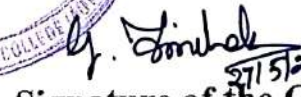
### CERTIFICATE

This is to certify that the project work entitled "**CRYSTAL GROWTH AND CHARACTERISATION OF GLYCINE LITHIUM CHLORIDE**" submitted to **THANTHAI PERIYAR GOVERNMENT ARTS & SCIENCE COLLEGE**, (Autonomous and Re Accredited). Affiliated to Bharathidasan University, in partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN PHYSICS**, is a bonafide record of a project work done by **S.SRINIVAS** (Reg.No:20PPH14) under my supervision and guidance.

  
Head of the Department  
HEAD

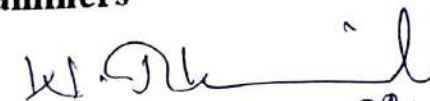

PG & RESEARCH DEPARTMENT OF PHYSICS  
THANTHAI PERIYAR GOVERNMENT  
ARTS AND SCIENCE COLLEGE (AUTONOMOUS)  
TIRUCHIRAPPALLI - 620 023.



  
Signature of the Guide  
(G.TAMILSELVI)

Submitted for the Viva-Voce examination held on ..2.6.22

### Examiners

- 1  02.06.22
- 2  2/6/22



Dr.T. UMA DEVI,  
Assitant Professor of Physics,  
PG and Research Department of Physics,  
Thanthai Periyar Government Arts & Science College  
(Autonomous and Re-Accredited),  
Tiruchirappalli-620 023.

### CERTIFICATE

This is to certify that the project work entitled "CRYSTAL GROWTH AND CHARACTERIZATION OF L-ASPARAGINE LITHIUM CHLORIDE" submitted to **THANTHAI PERIYAR GOVERNMENT ARTS & SCIENCE COLLEGE**, (Autonomous and Re Accredited). Affiliated to Bharathidasan University, in partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN PHYSICS**, is a bonafide record of a project work done by **A.SURENDAR** (Reg.No:20PPH15) under my supervision and guidance.



Head of the Department



PG & RESEARCH DEPARTMENT OF PHYSICS  
THANTHAI PERIYAR GOVERNMENT  
ARTS AND SCIENCE COLLEGE (AUTONOMOUS)  
TIRUCHIRAPPALLI - 620 023.

30/5/2022  
Signature of the Guide

(T.UMA DEVI)

Submitted for the Viva-Voce examination held on 02/6/22

Examiners

1  02-06-22  
2 






**Dr. S. DHEIVA MALAR. M. Sc., B.Ed., M.Phil.,  
PGDCA., Ph. D.**


**Assistant Professor,  
PG & Research Department of Physics,  
Thanthai Periyar Government Art And Science  
College (Autonomous and Re-accredited "A")  
Tiruchirappalli-620 023**

### **CERTIFICATE**

This is to certify that the project work entitled "**SPECTROSCOPIC STUDIES ON ACETAMINOPHEN (PARACETAMOL) COMPOUND USING DENSITY FUNCTIONAL THEORY STUDY**" submitted to Thanthai Periyar Government Arts And Science College (Autonomous) affiliated to Bharathidasan university in partial fulfilment for the award of degree of **MASTER OF SCIENCE IN PHYSICS**, is a bonafide record of a project work done by **V.SURYA (Reg. No. 20PPH16)**, under my supervision and guidance.

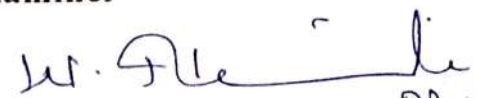
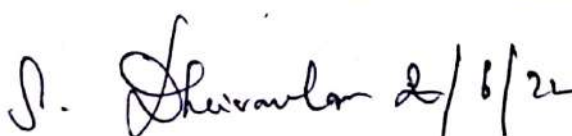
  
**Head of the Department**  
HEAD  
PG & RESEARCH DEPARTMENT OF PHYSICS  
THANTHAI PERIYAR GOVERNMENT  
ARTS AND SCIENCE COLLEGE (AUTONOMOUS)  
TIRUCHIRAPPALLI - 620 023.



  
**Signature of the guide**  
**(S.DHEIVA MALAR)**

**Submitted for the Viva-Voice examination held on...02...06...2022**

#### **Examiner**

1.   
02.06.22
2.   
2/6/22



Dr. S. RAJESWARI. M. Sc., M. Phil., Ph. D,

Associate Professor of Physics,


PG and Research Department of Physics,

THANTHAI PERIYAR GOVERNMENT ARTS AND SCIENCE COLLEGE  
(AUTONOMOUS AND REACCREDITED),

Tiruchirappalli-620 023,

**CERTIFICATE**

This is to certify that the project work entitled "NATURAL BOND ORBITAL ANALYSIS AND PARAMAGNETIC PROPERTY OF BENZENE AND BENZOIC ACID" submitted to THANTHAI PERIYAR GOVERNMENT ARTS AND SCIENCE E.V.R COLLEGE, (Autonomous and ReAccredited). affiliated to Bharathidasan University, Thiruchirappalli-23 in partial fulfillment of the requirement for the award of the degree of "MASTER OF SCIENCE IN PHYSICS", is a bonafide record of a project work done by **A.VIJAYAPRATHAP (Reg.No:20PPH17)** under my supervisor and guidance.

  
HEAD  
PG & RESEARCH DEPARTMENT OF PHYSICS  
**Head of the Department**  
ARTS AND SCIENCE COLLEGE (AUTONOMOUS)  
TIRUCHIRAPPALLI - 620 023,  
**Examiners**

  
**Signature of the Guide**

1   
02.06.22

2   
02/06/22



Dr. A. AUSTEIN M.Sc., M.Phil., Ph.D.,  
Assistant Professor,  
PG and Research Department of Physics,  
Thanthai Periyar Government Arts & Science College  
(Autonomous and Re-Accredited),  
Tiruchirappalli-620 023.

### CERTIFICATE

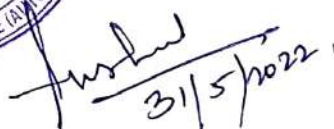
This is to certify that the project work entitled  
“**CHARACTERIZATION AND APPLICATIONS OF  
PHOTOVOLTAIC CELL USING ZnSe FILM**” submitted to  
**THANTHAI PERIYAR GOVERNMENT  
ARTS & SCIENCE COLLEGE**, (Autonomous and Re  
Accredited). Affiliated to Bharathidasan University, in partial  
fulfillment of the requirements for the award of the degree of  
**MASTER OF SCIENCE IN PHYSICS**, is a bonafide record of a  
project work done by **J. ANUJA** (Reg.No: **20PPH18**) under my  
supervision and guidance.





**Head of the Department**  
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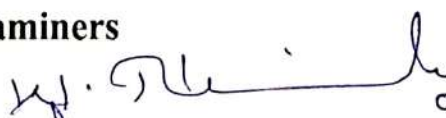

  
31/5/2022

**Signature of the Guide**

**(A. AUSTEIN)**

Submitted for the Viva-Voce examination held on .02.06.22

### Examiners

1.  02-06-22
2.  2/6/2022

**Dr. S.RAJALAKSHMI, M.Sc., M.Phil., Ph.D., P.G.D.C.A.,**  
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### **CERTIFICATE**

This is to certify that the project work entitled  
**“PHOTOCATALYSIS USING TiO<sub>2</sub> NANOPARTICLES  
CONTAINING SURFACE METAL SITES”** submitted to  
**THANTHAI PERIYAR GOVERNMENT ARTS &  
SCIENCE COLLEGE, (Autonomous and Re Accredited).**  
Affiliated to Bharathidasan University, in partial fulfillment of  
the requirements for the award of the degree of **MASTER OF  
SCIENCE IN PHYSICS**, is a bonafide record of a project work  
done by **S.DHIVYA (Reg.No:20PPH19)** under my supervision  
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31/5/22

**Head of the Department**  
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**Signature of the Guide**

  
**(S.RAJALAKSHMI)**

**Submitted for the Viva-Voce examination held on ...02.06.22**

**Examiners**

1  02.06.22

2  / 02/06/2022.

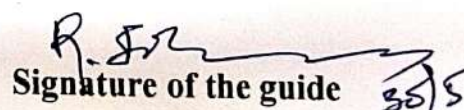
Dr. R.JOHN XAVIER, M.Sc., Ph.D.,  
Assistant professor,  
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**CERTIFICATE**


This is to certify that the project work entitled **"VIBRATIONAL ANALYSIS, NLO PROPERTIES OF 2,4,6-TRIMETHYL BENZALDEHYDE"** submitted to Thanthai Periyar Government Arts And Science College (Autonomous) affiliated to Bharathidasan university in partial fulfilment for the award of degree of **MASTER OF SCIENCE IN PHYSICS**, is a bonafide record of a project work done by **Mr. B. GOKILA (Reg. No. 20PPH20)**, under my supervision and guidance.

  
HEAD

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THANTHAI PERIYAR GOVERNMENT  
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**Head of the Department**

  
Signature of the guide

**Examiner**

-  02/6/22
-  2/8/22




**Dr. P. SIVAKUMAR, M.Sc., M. Phil., Ph.D.,**  
Associate Professor,  
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Thanthai Periyar Government Arts & Science College  
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Tiruchirappalli- 620 023



## CERTIFICATE



This is to certify that this project work entitled **'HIGH PERFORMANCE SYMMETRIC SUPERCAPACITOR INVESTIGATION USING HYDROTHERMALLY SYNTHESIZED BIMETALLIC NANOCOMPOSITES'** submitted to the Thanthai Periyar Government Arts & Science College (Autonomous), Tiruchirappalli, in Partial fulfillment of the **MASTER OF SCIENCE IN PHYSICS** is a bonafide record of work carried out by **T. KOHILA [Reg.No: 20PPH21]** in the Department of Physics, Thanthai Periyar Government Arts & Science College (Autonomous), under my supervision during the academic 2020-2022.

  
**Signature of the Research Advisor**  
**Dr. P. SIVAKUMAR**  
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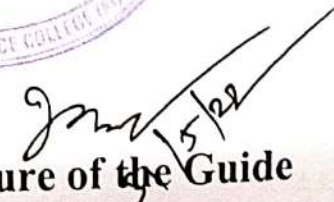
### CERTIFICATE

This is to certify that the project work entitled **"TITANIUM DIOXIDE NANOPARTICLE INTEGRATED CONCRETE: AN ASSESSMENT OF NANOPARTICLE RELEASE WHEN EXPOSED TO UV RADIATION AND WET WEATHER CONDITIONS"** submitted to **THANTHAI PERIYAR GOVERNMENT ARTS & SCIENCE COLLEGE**, (Autonomous and Re Accredited). Affiliated to Bharathidasan University, in partial fulfillment of the requirements for the award of the degree of **MASTER OF SCIENCE IN PHYSICS**, is a bonafide record of a project work done by **B.PRIYADHARSHINI** (Reg.No:**20PPH22**) under my supervision and guidance.



  
**Head of the Department**

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THANTHAI PERIYAR GOVERNMENT  
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**Signature of the Guide**

**(A.SAKTHIVELU)**



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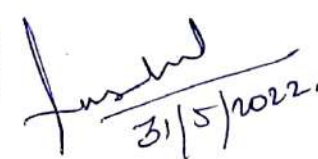
This is to certify that the project work entitled  
"VIBRATIONAL SPECTROSCOPIC STUDIES AND  
NORMAL COORDINATE ANALYSIS OF 3,4-DIMETHOX  
BENZYL ALCOHOL" submitted to **THANTHAI PERIYAR  
GOVERNMENT ARTS & SCIENCE COLLEGE,**  
(Autonomous and Re Accredited). Affiliated to Bharathidasan  
University, in partial fulfillment of the requirements for the award of  
the degree of **MASTER OF SCIENCE IN PHYSICS**, is a bonafide  
record of a project work done by **P. SANTHA PRIYA**  
(Reg.No:20PPH23) under my supervision and guidance.

  
**Head of the Department**

HEAD

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TIRUCHIRAPPALLI - 620 023.

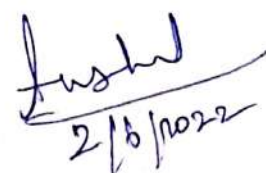


  
**Signature of the Guide**

**(A. AUSTEIN)**

**Submitted for the Viva-Voce examination held on .....**

**Examiners**

1  
2   
2/5/2022





Dr.S.DHEIVAMALAR. M. Sc.,B.Ed.,M.Phil.,  
PGDCA., Ph. D.  
Assistant Professor,  
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Thanthai Periyar Government Art And Science  
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Tiruchirappalli-620 023



### CERTIFICATE

This is to certify that the project work entitled "QUANTUM ENERGY CALCULATION ON 7-(D- $\alpha$ -AMINO- $\alpha$ -PHENYLACETAMIDO)-3-METHYL-3-CEPHEM-4-CARBOXYLIC ACID MONOHYDRATE COMPOUND USING DENSITY FUNCTIONAL THEORY STUDY" submitted to Thanthai Periyar Government Arts And Science College (Autonomous) affiliated to Bharathidasan university in partial fulfilment for the award of degree of **MASTER OF SCIENCE IN PHYSICS**, is a bonafide record of a project work done by **S.VELUNACHIYAR** (Reg. No. 20PPH24), under my supervision and guidance.

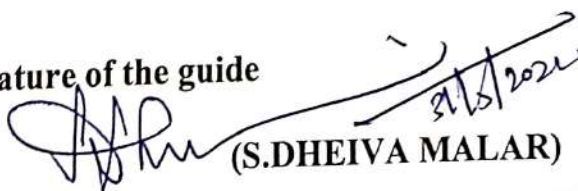
  
31.5.22

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Signature of the guide

  
21/5/2022  
(S.DHEIVA MALAR)

Submitted for the Viva-Voice examination held on... 02.06.22

Examiner

1.  02.06.22
2.  2/6/22

**Dr. P. SIVAKUMAR, M.Sc., M. Phil., Ph.D.,**  
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Tiruchirappalli- 620 023



Date: 30.05.22

## **CERTIFICATE**

This is to certify that this project work entitled '**HYDROTHERMAL SYNTHESIS OF SnS (TIN SULFIDE) NANOCOMPOSITES FOR HIGH ENERGY SYMMETRIC SUPERCAPACITORS**' submitted to the Thanthai Periyar Government Arts & Science College (Autonomous), Tiruchirappalli, in Partial fulfillment of the **MASTER OF SCIENCE IN PHYSICS** is a bonafide record of work carried out by **M. VIJI [Reg.No: 20PPH25]** in the Department of Physics, Thanthai Periyar Government Arts & Science College (Autonomous), under my supervision during the academic 2020-2022.

**Signature of the Research Advisor**  
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