

CURRICULUM VITAE

Dr M.PRABHU M.Sc.,Ph.D.,PDF

Assistant Professor

National Engineering College, Kovilpatti,

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Career Objective

To obtain a growth oriented and highly challenging position in an esteemed academic institution where I will be able to put forth my knowledge and experience effectively and efficiently for the development and better understanding of science.

Permanent Address

S/o. Mr. M. Murugan

Door No: 3/112, Palkalai Nagar Post, Vadapalanji,

Madurai- 625 021, Tamil Nadu, India.

Academic Qualifications

➤ Doctor of Philosophy (**Ph.D.**) in Physics - Awarded on 05.01.2018
School of Physics, Madurai Kamaraj University, Madurai, Tamil Nadu, India.

Thesis Title: "Experimental Investigation on Few Nanomaterials for Dye-Sensitized Solar Cells"

(This Degree Certificate is awarded in compliance of the UGC regulations 2009)

➤ Master of Science (**M.Sc.**) in Physics
First Class, School of Physics, Madurai Kamaraj University, Tamil Nadu.

Project Title: "Synthesis and Characterization of Nano ZnO for Two Morphologies"

➤ Bachelor of Science (**B.Sc.**) in Physics
First Class, Department of Physics, Vivekananda College, Madurai Kamaraj University, Madurai, Tamil Nadu.

➤ **SSLC and HSC**
First Class, M. N. U. Jayaraj Nadar Higher Secondary School, Madurai, Tamil Nadu.

Awards/Fellowships/Honours

- ❖ Awarded Senior Research Fellow (SRF) by *CSIR Emeritus Scientist Scheme*, CSIR, New Delhi (November 2012 - June 2016).
- ❖ Awarded **Gold medal** for the **Best M.Sc. Project** entitled “*Synthesis and characterization of nano ZnO for two morphologies*” in the **54th Department of Atomic Energy (DAE) Solid State Physics Symposium, Government of India**, held at The Maharaja Sayajirao University of Baroda, Vadodara from 14th to 18th December, 2009.

Invited and Special Lectures Presented

- Tamil Nadu State Government Sponsored Two Weeks Online Faculty Development Program, Topic: **Nanotechnology in Solar Cells** - Alagappa Chettiar Government College of Eng. Technol., Karaikudi, Tamil Nadu, 21 June (2022)
- Workshop on Household Appliances (Interdepartment), Topic: **Nanoscience in Solar Energy** -Vivekananda College, Tiruvedakam West, Madurai, Tamil Nadu, 19 March (2022)
- Five Day Online FDP on Multifunctional Materials and Their Applications, Topic: “**Nanomaterials for Solar Energy Applications**” -Mepco Schlenk Engineering College, Sivakasi, Virudhunagar, 21 September (2021)
- Topic: “**Science and Technology of Nano Materials**” -Annai Fathima College of Arst & Science, Thirumangalam, Madurai, Tamil Nadu, 22 January (2021)
- Topic: “**Fascinating World of Nano Science & Nano Technology**” -Sri Adi Chunchanagiri Women’s College, Cumbum, Tamil Nadu, 19 August (2019)

Teaching & Research Experience

- 19.12.2022** - **Assistant Professor**,
Ongoing National Engineering College, Kovilpatti, Tamil Nadu, India.
- 19.02.2021** - **Post-Doctoral Researcher**
- 18.02.2022** SSN College of Engineering, Kalavakkam, Tamil Nadu, India.
- 14.08.2019** - **Guest Faculty**
- 31.12.2020** School of Physics, Madurai Kamaraj University,
Palkalai Nagar, Madurai, Tamil Nadu, India.
- 24.06.2019** - **Assistant Professor**
- 13.08.2019** Department of Physics, Annai Fathima College,
Thirumangalam, Madurai, Tamil Nadu, India
- 07.07.2017** - **Assistant Professor**
- 23.06.2019** Department of Physics, PM Thevar College,
Madurai, Tamil Nadu, India.

Teaching Profession

M.Sc.-Physics (CBCS), School of Physics, Madurai Kamaraj University.

- Course Code: PHY1924C: Practical -II (4 credits)
- Course Code: PHY1934C: Practical -III (4 credits)
- Course Code: PHY1933C: Nuclear & Particle Physics (4 credits)
- Course Code: PHY1945E: Nano Physics (3 credits)

Research Work Experience

- Nano & micro materials are synthesized and their structure, optical and magnetic properties are characterized
- Fabrication of nano & micro materials for use in gas sensing & dye-sensitized solar cells applications
- We have an experience in the construction of low-cost gas sensor systems in our laboratory

Specialization

- Materials Science
- Materials Preparation, Characterization and Applications
- Nanoscience and Nanotechnology
- Gas Sensor and Dye-Sensitized Solar Cells

List of Instruments Handled

- DC Reactive Magnetron Sputtering
- Electron Beam Evaporation
- Spin Coating

Instrumentation & Measurement Techniques

Sl. No.	Instrument	Knowledge
1	UV-Vis Absorption Spectroscopy (Shimadzu-2450 and Agilent 8453 diode array spectrophotometer)	Operation, Analysis, & Maintenance
2	Diffuse Reflectance Spectroscopy (DRS)	
3	Photoemission Spectroscopy (Shimadzu RF-5000)	Analysis
4	Fourier Transform Infrared Spectroscopy (FT-IR)	
5	Micro Raman Spectroscopy	
6	Vibrating Sample magnetometer (VSM)	
7	X- Ray Diffraction Spectroscopy (XRD)	
8	Atomic Force Microscopy (AFM)	

9	Scanning Electron Microscopy (SEM) with Energy Dispersive X-Ray Spectroscopy (EDS)	
10	High-Resolution Transmission Electron Microscope (HRTEM) with Selected Area Electron Diffraction (SAED) pattern	
11	Newport Solar Simulator and Autolab (PGSTAT302N) Electrochemical Workstation	
12	X-ray Photoelectron Spectroscopy (XPS)	
13	I-V Instruments Measurement	Operation & Analysis

Computer Skills

- Operating Systems : Windows
- Utility Package : MS Office 2019
- Image Processing using origin, GSAS, and ChemOffice
- Data Analysis using PCPDFWIN
- Type-writing : Tamil and English

Research Publications in International Journals

1. Effect of zinc and indium doping in chalcogenide (CdS/Te) nanocomposites towards dye-sensitized solar cell applications

M Prabhu, M Marikkannan, M Senthil Pandian, P Ramasamy, K Ramachandran
Journal of Physics and Chemistry of Solids, **168**, 110802 (2022)

2. Synthesis and structural, optical and photovoltaic characteristics of pure and Ag doped TiO₂ nanoparticles for dye sensitized solar cell application

P. Suriya, M. Prabhu, E. Satheesh kumar and K. Jagannathan
Materials Today: Proceedings, **65**, 100 (2022)

3. Effect of Ag doping on structural, optical, complex impedance and photovoltaic properties of SnO₂ nanoparticles prepared by co-precipitation method for dye sensitized solar cell application

P. Suriya, M. Prabhu, E. Satheesh kumar and K. Jagannathan
Optik, **260**, 168971 (2022)

4. Synthesis and characteristics of Nickel doped TiO₂ nanoparticles as photoanode by green synthesis method for dye sensitized solar cells

Rajkumar Senthamarai, V. Madurai Ramakrishnan, Prabhu Murugan, Anbarasan Ponnusamy Munusamy, Suguna Kulandhaivel
International Journal of Energy Research, **46** (6) 7749-7757 (2022)

- 5. Oxygen vacancies induced room temperature ferromagnetism and gas sensing properties of Co-doped TiO₂ nanoparticles**
C. Stella, Diva Prabhakar, M. Prabhu, N. Soundararajan K. Ramachandran
Journal of materials science: materials in electronics, **27**:1636–1644 (2016)
- 6. Ethanol Gas Sensing by Zn-doped CdS/CdTe Nanoparticles**
M. Prabhu, V.S. Manikandan, N. Soundararajan and K. Ramachandran
AIP Conference Proceeding **1731**, 050141(2016)
- 7. Peanut shaped ZnO microstructures: controlled synthesis and nucleation growth toward low-cost dye sensitized solar cells**
M. Prabhu, J. Mayandi, R.N. Mariammal, V. Vishnukanthan, J.M. Pearce, N. Soundararajan, and K. Ramachandran
Materials Research Express, **2** 066202 (2015)
- 8. Fabrication and characterization of ZnSe thin films based low-cost dye sensitized solar cells**
M. Prabhu, K. Kamalakkannan, N. Soundararajan and K. Ramachandran
Journal of materials science: materials in electronics, **26**: 3963–3969 (2015)
- 9. Heterojunction thin films based on multifunctional metal oxides for photovoltaic application**
M. Prabhu, M. Marikkannan, J. Mayandi, N. Soundararajan K. Ramachandran
AIP Conference Proceeding, **1591**, 930 (2014)
- 10. Preparation of DC reactive magnetron sputtered ZnO thin film towards photovoltaic applications**
M. Prabhu, A. Sivanantham, P. Karthick Kannan, V. Vishnukanthan, J. Mayandi
AIP Conference Proceeding, **1536**, 531 (2013)
- 11. Dumbbell-shaped ZnO nanorods: growth and characterization**
N. Rajkumar, M. Prabhu and K. Ramachandran
International Journal of Nanoscience, **10 (1-2)** 87 (2011)

List of Research Manuscripts Communicated & Preparation

- 1. Synthesis of Mg²⁺ -doped TiO₂ nanoparticles and its effectiveness in DSSCs activity**
M. Prabhu, M. Marikkannan, M. Senthil Pandian, P Ramasamy, K. Ramachandran
(Under preparation 2022)

2. **Nanocomposite based Metal Oxide Nanoparticles for Photocatalysts in the Degradation of Dyes**
M. Prabhu, M. Marikkannan, M. Senthil Pandian, P Ramasamy, K. Ramachandran
 (Under preparation 2022)
3. **g-C₃N₄/MoS₂/CeO₂ Nanocomposite: Synthesis and Photocatalytic for Organic Dye Degradation**
 Senthilnathan Selvaraj, M. Prabhu, P. Balaji Bhargav (Under preparation 2022)
4. **A Review Based on MoS₂ Nanostructures: Hydrothermal Synthesis and Photocatalytic Application**
M. Prabhu, Senthilnathan Selvaraj, P. Balaji Bhargav, M. Senthil Pandian,
 P Ramasamy (Under preparation 2022)
5. **Elastic moduli of metal oxide nanostructures from FTIR measurements**
M. Prabhu, C. Stella, and K. Ramachandran (Under preparation 2022)

Research Works Presented in International Symposium/ Conference/Seminar

1. **International Conference on Nanotechnology (ICON-2022) "An investigation of the structural, optical, magnetic, and superconducting behaviour of LBCO/MWCNT nanocomposites" -Oral**
 Organized by Srinivas University, Mangaluru, November 11-12 (2022)
2. **Indo - Norwegian International Online Conference on Functional materials for energy, environment And biomedical applications (FARAON-22)**
 "Nanocomposite based Metal Oxide Nanoparticles for Photocatalysts in the Degradation of Dyes" - *Poster* Organized by M.K University, Institute for Energy Technology (IFE) & University of OSLO (UiO), Norway, February 02-04 (2022)
3. **International Conference on Sustainable Materials and Technologies for Bio and Energy Applications, (SMTBEA-2021) "Synthesis of Mg²⁺ doped TiO₂ nanomaterials for dye-sensitized solar cells applications" - Oral**
 SSN College of Engineering, Kalavakkam, Chennai, May 19-21 (2021)
4. **International Conference on Exploring Nanostructures for Enhanced Power Conversion Efficiency of Solar Cells "Influence of Mg²⁺ doped TiO₂ nanoparticles and its characterization for dye-sensitized solar cells applications" - Poster**
 Gandhigram Rural Institution, Gandhigram, Dindigul, January (2019)
5. **International Conference on Recent Trends in Materials Science and Applications "Synthesis of Mg²⁺ doped TiO₂ nanoparticles & its effectiveness in DSSCs" - Poster**
 Sri Meenakshi Government Arts college for women, Madurai, 6th January (2017)

6. **International Conference on Materials and Characterization Techniques**
 "Effect of deposition parameters on ZnSe/CdTe hetero-junction thinfilm and photovoltaic application" - *Oral*
 VIT University, India, March 10-12 (2014)
7. **International Conference on Advanced Materials, Processing and Devices (AMPD-2013)**
 "Correlation between the Structural and Optical Properties of ZnO and ZnO:PbSe Thin Film" - *Poster*
 School of Chemistry, Madurai Kamraj University, Madurai, India, July 15,16 (2013)
8. **4th International Conference on Recent Advances in Composite Materials (ICRACM-2013)**
 "Role of Morphologies in ZnO Thin Film on Dye Sensitized Solar Cell" - *Poster*
 International Goa Centre, Goa, India, February 18-21 (2013)
9. **International Conference on Advanced Materials (ICAM-2011)**
 "Chemically Synthesized ZnO for Heterojunction Solar Cells" - *Poster*
 PSG College of Technology, Coimbatore, India, December 12-16 (2011)
10. **International Conference on Nanoscience and Nanotechnology (ICNN-2011)**
 "Synthesis and optical analysis on ZnO nanomaterials" - *Oral*
 Coimbatore Institute of Technology (CIT), Coimbatore, India, July 6-8 (2011)

Research Works Presented in National Symposium/ Conference/Seminar

1. **29th Annual General Meeting of MRSI & National Symposium on Advances in Functional and Exotic Materials** "Undoped and Mg²⁺ doped TiO₂ NPs for DSSC activity - *Poster*, Center for H P R, Bharathidasan University, February 14-16 (2018)
2. **60th DAE - Solid State Physics Symposium** "Ethanol Gas Sensing by Zn-doped CdS/CdTe Nanoparticles" - *Poster*, Amity University, Noida, December 21-25 (2015)
3. **58th DAE - Solid State Physics Symposium** "Heterojunction Thin Films Based On Multifunctional Metal Oxides for Photovoltaic Application" - *Poster*, Thapar University, Patiala, December 17-21(2013)
4. **54th DAE - Solid State Physics Symposium**
 "Synthesis and characterization of nano ZnO for two morphologies" - *Oral*
 The Maharaja Sayajirao University of Baroda, Vadodara, India, Dec 14-18 (2009)

Workshops & Hands on Training Attended

1. **Emerging Solar Energy Technologies: Fundamentals to Device Fabrication**
CSIR-Central Electrochemical Research Institute, Karaikudi, 15-17th September (2022)
2. **One Day Workshop on Teaching and Research Methodologies in Physics (TRMP-2016)**
School of Physics, Madurai Kamaraj University, Madurai, 25th October (2016)
3. **One Day Workshop on "Curriculum Development on Nanoscience and Nanotechnology (CDNSNT-16)**
School of Chemistry, Madurai Kamaraj University, Madurai, 25th October (2016)
4. **One Day Workshop on Materials Characterization Techniques: AFM & XRD**
School of Physics, Madurai Kamaraj University, Madurai, 19th November (2014)
5. **CSR Lecture Series**
UGC-DAE Consortium for Scientific Research, Indore (Madhya Pradesh), 1-12 September (2014)
6. **Workshop on Computational Physics**
School of Physics, Madurai Kamaraj University, Madurai, 30th-31st August (2013)
7. **2nd National Workshop on Characterization Techniques (NWCT-2)**
Alagappa University, Karaikudi, 21-23, March (2013)
8. **International Conference and Workshop on New Materials and Devices For Photovoltaic Application (ICWNMDP-2011)**
School of Chemistry, Madurai Kamaraj University, Madurai, February 10-12 (2011)
9. **National Workshop and Conference on Monte Carlo Simulation**
School of Physics, Madurai Kamaraj University, Madurai, August 9-13 (2010)

Seminars Attended

1. **National Seminar On X-Ray Crystallography (NSXC-2014)**
School of Physics, Madurai Kamaraj University, Madurai, 1st October (2014)
2. **57th DAE Solid State Physics Symposium (DAE-2011)**
IIT Bomba, Mumbai, India, December 3-7 (2012)
3. **56th DAE Solid State Physics Symposium (DAE-2011)** SRM University, Kattankulathur, Tamil Nadu, December 19-23 (2011)

4. **International Year of Chemistry celebration-2011-UGC Sponsored**
School of Chemistry, Madurai Kamaraj University, Madurai, December 19 (2011)
5. **Indo-Norwegian Satellite Meeting on Advances in Solar Cell Materials & Technologies (SMASMT-2011)**
School of Chemistry, Madurai Kamaraj University, Madurai, December 17 (2011)
6. **State Level Seminar on "Recent Development and Application on Nano System (RDANS-2011)**
School of Physics, Madurai Kamaraj University, Madurai, March 10-11 (2011)
7. **National Seminar on Nanostructured Materials and Applications (NSNMA-2011)**
School of Chemistry, Madurai Kamaraj University, Madurai, March 4-5 (2011)

Research Collaborative

❖ Dr. M. Jeyanthinath

Assistant Professor

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Madurai Kamaraj University, Madurai - 625021.

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❖ Dr. Smagul Karazhanov

Senior Scientist, Institute for Energy Technology (IFE) Norway.

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❖ Dr. M. Senthil Pandian

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SSN College of Engineering,

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References

✓ Dr. K. Ramachandran M.Sc., Ph.D.,

Formerly UGC Emeritus Scientist (2016-2018),

Department of Physics, The Gandhigram Rural Institute,

Dindigul - 624 302, Tamil Nadu, India.

Formerly CSIR Emeritus Scientist (2012- 2016),

Professor & Head, (1982-2011), School of Physics, Madurai Kamaraj University

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✓ **Prof. V. Vasu M.Sc., Ph.D.,**

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✓ **Dr M. Sivabharathy M.Sc., B.Ed.,M.Phil., Ph.D**

Professor & Associate Dean of Research & Development (R&D)

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Declaration

I hereby declare that all the information furnished above are true to the best of my knowledge and belief.

Place : Madurai

Yours sincerely

Date : 20.02.2023

(M. PRABHU)