

**GROWTH AND CHARACTERIZATION OF PbS THIN FILMS BY
USING CHEMICAL BATH DEPOSITION METHOD**

A PROJECT REPORT SUBMITTED TO
**SAVITRIBAI PHULE PUNE UNIVERSITY,
PUNE**



**FOR THE DEGREE OF
BACHELOR OF SCIENCE
IN
PHYSICS**

UNDER THE FACULTY OF SCIENCE

BY

MISS. ATTAR SUHANA MEHBUB

Department of Physics, Arts, Commerce and Science College, Sonai

UNDER THE GUIDANCE OF

Prof. SADEKAR H. K.

M.Sc. M.Phil. Ph.D.

DEPARTMENT OF PHYSICS,

ARTS, COMMERCE AND SCIENCE COLLEGE, SONAI

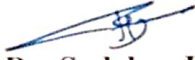
MARCH-2023

Seat No.

SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE

BONAFIDE CERTIFICATE

This is to certify that the work incorporated in the project report entitled "GROWTH AND CHARACTERIZATION OF PbS THIN FILMS BY USING CHEMICAL BATH DEPOSITION METHOD" submitted to Savitribai Phule Pune University, Pune is benefited work of Miss. Attar Suhana Mehbub of B.Sc. (Physics) during the academic year 2022-23, who carried out the project work under my supervision.



Dr. Sadekar H. K.

Guide

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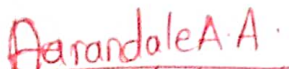
Dr. Sadekar H. K.

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09/05/2023
Internal Examiner


09/05/2023
External Examiner

ACKNOWLEDGEMENT

I wish to thank the Principal **Dr. Shankar Laware** of my college for permitting me to use all the facilities available in the institution for my project work. I would also like thank the Head of the Physics Department **Dr. Sadekar H. K.**, the teaching faculty and all the Non-teaching staff of my college for their support in completing the work successfully.

I am grateful to my Guide **Dr. Sadekar H. K.** for his encouragement, guidance and supervision of my project work during the year. I must acknowledge the financial support given to this project by my parent without which it would have been difficult to complete the work in time.

My classmates have been of great help to me the project work. My ideas were shaped and refined progressively through my discussions with them from time to time. I cannot miss to thank them all. There were some persons like **Prof. Shinde R. S.**, **Prof. Darandale A. A.** and **Prof. Darandale M.P.** who were not directly but indirectly involved in my preparatory/practical work. I appreciate their contribution and thank them too.

Place: Sonai

Date: 09/05/2023

Attar. S. M.
Signature of Research Student

Miss. Attar Suhana Mehbub

(B.Sc. Physics)

LIBRARY MANAGEMENT SYSTEM

A PROJECT REPORT SUBMITTED TO

SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE



FOR THE DEGREE OF
BACHELOR OF SCIENCE
IN
PHYSICS

UNDER THE FACULTY OF SCIENCE

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BONAFIDE CERTIFICATE

This is to certify that the work incorporated in the project report entitled “**LIBRARY MANAGEMENT SYSTEM**” submitted to Savitribai Phule Pune University, Pune, is benefited work of **Ms. RUTUJA BHASKAR DARANDALE** of T.Y.B.Sc. (Physics) during the academic year 2022-23, who carried out the project work under my supervision

Darandale M.P.
09/05/2023

Prof. Darandale M.P

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Darandale A.A.
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External Examiner

Date:- *09/05/2023*

ACKNOWLEDGEMENT

I wish to thank the Principal **Dr. Laxman Laware** of my college for permitting me to use all the facilities available in the institution for my project work. I would also like to thank the Head of the Physics Department **Dr. Sadekar H.K.**, the teaching faculty and all the non-teaching staff of my college for their support in completing the work successfully. I am grateful to my Guide **Prof. Darandale M.P.** for her encouragement, guidance and supervision of my project work during the year. I must acknowledge the financial support given to this project by my parent without which it would have been difficult to complete the work in time. My classmates have been of great help to me in the project work. My ideas were shaped and refined progressively through my discussions with them from time to time. I cannot miss to thank them all. There were some persons like **Mr. Shinde Sir ; Miss. Darandale A.A .** who were directly but indirectly involved in my preparatory/practical work. I appreciate their contribution and thank them too.

Place: Sonai


Signature of Research Student
Ms. Rutuja Bhaskar Darandale
(T.Y.B.Sc. Physics)

**GROWTH AND CHARACTERIZATION OF CdS THIN
FILMS BY CHEMICAL BATH DEPOSITION
A PROJECT REPORT SUBMITTED TO
SAVITRIBAI PHULE PUNE UNIVERSITY,
PUNE**



**FOR THE DEGREE OF
BACHELOR OF SCIENCE
IN
PHYSICS**

UNDER THE FACULTY OF SCIENCE

BY

Miss. Darade Shubhangi Gorakshnath

Department of Physics, Arts, Commerce and Science College, Sonai

UNDER THE GUIDANCE OF

Dr. SADEKAR H.K.

M.Sc., M.Phil, Ph.D

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MAY-2023

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This is to certify that the work incorporated in the project report entitled “**Growth and Characterization of CdS Thin Films by chemical bath deposition**” submitted to Savitribai Phule Pune University, Pune, is benefited work of **Miss. Darade Shubhangi Gorakshnath** of B.Sc. (Physics) during the academic year 2022-23, who carried out the project work under my



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External Examiner

ACKNOWLEDGEMENT

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Place: Sonai


Signature of Research Student

Date:

*Miss Darade Shubhangi
Gorakshnath*

CLAP SWITCH
A PROJECT REPORT SUBMITTED TO
SAVITRIBAI PHULE PUNE UNIVERSITY,
PUNE



FOR THE DEGREE OF
BACHLOR OF SCIENCE
IN
PHYSICS

UNDER THE FACULTY OF SCIENCE

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UNDER THE GUIDANCE OF

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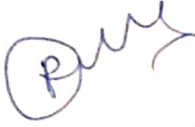
MARCH-2023

Seat No.

SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE

BONAFIDE CERTIFICATE

This is to certify that the work incorporated in the project report entitled SIMPLE CLAP SWITCH submitted to Savitribai Phule Pune University, Pune is benefited work of Miss.Dhadge Komal Navnath of B.Sc. (Physics) during the academic year 2022-23, who carried out the project work under my supervision.



Prof. Shinde R. S.

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Dr. Sadekar H.K.

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Internal Examiner

External Examiner

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Place: Sonai

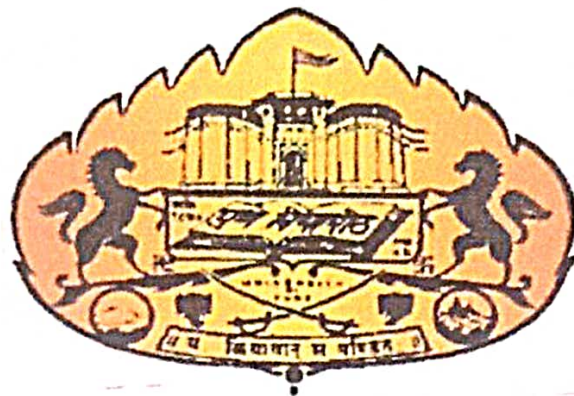
Signature of Research Student

Date: /05/2022

Miss. Dhadge Komal Navnath

(B.Sc. Physics)

ELECTRONICS HARMONIUM
A PROJECT REPORT SUBMITTED TO
SAVITRIBAI PHULE PUNE UNIVERSITY,
PUNE



FOR THE DEGREE OF
BACHELOR OF SCIENCE
IN
PHYSICS

UNDER THE FACULTY OF SCIENCE

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MARCH-2023

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SAVITRIBAI PHULE PUNE UNIVERSITY

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This is to certify that the work incorporated in the project report entitled “**Electronic Harmonium**” submitted to Savitribai Phule Pune University, Pune, is benefited work of **Miss. Gawali Vidya Jayram** of T.Y.B.Sc. (Physics) during the academic year 2022-23, who carried out the project work under my supervision

Darandale A.A.

Miss. Darandale A.A.

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09/05/2023
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Date

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H.K. Sadekar
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Place: Sonai


Signature of Research Student

Date:

Miss.Gawali Vidya Jayram
(T.Y.B.Sc. Physics)