

## DECLARATION

We hereby declare that the work reported in this project entitled "Influence of  $\text{Pr}_2\text{O}_3$  on  $\text{ZnO-MoO}_3\text{-B}_2\text{O}_3$  Glasses" is entirely original and were carried out by us independently in the Department of Physics, Krishna University, Rudravaram, under the supervision of Dr. P. Sobhanachalam. We further declare that this project has not been submitted for the award of any Degree or Diploma of any University or Institution.

<b>A. HARSHA PHANI VARDHINI</b>	<b>(Regd. No. Y21PHY101001)</b>
<b>B.CHATURYA</b>	<b>(Regd. No. Y21PHY101002)</b>
<b>B. SAI VISHNAVI</b>	<b>(Regd. No. Y21PHY101003)</b>
<b>B.NAGA DURGA RAO</b>	<b>(Regd. No. Y21PHY101004)</b>
<b>CH.DHARANI</b>	<b>(Regd.No.Y21PHY101005)</b>
<b>CH.SUDHER BABU</b>	<b>(Regd.No.Y21PHY101006)</b>
<b>D. SRILAKSHMI</b>	<b>(Regd.No.Y21PHY101007)</b>

Department of Physics,  
Krishna University,  
Rudravaram -521 004  
A.P, INDIA.

**KRISHNA UNIVERSITY**  
**Rudravaram- 521 004**

**Dr. P. Sobhanachalam**

M.Sc., B.Ed., Ph.D., CSIR-NET., AP-SET.

Department of Physics  
Krishna University  
Rudravaram-521 004  
A.P., INDIA



Krishna Dist. A.P., India  
E-mail: sobhan.pamarthi@gmail.com  
Mobile: 6303747889

**CERTIFICATE**

*This to certify that the present project entitled*

**“Influence of  $Pr_2O_3$  on  $ZnO-MoO_3- B_2O_3$  Glasses ”** *submitted*  
*by A.Harsha Phani Vardhini, B.Chaturya, B.Vishanavi , B.Naga*  
*durgarao, CH.Dharani, CH.Sudheer Babu and D.Srilakshmi*  
*towards the partial fulfillment for the award of degree of Master of*  
*Science in Physics to the Krishna University, Rudravaram is a*  
*bonafide record of project work actually carried out by them under*  
*my guidance in the Physics Department of this Institute. The results*  
*embodied in this project have not been submitted for any other*  
*Degree or Diploma to any other University or Institution.*

  
**(Dr .P .Sobhanachalam)**

**Project Supervisor**

September- 2023

## DECLARATION

*We hereby declare that the work reported in this project entitled "IMAGE ANALYSIS AND THERMODYNAMICAL PARAMETERS OF THERMOTROPIC LIQUID CRYSTALS" is entirely original and were carried out by us independently in the Department of Physics, Krishna University, Rudravaram, under the supervision of Dr. Sk. Salma Begum. We further declare that this project has not been submitted for the award of any Degree or Diploma of any University or Institution.*

G MADHAVI

K GEYASRI

K SAI RAMYA

K PRAGNYA

K ANUSHA

K CHIRANJEEVI

M GANESH BABU

(Regd. No. Y21PHY101008)

(Regd. No. Y21PHY101009)

(Regd. No. Y21PHY101010)

(Regd. No. Y21PHY101011)

(Regd. No. Y21PHY101012)

(Regd. No. Y21PHY101013)

(Regd. No. Y21PHY101015)

Department of Physics,  
Krishna University,  
Rudravaram -521 004  
A.P, INDIA.





## KRISHNA UNIVERSITY

Rudravaram- 521 004

**Dr. Sk. Salma Begum**  
**M.Sc., Ph.D., AP-SET.**  
**Department of Physics**  
**Krishna University**  
**Rudravaram-521 004**  
**A.P., INDIA**



**Krishna Dist. A.P., India**  
**E-mail: dr.ssbmj@g-mail.com**  
**-Mobile:8019718981**

### CERTIFICATE

This is to certify that the present project entitled **“Image Analysis and Thermodynamical Parameters of Thermotropic Liquid Crystals”** towards the partial fulfilment for the award of degree of Master of Science in Physics to the Krishna University, Rudravaram is a bonafide record of project work actually carried out by them under my guidance in the Physics Department of this Institute. The results embodied in this project have not been submitted for any other Degree or Diploma to any other University or Institution.

**(Dr.Sk. Salma Begum)**

**Project Supervisor**

## DECLARATION

*We hereby declare that the work reported in this thesis entitled "Influence of Ho<sup>3+</sup> ions in PbO-B<sub>2</sub>O<sub>3</sub>-SeO<sub>2</sub> glass system" is carried out by us jointly in the Department of Physics, Krishna University, Machilipatnam, under the guidance of Dr. A. Siva Sessa Reddy. We further, declare that this thesis has not been submitted for the award of any Degree or Diploma of any other University or Institution.*

M. Jyothsna

**M. JYOTHSNA**

(Regd. No. Y21PHY101016)

M. Madhuri

**M. MADHURI**

(Regd. No. Y21PHY101018)

**R. NAVANEETHA**

(Regd. No. Y21PHY101020)

R. Navaneetha

**S. NAGA SUNITHA**

(Regd. No. Y21PHY101023)

S. N. Sunitha

M. Lilly sharmila

**M. LILLY SHARMILA**

(Regd. No. Y21PHY101017)

N. Venkata Ramana

**N. VENKATA RAMANA**

(Regd. No. Y21PHY101019)

**S. KARUN KUMAR**

(Regd. No. Y21PHY101022)

S. Karun

**DEPARTMENT OF PHYSICS  
KRISHNA UNIVERSITY  
MACHILIPATNAM -521004  
ANDHRA PRADESH  
INDIA**





**KRISHNA UNIVERSITY**

**కృష్ణా విశ్వవిద్యాలయం**

Since 2008

ISO 9001-2015

**Dr. A. SIVA SESA REDDY**

M.Sc., Ph.D.

Mobile: +91-9494085195

Assistant Professor (C)

Department of Physics

Email: shivaseshareddy@gmail.com


Krishna University, Machilipatnam - 521004

Andhra Pradesh, INDIA

Dt: 12.09.2023

## **CERTIFICATE**

This is to certify that the present thesis entitled "*Influence of Ho<sup>3+</sup> ions in PbO-B<sub>2</sub>O<sub>3</sub>-SeO<sub>2</sub> glass system*" submitted by **Ms. M. JYOTHSNA** (Regd. No.Y21PHY101016), **Ms. M. LILLY SHARMILA** (Regd. No. Y21PHY101017), **Ms. M. MADHURI** (Regd. No. Y21PHY101018), **Ms. N. VENKATA RAMANA** (Regd. No. Y21PHY101019), **Ms. R. NAVANEETHA** (Regd. No. Y21PHY101020), **Mr. S. KARUN KUMAR** (Regd. No. Y21PHY101022) and **Ms. S. NAGA SUNITHA** (Regd. No. Y21PHY101023) for the partial fulfillment of Master of Science in Physics to Krishna University, Machilipatnam, is a bonafide record of research work actually carried out by them under my supervision in the Physics Department of this Institution.

  
(Dr. A. Siva Sesa Reddy)  
Project Supervisor



## DECLARATION

We hereby declare that the work reported in this project entitled "*Effect of Erbium ions on optical properties of PbO-PbF<sub>2</sub>-Bi<sub>2</sub>O<sub>3</sub>-B<sub>2</sub>O<sub>3</sub>-Y<sub>2</sub>O<sub>3</sub> glasses*" is entirely original and were carried out by us independently in the Department of Physics, Krishna University, Rudravaram, under the supervision of Dr.A.Chitti Babu. We further declare that this project has not been submitted for the award of any Degree or Diploma of any University or Institution.

**S. SIVA GAYATRI** (Regd. No. Y21PHY101024)

**T. POOJITHA** (Regd. No. Y21PHY101025)

**T. HEMANI** (Regd. No. Y21PHY101026)

**V. V.D.MANOJ** (Regd. No. Y21PHY101027)

**Y. V.V.SATYANARAYANA** (Regd. No. Y21PHY101028)

Department of Physics,  
Krishna University,  
Rudravaram -521 004  
A.P, INDIA.

# KRISHNA UNIVERSITY

Rudravaram- 521 004

*Dr. A.Chitti Babu*

M.Sc., M.phil., Ph.D.



Krishna Dist. A.P., India

E-mail: chittiphy@gmail.com

Mobile:9963501456

Department of Physics

Krishna University

Rudravaram-521 004

A.P., INDIA

## CERTIFICATE

*This to certify that the present project entitled "Effect of Erbium ions on optical properties of  $PbO-PbF_2-Bi_2O_3-B_2O_3-Y_2O_3$  glasses" submitted by S.SIVAGAYATRI, T.POOJITHA, T.HEMANI, V.V.D.MANOJ and Y.V.V.SATYANARAYANA towards the partial fulfillment for the award of degree of Master of Science in Physics to the Krishna University, Rudravaram is a bonafide record of project work actually carried out by them under my guidance in the Physics Department of this Institute. The results embodied in this project have not been submitted for any other Degree or Diploma to any other University or Institution.*

(Dr. A. Chitti Babu)

Project Supervisor