



ANNA UNIVERSITY, CHENNAI - 600 025
CENTRE FOR RESEARCH




CERTIFICATE

1. This is to certify that no corrections/suggestions were pointed out by the Indian/Foreign Examiner(s) in the Thesis titled " FIRST PRINCIPLES STUDIES OF ELECTRONIC BANDSTRUCTURE AND ASSOCIATED PROPERTIES OF METALLIC CuS_2 , INTER-METALLIC Ti_3M (M=Au, Pt, Ir), AND SEMI-METALLIC $\text{Sb}_2\text{Te}_x\text{Se}_{3-x}$ (X=3, 2, 1, 0) COMPOUNDS " submitted by Mr./Ms. MAHALAKSHMI.K

OR

2. This is to certify that all corrections and suggestions pointed out by the Indian /Foreign Examiner(s) are incorporated in the Thesis titled " FIRST PRINCIPLES STUDIES OF ELECTRONIC BANDSTRUCTURE AND ASSOCIATED PROPERTIES OF METALLIC CuS_2 , INTER-METALLIC Ti_3M (M=Au, Pt, Ir), AND SEMI-METALLIC $\text{Sb}_2\text{Te}_x\text{Se}_{3-x}$ (X=3, 2, 1, 0) COMPOUNDS " submitted by Mr./Ms. MAHALAKSHMI.K

Signature of the Joint Supervisor
(if applicable)


18/4/2016
Signature of the Supervisor

Dr S SANKAR, M Sc, Ph D
Professor, Department of Physics
Madras Institute of Technology Campus
Anna University, Chennai 600 044

Place : **Chennai-44**

Date : **18-04-2016**





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Proceedings of the Ph.D. Viva-Voce Examination of Mr./Ms. MAHALAKSHMI.K held at 10:30 AM on 18.04.2016 in Dept. of Physics, Division of Applied Sciences & M.I.T. Campus, Anna University, Chennai-44

The Ph.D. Viva-Voce Examination of Mr./Ms. MAHALAKSHMI.K (Reg. No. 2825719770) on his/her Ph.D. Thesis Entitled " FIRST PRINCIPLES STUDIES OF ELECTRONIC BANDSTRUCTURE AND ASSOCIATED PROPERTIES OF METALLIC CuS_2 , INTER-METALLIC Ti_3M (M=Au, Pt, Ir), AND SEMI-METALLIC $\text{Sb}_2\text{Te}_x\text{Se}_{3-x}$ (X=3, 2, 1, 0) COMPOUNDS " was conducted on 18.04.2016 at 10:30 AM in the Dept. of Physics, Division of Applied Sciences & M.I.T. Campus, Anna University, Chennai-44.

The following Members of the Oral Examination Board were present:

- | | |
|---|-----------------------|
| 1. Dr. G Vaitheeswaran, Assistant Professor, Advanced Centre of Research in High Energy Materials, University of Hyderabad, Hyderabad 500 046 | Indian Examiner |
| 2. Dr. V Sankaranarayanan, Professor, Department of Physics, Office Location HSB 113, Indian Institute of Madras Chennai 36 | Subject Expert |
| 3. Dr. Sankar.S, Professor, Madras Institute of Technology, Chennai | Supervisor & Convenor |

The research scholar, Mr./Ms. MAHALAKSHMI.K presented the salient features of his/her Ph.D. work. This was followed by questions from the board members. The questions raised by the Foreign and Indian Examiners were also put to the scholar. The scholar answered the questions to the full satisfaction of the board members.

The corrections suggested by the Indian/Foreign examiner have been carried out and incorporated in the Thesis before the Oral examination.

Based on the scholars research work, his/her presentation and also the clarifications and answers by the scholar to the questions, the board recommends that Mr./Ms. MAHALAKSHMI.K be awarded Ph.D. degree in the **Faculty of Science and Humanities**.

- | | | |
|---|---|---------------------------|
| 1. <i>G. Vaitheeswaran</i>
18/4/16 | Dr. G. VAITHEESWARAN
University of Hyderabad | Indian Examiner |
| 2. <i>Sankar Sankaranarayanan</i>
18/04/2016 | { Prof. V. SANKARANARAYANAN
IIT Madras } | Subject Expert |
| 3. <i>Sankar</i>
18/4/2016 | Dr. S. SANKAR
Professor of Physics
MIT Campus, Anna University
Chennai-44. | Supervisor & Convenor |
| 4. | _____ | Joint Supervisor (If any) |



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CHENNAI 600 025

CERTIFICATE

The research work embodied in the present Thesis entitled **“FIRST PRINCIPLES STUDIES OF ELECTRONIC BANDSTRUCTURE AND ASSOCIATED PROPERTIES OF METALLIC CuS_2 , INTER-METALLIC Ti_3M ($\text{M}=\text{Au},\text{Pt},\text{Ir}$), AND SEMI-METALLIC $\text{Sb}_2\text{Te}_x\text{Se}_{3-x}$ ($x=3,2,1,0$) COMPOUNDS”** has been carried out in the Department of Physics, Anna University, Chennai. The work reported herein is original and does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion or to any other scholar.

I understand the University's policy on plagiarism and declare that the thesis and publications are my own work, except where specifically acknowledged and has not been copied from other sources or been previously submitted for award or assessment.

MAHALAKSHMI K
RESEARCH SCHOLAR

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