



**WMO Arts and Science College, Muttil, Wayanad**

**Department of Physics**

**Criteria 1**

**1.3.2 Percentage of students undertaken project work/  
field work/ internship**

**Academic year 2021- 2022**

Sl no	Name of the Student	Title of the project	Guide's name and institution	UG/P G	Department
1.	Fathima Minna	Determination of Surface temperature of a sample of stars in the Messier 67-star constellation.	Dr. Biju K G, WMO Arts and Science College, Muttill	UG	Physics
2.	Masna T	Determination of Surface temperature of a sample of stars in the Messier 67-star constellation.	Dr. Biju K G, WMO Arts and Science College, Muttill	UG	Physics
3.	Afeefa M	Determination of Surface temperature of a sample of stars in the Messier 67-star constellation.	Dr. Biju K G, WMO Arts and Science College, Muttill	UG	Physics
4.	Avanthika Nk	Determination of Surface temperature of a sample of stars in the Messier 67-star constellation.	Dr. Biju K G, WMO Arts and Science College, Muttill	UG	Physics
5.	Ashina Vp	Determination of Surface temperature of a sample of stars in the Messier 67-star constellation.	Dr. Biju K G, WMO Arts and Science College, Muttill	UG	Physics
6.	Fathima Rose Is	Determination of Surface temperature of a sample of stars in the Messier 67-star constellation.	Dr. Biju K G, WMO Arts and Science College, Muttill	UG	Physics
7.	Mohammed Fayas Kk	XRD Characterisation- Tin Nitride Thin films.	Dr. Muhammad Shabeer N A, WMO Arts and Science College, Muttill	UG	Physics
8.	Muhammed Mahook Pt	XRD Characterisation- Tin Nitride Thin films.	Dr. Muhammad Shabeer N A, WMO Arts and Science College, Muttill	UG	Physics
9.	Muhammed Mubashir	XRD Characterisation- Tin Nitride Thin films.	Dr. Muhammad Shabeer N A, WMO Arts and Science College, Muttill	UG	Physics
10.	Sayan George	XRD Characterisation- Tin Nitride Thin films.	Dr. Muhammad Shabeer N A, WMO Arts and Science College, Muttill	UG	Physics
11.	Muhammed Namshad Tk	XRD Characterisation- Tin Nitride Thin films.	Dr. Muhammad Shabeer N A, WMO Arts and Science College, Muttill	UG	Physics
12.	Amrutha Rajan	Determination of Hubble constant and age of the	Dr. Biju K G, WMO Arts and Science College, Muttill	UG	Physics

		Universe using the velocities of Galaxies.			
13.	Anamika Saji	Determination of Hubble constant and age of the Universe using the velocities of Galaxies.	Dr. Biju K G, WMO Arts and Science College, Muttill	UG	Physics
14.	Ayisha Sinsina	Determination of Hubble constant and age of the Universe using the velocities of Galaxies.	Dr. Biju K G, WMO Arts and Science College, Muttill	UG	Physics
15.	Aysha Shibani P	Determination of Hubble constant and age of the Universe using the velocities of Galaxies.	Dr. Biju K G, WMO Arts and Science College, Muttill	UG	Physics
16.	Asnil Er	Determination of Hubble constant and age of the Universe using the velocities of Galaxies.	Dr. Biju K G, WMO Arts and Science College, Muttill	UG	Physics
17.	Adeep Farhan Ck	Hydrogen atom wavefunctions using Numerical methods	Dr. Sirajudheen K K, WMO Arts and Science College, Muttill	UG	Physics
18.	Abuthufail M	Hydrogen atom wavefunctions using Numerical methods	Dr. Sirajudheen K K, WMO Arts and Science College, Muttill	UG	Physics
19.	Vibin Vijay	Hydrogen atom wavefunctions using Numerical methods	Dr. Sirajudheen K K, WMO Arts and Science College, Muttill	UG	Physics
20.	Alwin Andrews	Hydrogen atom wavefunctions using Numerical methods	Dr. Sirajudheen K K, WMO Arts and Science College, Muttill	UG	Physics
21.	Safvan C	Hydrogen atom wavefunctions using Numerical methods	Dr. Sirajudheen K K, WMO Arts and Science College, Muttill	UG	Physics
22.	Ansiya Fidha	Hydrogen atom wavefunctions using Numerical methods	Dr. Sirajudheen K K, WMO Arts and Science College, Muttill	UG	Physics
23.	Ajinas K	Radio spectral studies of selected sample of radio galaxies	Dr. Biju K G, WMO Arts and Science College, Muttill	UG	Physics
24.	Asif Ahammed	Radio spectral studies of selected sample of radio galaxies	Dr. Biju K G, WMO Arts and Science College, Muttill	UG	Physics

25.	Fathimath Thasniya	Radio spectral studies of selected sample of radio galaxies	Dr. Biju K G, WMO Arts and Science College, Muttil	UG	Physics
26.	Adil Muhammed Ik	Radio spectral studies of selected sample of radio galaxies	Dr. Biju K G, WMO Arts and Science College, Muttil	UG	Physics
27.	Anoop Krishna	Radio spectral studies of selected sample of radio galaxies	Dr. Biju K G, WMO Arts and Science College, Muttil	UG	Physics
28.	Jasir Hussain N	Radio spectral studies of selected sample of radio galaxies	Dr. Biju K G, WMO Arts and Science College, Muttil	UG	Physics
29.	Fathima Sherin Ca	A study on the distribution of black hole masses in the Galaxy cluster A 2142.	Dr. Biju K G, WMO Arts and Science College, Muttil	UG	Physics
30.	Febina Sherin M	A study on the distribution of black hole masses in the Galaxy cluster A 2142.	Dr. Biju K G, WMO Arts and Science College, Muttil	UG	Physics
31.	Henna Mehjabin	A study on the distribution of black hole masses in the Galaxy cluster A 2142.	Dr. Biju K G, WMO Arts and Science College, Muttil	UG	Physics
32.	Kavya Vj	A study on the distribution of black hole masses in the Galaxy cluster A 2142.	Dr. Biju K G, WMO Arts and Science College, Muttil	UG	Physics
33.	Shamna Rafeeqe	A study on the distribution of black hole masses in the Galaxy cluster A 2142.	Dr. Biju K G, WMO Arts and Science College, Muttil	UG	Physics
34.	Jisan P	A study on the distribution of black hole masses in the Galaxy cluster A 2142.	Dr. Biju K G, WMO Arts and Science College, Muttil	UG	Physics
35.	Ashmila M	Error analysis with Young's modulus experiments as example.	Dr. Sirajudheen K K, WMO Arts and Science College, Muttil	UG	Physics
36.	Chandana Govind	Error analysis with Young's modulus experiments as example.	Dr. Sirajudheen K K, WMO Arts and Science College, Muttil	UG	Physics
37.	Dijna Sherin	Error analysis with Young's modulus experiments as example.	Dr. Sirajudheen K K, WMO Arts and Science College, Muttil	UG	Physics
38.	Faseela P	Error analysis with Young's modulus experiments as example.	Dr. Sirajudheen K K, WMO Arts and Science College, Muttil	UG	Physics

39.	Munsira Ms	Error analysis with Young's modulus experiments as example.	Dr. Sirajudheen K K, WMO Arts and Science College, Muttil	UG	Physics
40.	Shadil C	Error analysis with Young's modulus experiments as example.	Dr. Sirajudheen K K, WMO Arts and Science College, Muttil	UG	Physics
41.	Nahla Sherin A M	Surface topography of sputtered chromium nitride thin films	Dr. Muhammad Shabeer N A, WMO Arts and Science College, Muttil	PG	Physics
42.	Finu Fathima T K	Preparation and analysis of Barium cerate using different fuels	Dr. Nisamudheen. K M, Kannur University Campus, Payyannur	PG	Physics
43.	Ansil Babu	Dynamics of 1D bright solution in periodic potential and non-periodic potential	Dr. Aysha Muhsina K, Govt. Arts & Science college, Meenchantha	PG	Physics
44.	Kavya K J	A study on quark gluon plasma	Mr. Sreejith C S	PG	Physics
45.	Aysha Sameeha	Indian summer monsoon calculation characteristics and thermodynamic features over coastal station	Dr. Indira Rani, NCMRWF, Ministry of Earth Sciences, Noida	PG	Physics
46.	Kiran Reji	Moving object detection using ultrasonic radar	Mr. Abdul Rasheed, WMO Arts & Science college, Muttil	PG	Physics
47.	Aswathy Mr	Non-extensive statistical mechanics- A literature review	Mr. Sreejith C S, St. Mary's college, S.Bathery	PG	Physics
48.	Jency Kb	A study on thinfilm thermoelectric; enhancement of figure of merit by improving power factor	Dr. Muhammad Shabeer N A, WMO Arts and Science College, Muttil	PG	Physics
49.	Senha C	Preparation of Perovskite La <sub>2</sub> MgTiO <sub>6</sub> and to study effect of calcination on the bandgap energy	Dr. Nisamudheen. K M, Kannur University Campus, Payyannur	PG	Physics
50.	Fathima Husna P	Growth and characterisation of Sodium tartrate crystal	Dr. Jaya T P, Dayapuram Arts & Science College	PG	Physics
51.	Anju Prakash	Growth and characterisation of Nickel tartrate crystal	Dr. Jaya T P, Dayapuram Arts & Science College	PG	Physics
52.	Hasna K	An investigation into the world level relative time characteristics of malayalam non-plosive sounds	Mr. Sunil John, St. Mary's college, Sulthan Bathery	PG	Physics
53.	Fasalul Farisa Kp	Durational analysis of plosive sound with the context of	Mr. Sunil John, St. Mary's college, Sulthan Bathery	PG	Physics

		their position in Malayalam word			
54.	Farsina Sherin	Dynamics of Dark solution in BECs	Dr. Aysha Muhsina K, Govt. Arts & Science college, Meenchantha	PG	Physics
55.	Nahla K	Crystallographic features of sputtered tin titrite thinfilm	Dr. Muhammad Shabeer N A, WMO Arts and Science College, Muttil	PG	Physics
56.	Swetha Ps	Preparation and analysis of Strontium cerate using different fuels	Dr. Nisamudheen. K M, Kannur University Campus, Payyannur	PG	Physics
57.	Muhammed Jawahar C	Monitoring Temperature and Humidity using Arduino based sensor	Mr. Hashim N K, WMO Arts and Science College, Muttil	PG	Physics
58.	HariPriya	Synthesis and characterisation of Fe <sub>3</sub> O <sub>4</sub> nanoparticles dopped with CO <sub>2</sub> <sup>+</sup> and Mg <sup>2+</sup> - A comparative study	Dr. Pramodkumar, St. Mary's college, Sulthan Bathery	PG	Physics

DEPARTMENT OF PHYSICS  
WMO ARTS AND SCIENCE COLLEGE, MUTTIL, WAYANAD



DETERMINATION OF SURFACE TEMPERATURE OF STARS.

PROJECT REPORT

Submitted to

University of Calicut

In partial fulfilment of the requirements for the award of the Degree of

BACHELOR OF SCIENCE IN PHYSICS

By

1.FATHIMA MINNA (WMATSPH001)

2.MASNA T (WMATSPH002)

3.AFEEFA M (WMATSPH008)

4.AVANTHIKA N K (WMATSPH012)

5.ASHINA V P (WMATSPH028)

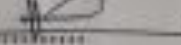
6.FATHIMA ROSE (WMATSPH033)

Under the guidance of

Dr. Biju KG

Associate Professor in physics

Evaluated By,

1. Hashim 

2. ....



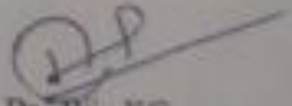
DEPARTMENT OF PHYSICS WMO ARTS AND SCIENCE  
COLLEGE, MUTTIL, WAYANAD

Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad



### CERTIFICATE

This is to certify that this project report "**Determination of surface temperature of stars**" submitted in partial fulfilment in requirement for the award of the Bachelor of Science in Physics is the Bonafede record of the project done by the students 1.FATHIMA MINNA (WMATSPH001), 2.MASNA T (WMATSPH002), 3.AFEEFA M (WMATSPH008), 4.AVANTHIKA N K (WMATSPH012), 5.ASHINA V P (WMATSPH028), 6.FATHIMA ROSE I S (WMATSPH033) of 2019-22 batch of the BSc Physics Programme, under my guidance and supervision.



Dr. Biju KG

Project Supervisor



Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad



DEPARTMENT OF PHYSICS  
WMO ARTS AND SCIENCE COLLEGE, MUTTIL WAYANAD



SYSTEMATIC ANALYSIS OF X-RAY DIFFRACTOGRAM FOR THE  
CRYSTALLOGRAPHIC FEATURES OF THIN FILMS

*PROJECT REPORT*

Submitted to

University of Calicut

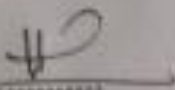
In partial fulfillment of the requirements for the award of the Degree of

**BACHELOR OF SCIENCE IN PHYSICS**

1. MOHAMMED FAYAS K K(WMATSPH005)
2. MUHAMMED MAHSHOOK PT(WMATSPH006)
3. MUHAMMED MUBASHIR(WMATSPH007)
4. SAYAN GEORGE(WMATSPH024)
5. MUHAMMED NAMSHAD(WMATSPH043)

Under the guidance of  
**Dr. MUHAMMED SABEER N. A.**

Evaluated By:

1. Hashim N-K 

2. ....



Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad

DEPARTMENT OF PHYSICS  
WMO ARTS AND SCIENCE COLLEGE, MUTTIL  
WAYANAD



CERTIFICATE

This is to certify that this project report 'Systematic Analysis of X-ray Diffractogram for the Crystallographic Features of Thin films' Submitted in partial fulfillment of the requirement for the award of the Bachelor of Science in Physics is a the bonafide record of the project work done by the students, 1. MOHAMMED FAYAS K K (WMATSPH005) 2. MUHAMMED MAHSHOOK P T (WMATSPH006) 3. MUHAMMED MUBASHIR (WMATSPH007) 4. SAYAN GEORGE (WMATSPH024) 5. MUHAMMED NAMSHAD T K (WMATSPH043) of 2019-22 batch of the B.Sc. Physics programme, under my guidance and supervision.

Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad

Dr. Muhammed Sabeer N. A.  
(Project Supervisor)

DEPARTMENT OF PHYSICS  
WMO ARTS AND SCIENCE COLLEGE, MUTTIL, WAYANAD



Determination of Hubble constant and age of the Universe  
using the recession velocities of a selected sample of  
Galaxies.

PROJECT REPORT

Submitted to

University of Calicut

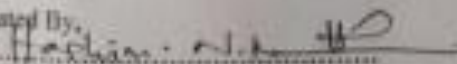
In partial fulfillment of the requirements for the award of the Degree of  
BACHELOR OF SCIENCE IN PHYSICS

By

1. AMRUTHA RAJAN (WMATSPH009)
2. ANAMIKA SAJI (WMATSPH010)
3. AYISHA SINSINA (WMATSPH013)
4. AYISHA SHIBHAN P (WMATSPH014)
5. ASNIL ER (WMATSPH041)

Under the guidance of  
Dr. Biju KG  
Associate Professor in physics

Evaluated By,

1. 

2. ....



Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad

DEPARTMENT OF PHYSICS  
WMO ARTS AND SCIENCE COLLEGE, MUTTIL, WAYANAD



CERTIFICATE

This is to certify that this project report "Determination of Hubble constant and age of the Universe using the recession velocities of a selected sample of Galaxies." Submitted in partial fulfillment of the requirement for the award of the Bachelor of Science in Physics is a the Bonafede record of the project work done by the students, 1. AMRUTHA RAJAN (WMATSPH009), 2. ANAMIKA SAJI (WMATSPH010), 3. AYISHA SINSINA (WMATSPH013), 4. AYSHA SHIBAN P (WMATSPH014), 5. ASNIL ER (WMATSPH041) of 2019-22 Batch of the BSc Physics Programme, under my guidance and supervision.

Dr.Biju KG

Project Supervisor

Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad

DEPARTMENT OF PHYSICS  
WMO ARTS AND SCIENCE COLLEGE,  
MUTTIL, WAYANAD



Solving Hydrogen Atom using Analytical and  
Numerical method

*PROJECT REPORT*

Submitted to  
University of Calicut

In partial fulfillment of the requirements for the award of the Degree of


**BACHELOR OF SCIENCE IN PHYSICS**

By

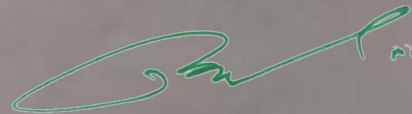
1. ADEEP FARHAN CK (WMATSPH003)
2. ABUTHUFAIL M (WMATSPH020)
3. VIPIN VJAY (WMATSPH025)
4. ALWIN ANDREWS (WMATSPH039)
5. SAFVAN C (WMATSPH044)
6. ANSIYA FIDHA (WMATSPH027)

Under the guidance of  
Dr. Sirajulbeen K K

Evaluated By,

1. Hashim. rise 

2. \_\_\_\_\_



DEPARTMENT OF PHYSICS WMO ARTS AND SCIENCE  
COLLEGE, MUTTIL, WAYANAD



## CERTIFICATE

This is to certify that this project report "Solving Hydrogen Atom using Analytical and Numerical method." Submitted in partial fulfillment of the requirement for the award of the Bachelor of Science in Physics is a the Bonafide record of the project work done by the students, 1. ADEEP FARHAN CK (WMATSPH003), 2. ABUTHUFAIL M (WMATSPH020), 3. VIPIN VIJAY (WMATSPH025), 4. ANSIYA FIDHA (WMATSPH027), 5. ALWIN ANDREWS (WMATSPH039), 6. SAFVAN C (WMATSPH044) of 2019-22 Batch of the BSc Physics Program, under my guidance and supervision

Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad

Dr. Sirajudheen K K  
Project Supervisor

DEPARTMENT OF PHYSICS  
WMO ARTS AND SCIENCE COLLEGE, MUTTIL,  
WAYANAD



**Radio spectral studies of selected samples of Radio  
galaxies**

*PROJECT REPORT*

Submitted to

University of Calicut

In partial fulfillment of the requirements for the award of the Degree of

**BACHELOR OF SCIENCE IN PHYSICS**

By

1. ZASIR HUSAIN N(WMATSPH004)

2. AJINAS K (WMATSPH021)

3. ANIF AHAMMED (WMATSPH022)

4. FATHIMATH THASNIYA V (WMATSPH034)

5. ADIL MUHAMMED I K (WMATSPH038)

6. ANOOP KRISHNA (WMATSPH048)

Under the guidance of

**Dr. Biju KG**

Associate Professor in physics

Evaluated By

1. Hethine V S

2. \_\_\_\_\_

Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad

DEPARTMENT OF PHYSICS  
WMO ARTS AND SCIENCE COLLEGE, MUTTIL,  
WAYANAD



CERTIFICATE

This is to certify that this project report "Radio spectral studies of selected samples of Radio galaxies" Submitted in partial fulfillment of the requirement for the award of the Bachelor of Science in Physics is a the Bonafede record of the project work done by the students, 1. JASIR HUSAIN N (WMATSPH004), 2. AJINAS K (WMATSPH021), 3. ASIF AHAMMED (WMATSPH022), 4. FATHIMATH THEASNIYA V (WMATSPH034), 5. ADIL MUHAMMED I K (WMATSPH030), & ANGOOP KRISHNA(WMATSPH040) of 2019-22 Batch of the BSc Physics Programme, under my guidance and supervision.

Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad

Dr. Biju KG

Project Supervisor

Type text here



**DEPARTMENT OF PHYSICS**  
**WMO ARTS AND SCIENCE COLLEGE, MUTTIL, WAYANAD**



**A STUDY ON THE DISTRIBUTION OF BLACK HOLE MASSES IN  
THE GALAXY CLUSTER A 2142.**

*PROJECT REPORT*

Submitted to

University of Calicut

In partial fulfillment of the requirements for the award of the Degree of  
**BACHELOR OF SCIENCE IN PHYSICS**

By

1. FATHIMA SHERIN C A (WMATSPH015)
2. FEBINA SHERIN M (WMATSPH016)
3. HENNA MEHJABIN (WMATSPH017)
4. KAVYA V J (WMATSPH018)
5. SHAMINA RAFEEQUE (WMATSPH019)
6. JISAN P(WMATSPH023)

Under the guidance of

**Dr. Biju KG**

Associate Professor in physics

Evaluated By,

1. ....

2. ....

**Principal**  
**W.M.O. Arts & Science College**  
**Muttill P.O., Wayanad**

DEPARTMENT OF PHYSICS  
WMO ARTS AND SCIENCE COLLEGE,  
MUTTIL, WAYANAD



**CERTIFICATE**

This is to certify that this project report **“A Study on the distribution of black hole masses in the Galaxy cluster A 2142 .”** Submitted in partial fulfillment of the requirement for the award of the Bachelor of Science in Physics is a Bonafede record of the project work done by the students, 1. FATHIMA SHERIN C A (WMATSPH015), 2. FEBINA SHERIN M (WMATSPH016),

3. HENNA MEHLABIN (WMATSPH017), 4. KAVYA V J (WMATSPH018), 5. SHAMINA RAFAQE (WMATSPH019), 6. JISAN P(WMATSPH023) of 2019-22 Batch of the BSc Physics Programme, under my guidance and supervision.

Principal

W.M.O. Arts & Science College  
Muttill P.O., Wayanad

Dr. Biju KG

Project Supervisor

DEPARTMENT OF PHYSICS  
WMO ARTS AND SCIENCE COLLEGE, MUTTIL, WAYANAD



## ERROR ANALYSIS AND IT'S SIGNIFICANCE

*PROJECT REPORT*

Submitted to

University of Calicut

In partial fulfillment of the requirements for the award of the Degree of

**BACHELOR OF SCIENCE IN PHYSICS**

By

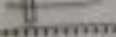
1. MUNSIRA M S (WMATSPH036)
2. FASEELA P (WMATSPH032)
3. DIJNA SHIRIN WMATSPH031)
- 4.CHANDANA GOVIND (WMATSPH030)
5. ASHMILA M (WMATSPH029)
- 6.SHADIL C(WMATSPH045)

Under the guidance of

**Dr. Sirajudheen K.K**

Associate Professor in physics

Evaluated By.

1.  .....

2. ....



Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad

DEPARTMENT OF PHYSICS  
WMO ARTS AND SCIENCE COLLEGE, MUTTIL, WAYANAD



**CERTIFICATE**

This is to certify that this project report "ERROR ANALYSIS AND IT'S SIGNIFICANCE" Submitted in partial fulfillment of the requirement for the award of the Bachelor of Science in Physics is a the bonafede record of the project work done by the students, 1. ASHMILA M (WMATSPH029), 2.CHANDHANA GOVIND (WMATSPH030), 3. DIJNA SHIRIN (WMATSPH031), 4. FASEELA P (WMATSPH032), 5. MUNSIRA M S (WMATSPH036) ,6.SHADIL C(WMATSPH045)of 2019-22 Batch of the BSc Physics Programme, under my guidance and supervision.

Dr. Sirajudheen K.K

Project Supervisor

Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad



**DEPARTMENT OF PHYSICS**  
**WMO ARTS AND SCIENCE COLLEGE**  
**MUTTIL**

**2020-2022**

**CERTIFICATE**

This is to certify that the project report entitled —SURFACE TOPOGRAPHY OF SPUTTERED CHROMIUM NITRIDE THIN FILMS submitted to The University of Calicut in partial fulfilment of the requirement for the award of Degree of Master of Science in Physics is a record of original research done by NAHLA SHERIN A M, during the period of her study in the Department of Physics, WMO Arts and Science College, Muttil, under my supervision and guidance.

**Dr. MUHAMMED SABEER.N.A**

**Project Guide**

**Examiners:**

1.....

2.....

**Dr. BIJU K G**

**Head of the Department**

HEAD OF THE DEPARTMENT  
Dept. of Physics  
W.M.O. Arts & Science College  
Muttil P.O., Wayanad, Kerala

Principal  
W.M.O. Arts & Science College  
Muttil P.O., Wayanad

**SURFACE TOPOGRAPHY OF  
SPUTTERED CHROMIUM NITRIDE THIN FILMS**

*Project submitted to the University of Calicut for the partial fulfillment of the  
requirements for the award of the degree of*

*Master of Science in Physics*

*by*

**NAHLA SHERIN A M**

*Under the guidance of*

**Dr. MUHAMMED SABEER N.A.**



**DEPARTMENT OF PHYSICS  
WMO ARTS & SCIENCE COLLEGE  
MUTTIL, WAYANAD**

**August-2022**

**Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad**



**KANNUR UNIVERSITY**

Department of Physics  
PAYYANUR CAMPUS

[www.kannuruniversity.ac.in](http://www.kannuruniversity.ac.in)

Edat Post, Kannur Dist., Kerala, India, PIN: 670 327, Ph: 0497-2806401

---

Dr. K. M. Nissamudeen. M.Sc., M.Phil., Ph.D.  
Assistant Professor

**CERTIFICATE**

This is to certify that the project report entitled as “**PREPARATION AND ANALYSIS OF BARIUM CERATE USING DIFFERENT FUELS**” is an authentic record of the work carried out by **Ms. Finu Fathima T K** in the Department of Physics, Kannur University. Also, we certify that this project work or any part thereof has not been submitted elsewhere for any other degree, diploma or similar title of any University or institution.



Principal  
W.M.O. Arts & Science College  
Muttil P.O., Wayanad



Dr. Nissamudeen K M

**HEAD**  
Department of Physics  
KANNUR UNIVERSITY  
Payyanur Campus, Payyanur



1

# PREPARATION AND ANALYSIS OF BARIUM CERATE USING DIFFERENT FUELS

Project report submitted to The University of Calicut in partial fulfillment of the requirement of  
the award of degree of **MASTER OF SCIENCE IN PHYSICS**

Submitted by

**FINU FATHIMA TK**

REG NO :WMAUMPH008

Under the guidance of

**Dr NISAMUDEEN KM**

Post Graduate and Research Department of Physics

University of Kannur, Payyanur



DEPARTMENT OF PHYSICS

WMO ARTS AND SCIENCE COLLEGE MUTTIL, WAYANAD

Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad

2020-2022



**Dr. AYSHA MUHSINA K**  
Asst. Professor and Research Guide

Department of Physics  
Government Arts & Science  
College, Calicut

**CERTIFICATE**

This is to certify that the project report entitled “**DYNAMICS OF 1D BRIGHT SOLITON IN PERIODIC POTENTIAL AND NON-PERIODIC POTENTIAL**”, submitted by **ANSIL BABU** is a bona fide record of research work done by him during the period of his study under my guidance and that the thesis has not previously formed the basis for the award of any degree, diploma, associateship, fellowship or any other similar title to the candidate.

This is also to clarify that the thesis represents the independent work done by the candidate.



Place: Calicut

Date: 17/8/2022

Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad

**Dr. AYSHA MUHSINA K**

Assistant Professor,

Department of Physics ,

Govt.Arts and Science College, Calicut

**Dr. AYSHA MUHSINA. K.**  
Asst. Professor  
Research Department of Physics  
Govt. Arts & Science College,  
Kozhikode, Kerala  
PEN : 760203

A PROJECT REPORT ON  
**DYNAMICS OF 1D BRIGHT SOLITON IN PERIODIC POTENTIAL  
AND NON-PERIODIC POTENTIAL**

Submitted to The University of Calicut in partial fulfilment of the requirement of the award of  
degree of **MASTER OF SCIENCE IN PHYSICS**

Submitted by  
**ANSIL BABU**  
**WMAUMPH002**

Under the guidance of  
**Dr. AYSHA MUHSINA K**  
Post Graduate and Research Department of Physics  
Government Arts & Science College, Calicut



DEPARTMENT OF PHYSICS  
WMO ARTS AND SCIENCE COLLEGE  
MUTTIL, WAYANAD  
2020-2022

Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad

## CERTIFICATE

This is to certify that the project work entitled “**DURATION ANALYSIS OF PLOSIVE SOUNDS IN THE CONTEXT OF THEIR POSITION IN MALAYALAM WORDS**” by Ms. **FASALUL FARISA K P(WMAUMPH006)** is the work done under my supervision, during the period 2021-2022, in partial fulfilment of the requirements for the award of the degree of Master of Science in Physics.



Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad

Sunil John



Asst. Professor.

St. Mary's College,

S. Bathery.

# INDIAN SUMMER MONSOON CIRCULATIONS AND THERMODYNAMIC FEATURES OVER A COASTAL STATION

Project report submitted to The University of Calicut in partial fulfilment of the requirement  
of the award of degree of **MASTER OF SCIENCE IN PHYSICS**

Submitted by

**AYSHA SAMEEHA**

REG NO: WMAUMPH004

Under the guidance of

**Dr. INDIRA RANI S**

Scientist F

NCMRWF, Ministry of Earth Sciences

A-50, Sector-62, Noida, U.P -201301




DEPARTMENT OF PHYSICS

WMO ARTS AND SCIENCE COLLEGE

MUTTIL, WAYANAD

2020-2022

  
Principal  
W.M.O. Arts & Science College  
Muttil P.O., Wayanad



DEPARTMENT OF PHYSICS  
WMO ARTS AND SCIENCE COLLEGE

MUTTIL

2020-2022

CERTIFICATE

This is to certify that the project report entitled "INDIAN SUMMER MONSOON CIRCULATIONS AND THERMODYNAMIC FEATURES OVER A COASTAL STATION", submitted to the University of Calicut in partial fulfilment of the requirement for the award of Degree of Master of Science in Physics is a record of original research done by AYSHA SAMEEHA, during the period of her study in the Department of Physics, WMO Arts and Science College, Muttil, under my supervision and guidance.

Dr. INDIRA RANI S.  
Scientist-F  
NCMRWF,

Principal  
W.M.O. Arts & Science College  
Muttil P.O., Wayanad

**MOVING OBJECT DETECTION USING  
ULTRASONIC RADAR**

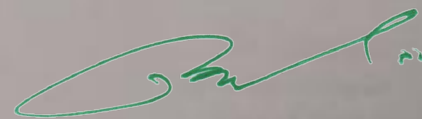
A PROJECT REPORT

Submitted by

**KIRAN REJI  
WMAUMPH013**

to the University of Calicut  
in partial fulfillment of the requirements for the award of the  
Degree of

**Master of Science  
in  
Physics**



Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad

DEPARTMENT OF PHYSICS  
WMO ARTS & SCIENCE COLLEGE  
Muttill, Wayanad  
August 2022

PH: 04936 - 203382



## DEPARTMENT OF ELECTRONICS

W.M.O. ARTS & SCIENCE COLLEGE

MUTTIL P.O, WAYANAD - 673122

( NAAC ACCREDITED & AFFILIATED TO UNIVERSITY OF CALICUT )

Date: 17/08/2022.....

### CERTIFICATE

This is to certify that the project report entitled "Moving Object Detection Using Ultrasonic Radar" submitted by KIRAN REJI in partial fulfilment of the requirements for the award of the degree of Master of Science in Physics is a bonafide record of the work carried out at Electronics Lab, Department of Electronics, WMO arts and Science College, Muttil during the academic year 2021-22 under my supervision and guidance.

Principal  
W.M.O. Arts & Science College  
Muttil P.O., Wayanad



ABDUL HASHEED  
Assistant Professor  
Department of Electronics  
Signature of Guide  
WMO Arts & Science College  
Muttil P.O., Wayanad-673122

## CERTIFICATE

This is to certify that the project report entitled ' GROWTH AND CHARACTERIZATION STUDIES OF SODIUM TARTRATE CRYSTAL' submitted by FATHIMA HUSNA.P , is a bonafide record of research work done by her during the period of her study under my guidance and that the thesis has not previously formed the basis for the award of any degree, diploma, associateship, fellowship or any other similar title to the candidate.

This is also to clarify that the thesis represents the independent work done by the candidate

Place:

Date :



Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad



Research Guide

Dr. Jaya T.P

Asst.Professor and Head

Department of physics

Dayapuram Arts and Sciece College



A Study on thin film thermoelectric; Enhancement of figure of merit  
by improving power factor

A PROJECT RREPORT

Submitted by

JENCY K B

Reg.no: WMAUMPH011

For the award of the

DEGREE OF MASTER OF SCIENCE IN PHYSICS

(University of Calicut)

Under the guidance of

Dr. MUHAMMED SABEER N. A



Department of physics  
WMO Arts and Science College, Muthi  
Wayanad

Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad

2020-2022



DEPARTMENT OF PHYSICS  
WMO ARTS AND SCIENCE COLLEGE  
MUTTHIL  
2020-2022

**CERTIFICATE**

This is to certificate that the project report entitled " A STUDY ON THIN FILM THERMOELECTRICS: ENHANCEMENT OF FIGURE OF MERIT BY IMPROVING POWER FACTOR", submitted to the University of Calicut in partial fulfilment of the requirement for the award of Degree of Master of Science in Physics is a record of original research done by JENCY K B., during the period of her study in the department of physics, WMO Arts and Science College, Muttil, under my supervision and guidance.

Dr. MUHAMMED SABEER N A

(Project guide)

Dr. BLJU K G

(Head of Dept. of Physics)  
HEAD OF THE DEPARTMENT  
Dept. of physics

W.M.O. Arts & Science College  
Muttil P.O., Wayanad, Kerala - 673122

Examiners:

1.....Principal  
W.M.O. Arts & Science College  
Muttil P.O., Wayanad

2.....



**PREPARATION OF PEROVSKITE  $\text{La}_2\text{MgTiO}_6$  AND  
TO STUDY EFFECT OF CALCINATION ON THE  
BANDGAP ENERGY**

Project report submitted to The University of Calicut in partial fulfilment of the  
requirement of the award of the degree of **MASTER OF SCIENCE IN PHYSICS**

Submitted by

**SENHA C**

**REG NO:WMAUMPH017**

Under the guidance of

**Dr . NISSAMUDEEN K.M**

**ASSOCIATED PROFESSOR (MSc, PhD)**

Post Graduate and Research Department of Physics, University of Kannur , Kannur



Principal  
W.M.O. Arts & Science College  
Muttil P.O., Wayanad

DEPARTMENT OF PHYSICS  
WMO ARTS AND SCIENCE COLLEGE, MUTTIL  
WAYANAD

  
**KANNUR UNIVERSITY**

Department of Physics  
PAYYANUR CAMPUS

[www.kannuruniversity.ac.in](http://www.kannuruniversity.ac.in)

Edat Post, Kannur Dist., Kerala, India, PIN: 670 327, Ph: 0497-2806401

---

Dr. K. M. Nissamudeen. M.Sc., M.Phil., Ph.D.  
Assistant Professor

**CERTIFICATE**

This is to certify that the project report entitled as "PREPARATION OF PEROVSKITE  $\text{La}_2\text{MgTiO}_6$  AND TO STUDY THE EFFECT OF CALCINATION ON THE BANDGAP ENERGY" is an authentic record of the work carried out by Ms. Senha C in the Department of Physics, Kannur university. Also, we certify that this project work or any part thereof has not been submitted elsewhere for any other degree, diploma or similar title of any University or institution.



Principal  
W.M.O. Arts & Science College  
Muttil P.O., Wayanad



Dr. Nissamudeen K M

**HEAD**  
Department of Physics

# GROWTH AND CHARACTERIZATION STUDIES OF SODIUM TARTRATE CRYSTAL

Project report submitted to The University of Calicut in partial fulfilment of the requirement of the award of the degree of **MASTER OF SCIENCE IN PHYSICS**

Submitted by

**FATHIMA HUSNA.P**

**REG NO:WMAUMPH007**

Under the guidance of

**Dr Jaya T P**

Assistant Professor and Head

Department of Physics

Dayapuram Arts and Science College for Women



Principal  
W.M.O. Arts & Science College  
Muttil P.O., Wayanad

DEPARTMENT OF PHYSICS

W.M.O. ARTS AND SCIENCE COLLEGE, MUTTIL,

WAYANAD

2022

## CERTIFICATE

This is to certify that the project report entitled ' GROWTH AND CHARACTERIZATION STUDIES OF SODIUM TARTRATE CRYSTAL' submitted by FATHIMA HUSNA.P , is a bonafide record of research work done by her during the period of her study under my guidance and that the thesis has not previously formed the basis for the award of any degree, diploma, associateship, fellowship or any other similar title to the candidate.

This is also to clarify that the thesis represents the independent work done by the candidate



Research Guide

Dr. Jaya T.P

Asst.Professor and Head

Department of physics

Dayapuram Arts and Sciece College

Place:

Date :



Principal

W.M.O. Arts & Science College  
Muttil P.O., Wayanad

**GROWTH AND CHARACTERIZATION OF NICKEL  
TARTRATE CRYSTALS - A COMPARATIVE STUDY**

Project report submitted to The University of Calicut in partial fulfilment of the  
requirement of the award of degree of  
**MASTER OF SCIENCE IN PHYSICS**

Submitted by  
**ANJU PRAKASH**

Under the guidance of

**Dr JAYA T.P**

Assistant Professor, Head of Department of Physics  
Dayapuram Arts and Science College for Women  
Calicut



Principal  
W.M.O. Arts & Science College  
Muttil P.O., Wayanad

**DEPARTMENT OF PHYSICS  
WMO ARTS AND SCIENCE COLLEGE  
MUTTIL, WAYANAD 2020-2022**

## CERTIFICATE

This is to certify that the project titled “GROWTH AND CHARACTERIZATION OF NICKEL TARTATE CRYSTALS - A COMPARATIVE STUDY” submitted to University of Calicut for the Award of Master of Degree in Physics is a bonafide record of the research work carried out by ANJU PRAKASH (Register no: WMAUMPH001) in the department of Physics under my guidance and supervision.

Further I also certify that the thesis represents her independent, original investigations.



Principal  
W.M.O. Arts & Science College  
Muttil P.O., Wayanad

Place:

Date:



Research guide

Dr Jaya TP.

Assistant Professor

Department of Physics

Dayapuram Arts and Science college



**A PROJECT REPORT ON**  
**AN INVESTIGATION INTO THE WORD-LEVEL RELATIVE TIME**  
**CHARACTERISTICS OF MALAYALAM NON-PLOSIVE SOUNDS**

SUBMITTED TO THE UNIVERSITY OF CALICUT IN PARTIAL FULFILMENT OF  
REQUIREMENT FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN  
PHYSICS

Submitted by

**HASNA K**

**REGISTER NO: WMAUMPH010**

**DEPARTMENT OF PHYSICS**

**WMO ARTS AND SCIENCE COLLEGE MUTTIL**



UNDER THE GUIDANCE OF

**SUNIL JOHN**

**Asst Professor**

**St. Mary's College, Sulthan Batheri**

Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad

## CERTIFICATE

This is certify that the project work entitled “AN INVESTIGATION INTO THE WORD-LEVEL RELATIVE TIME CHARACTERISTICS OF MALAYALAM NON-PLOSIVE SOUNDS “ by HASNA K (WMAUMPH010) is the work done under the guidance of SUNIL JOHN, Asst professor of St. Mary’s college, during the period 2021-2022 in partial fulfillment of the requirement for the award of Degree of Master in Physics.

*Examiner:*

Sunil John 



*Head of the department:*



Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad

**HEAD OF THE DEPARTMENT**  
Dept. of Physics  
W.M.O. Arts & Science College  
Muttill. P.O., Wayanad, Kerala - 673 122

**A PROJECT REPORT ON  
DURATION ANALYSIS OF PLOSIVE SOUNDS IN THE  
CONTEXT OF THEIR POSITION IN MALAYALAM  
WORDS**

**SUBMITTED TO THE UNIVERSITY OF CALICUT IN  
PARTIAL  
FULFILMENT OF REQUIREMENT FOR THE AWARD OF  
THE  
DEGREE OF  
MASTER OF SCIENCE IN PHYSICS**

Submitted by

FASALUL FARISA KP

Register No: WMAUMPH006

DEPARTMENT OF PHYSICS

WMO ARTS AND SCIENCE COLLEGE, MUTTIL.



Under The Guidance Of

**SUNIL JOHN**

Asst Professor, St. Mary's College, Sulthan Batheri

Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad

## CERTIFICATE

This is to certify that the project work entitled "**DURATION ANALYSIS OF PLOSIVE SOUNDS IN THE CONTEXT OF THEIR POSITION IN MALAYALAM WORDS**" by Ms. **FASALUL FARISA K P(WMAUMPH006)** is the work done under my supervision, during the period 2021-2022, in partial fulfilment of the requirements for the award of the degree of Master of Science in Physics.



Principal  
W.M.O. Arts & Science College  
Muttil P.O., Wayanad

Sunil John



Asst. Professor.

St. Mary's College,

S. Bathery.

**DYNAMICS OF DARK SOLITON IN BOSE EINSTEIN CONDENSATES**  
A DESSERTATION SUBMITTED ON THE  
PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF DEGREE  
OF  
MASTER OF SCIENCE IN PHYSICS  
UNDER UNIVERSITY OF CALICUT

Submitted by  
FARSINA SHERIN P M  
WMAUMPH005

Under the guidance of  
**Dr AYSHA MUHSINA K**  
Post Graduate and Research Department of Physics  
Government Arts & Science College, Calicut



Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad

DEPARTMENT OF PHYSICS  
WMO ARTS AND SCIENCE COLLEGE  
MUTTIL, WAYANAD  
2020-2022

**Dr AYSHA MUHSINA K**

Asst. Professor and Research Guide

Department of Physics

Government Arts & Science College, Calicut.

**CERTIFICATE**

This is to certify that the project report entitled "**DYNAMIC OF DARK SOLITON IN BOSE EINSTEIN CONDENSATES**", submitted by **FARSINA SHERIN** is a bona fide record of research work done by her during the period of his study under my guidance and that the thesis has not previously formed the basis for the award of any degree, diploma, associateship, fellowship or any other similar title to the candidate.

This is also to clarify that the thesis represents the independent work done by the candidate.

**Principal**

**W.M.O. Arts & Science College  
Muttill P.O., Wayanad**

**Place: Calicut**

**Research Guide**

**Dr. AYSHA MUHSINA. K.**  
Assistant Professor  
PG Research Department of Physics  
Govt. Arts & Science College,  
Kozhikode, Kerala  
PIN - 760203

**Date: 17/8/2022**

**CRYSTALLOGRAPHIC FEATURES OF SPUTTERED TIN  
NITRIDE THIN FILMS**

*Project submitted to the University of Calicut for the partial fulfillment of the  
requirements for the award of the degree of*

*Master of Science in Physics*

*by*  
**NAHLA K**

*Under the guidance of*  
**Dr. MUHAMMED SABEER N.A.**



Principal  
W.M.O. Arts & Science College  
Muttil P.O., Wayanad

**DEPARTMENT OF PHYSICS  
WMO ARTS & SCIENCE COLLEGE  
MUTTIL, WAYANAD**

**August-2022**



DEPARTMENT OF PHYSICS  
WMO ARTS AND SCIENCE COLLEGE

MUTTIL

2020-2022

CERTIFICATE

This is to certify that the project report entitled CRYSTALLOGRAPHIC FEATURES OF SPUTTERED TIN NITRIDE THIN FILMS, submitted to The University of Calicut in partial fulfillment of the requirement for the award of Degree of Master of Science in Physics is a record of original research done by NAHILA K, during the period of her study in the Department of Physics, WMO Arts and Science College, Muttil, under my supervision and guidance.

Dr. MUHAMMED SABEER.N.A

Project Guide

Examiners:

1.....

2.....

Principal  
W.M.O. Arts & Science College  
Muttil P.O., Wayanad

Dr. BIJU K G

Head of the Department

HEAD OF THE DEPARTMENT

Dept. of Physics

W.M.O. Arts & Science College  
Muttil P.O., Wayanad, Kerala - 673 122



**SYNTHESIS AND CHARACTERIZATION OF STRONTIUM  
CERATE PEROVSKITES**

Project report submitted to The University of Calicut in partial fulfilment of the  
requirement of the award of degree of **MASTER OF SCIENCE IN PHYSICS**

Submitted by

**SWETHA P S**

**REG NO:WMAUMPH018**

Under the guidance of

**Dr.NISSAMUDEEN KM**

Post Graduate and Research Department of Physics, Kannur University



Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad

**DEPARTMENT OF PHYSICS**

**W.M.O. ARTS AND SCIENCE COLLEGE MUTTIL, WAYANAD**

**2020-2022**

  
**KANNUR UNIVERSITY**

Department of Physics  
PAYYANUR CAMPUS

[www.kannuruniversity.ac.in](http://www.kannuruniversity.ac.in)

Edat Post, Kannur Dist., Kerala, India, PIN: 670 327, Ph: 0497-2806401

---

Dr. K. M. Nissamudeen. M.Sc., M.Phil., Ph.D.  
Assistant Professor

**CERTIFICATE**

This is to certify that the project report entitled as "SYNTHESIS AND CHARACTERIZATION OF STRONTIUM CERATE PEROVSKITES" is an authentic record of the work carried out by Ms. Swetha P S in the Department of Physics, Kannur university. Also, we certify that this project work or any part thereof has not been submitted elsewhere for any other degree, diploma or similar title of any University or institution.



Principal  
W.M.O. Arts & Science College  
Muttil P.O., Wayanad



Dr. Nissamudeen K M

**HEAD**  
Department of Physics  
KANNUR UNIVERSITY  
Payyanur Campus, Payyanur



# MONITORING TEMPERATURE AND HUMIDITY USING ARDUINO BASED SENSOR

A PROJECT REPORT

Submitted by

**MUHAMMED JAWAHAR CA**

**REG NO:WMAUMPH014**

To the University of Calicut

In partial fulfilment of the requirements for the award of the

Degree of **MASTER OF SCIENCE IN PHYSICS**

**(UNIVERSITY OF CALICUT)**

Under the guidance of

**Mr. HASHIM N K**



Principal  
W.M.O. Arts & Science College  
Muttil P.O., Wayanad

**DEPARTMENT OF PHYSICS**

**WMO ARTS AND SCIENCE COLLEGE**

**MUTTIL, WAYANAD**

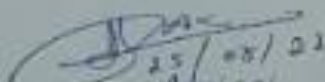
**2020-2022**

DEPT. OF PHYSICS  
WMO ARTS SCIENCE COLLEGE  
MUTTIL  
2020 – 2022



CERTIFICATE

This is to certify that the report entitled **MONITORING TEMPERATURE AND HUMIDITY USING ARDUINO BASED SENSOR** submitted by **Muhammed Jawahar C A**, to the Calicut University in partial fulfillment of the MSc. Master Degree in Physics is a bonafide record of the project work carried out by him/her under my/our guidance and supervision. This report in any form has not been submitted to any other University or Institute for any purpose


  
25/08/22  
Project Coordinator

Mr. HASHIM N K

Assistant Professor

Dept. of Physics

WMO Arts and Science College, Muttil

  
26/8/22  
Head of the Department  
Dr. BIJU K OF THE DEPARTMENT  
Dept. of Physics  
Associate Professor  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad, Kerala - 673 122

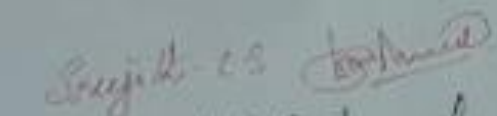
Dept. of Physics

WMO Arts and Science  
College, Muttil





Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad

  
Dr. Pramod K S

**SYNTHESIS AND CHARACTERIZATION OF  $\text{Fe}_3\text{O}_4$   
NANOPARTICLES DOPED WITH  $\text{Co}^{2+}$  AND  $\text{Mg}^{2+}$   
-A COMPARATIVE STUDY**

Project report submitted to The University of Calicut in partial fulfillment of the requirement  
of the award of degree of **MASTER OF SCIENCE IN PHYSICS**

Submitted by

**HARIPRIYA B  
WMAUMPH009**

Under the guidance of

**Dr. PRAMOD K.S**

Post Graduate and Research Department of Physics  
St. Mary's College, Sulthan Bathery



Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad



DEPARTMENT OF PHYSICS  
W.M.O. ARTS AND SCIENCE COLLEGE  
MUTTIL, WAYANAD  
2020-2021



DEPARTMENT OF PHYSICS  
WMO ARTS AND SCIENCE COLLEGE

MUTTIL

2020-2022

**CERTIFICATE**

This is to certify that the project report entitled "SYNTHESIS AND CHARACTERIZATION OF  $\text{Fe}_3\text{O}_4$  NANOPARTICLES DOPED WITH  $\text{Co}^{2+}$  AND  $\text{Mg}^{2+}$  - A COMPARATIVE STUDY", submitted to The University of Calicut in partial fulfilment of the requirement for the award of Degree of Master of Science in Physics is a record of original research done by HARIPRIYA B. during the period of her study in the Department of Physics, WMO Arts and Science College, Muttill, under my supervision and guidance.

  
Dr. PRAMOD K.S.

(Supervising Lecturer)



Principal  
W.M.O. Arts & Science College  
Muttill P.O., Wayanad

  
(Head of Dept. of Physics)



Examiners: