

N. PRADEEP

200A, Doctoral Research Scholar in Mechanical Engineering
Heat Transfer and Thermal Power Laboratory
Indian Institute of Technology Madras

E-mail ID: [REDACTED]

Institute Email.ID: [REDACTED]

Phone No: [REDACTED]

Research Interest: Experimental Techniques, Heat Transfer, Solar Energy, Thermocline Thermal Energy Storage Systems, Synthesis of Filler Material and Encapsulation, Multi-Physics Modelling, Computational Fluid Dynamics, Parametric Optimization, Thermal Management Systems for Electrochemical Systems, Industrial Product and Process Heating Development.

Experience		Patent (Published/Submitted)	Journal (Published/Communicated)	Conference & Workshop
Research	Teaching			
7 Year 14 days	1 Year 11 Month 13 Days	1/2	8/13	15

Summary:

To pursue a fulfilling career that utilizes my competence for the benefit of the organization and broadens my spectrum of knowledge and skills.

Educational Background:

Level	University	Year of Passing	CGPA (or) %
Ph.D. – (Thesis First Draft Submitted) (Mechanical Engineering)	Indian Institute of Technology Madras – Full-time	2024	8.51/10
Thesis Title: Multi-physics Modelling and Experimental Investigation of Thermocline Thermal Energy Storage System for Solar Process Heating Applications Seminar I: Design and Development of a Thermocline Thermal Energy Storage System for Solar Process Heating Applications (Link: https://www.iitm.ac.in/happenings/events/design-and-development-thermocline-thermal-energy-storage-system-solar-process) Seminar II: Development and Experimental Investigation of Stainless Steel Encapsulated Nitrate Phase Change Material filled Thermocline Thermal Energy Storage System (Link: https://www.iitm.ac.in/happenings/events/development-and-experimental-investigation-stainless-steel-encapsulated-nitrate)			
M.E (Energy Engineering)	Anna University Tamil Nadu - Full time	2015	7.82/10
Thesis Title: Experimental Analysis of Automotive Vapor Compression Refrigeration system by WHR			
Higher Diploma (Quality Management)	Annamalai University DDE	2015	77%
B.E (Mechanical Engineering)	Anna University Tamil Nadu - Full time	2012	8.02/10
Thesis Title: Study of Orbital TIG Welding Process and its Weld Defects Analysis			



Job Experience:**Total Experience: 8 Years 4 Months 29 Days (upto 31st March 2023)**

S.No	Institute / Firm	Designation /Position	Project / Description	Duration	Experience
1	Indian Institute of Technology Madras- (IITM) Chennai, INDIA	Senior Project Officer (SPO)	DST Solar Energy Harnessing Centre - Thermal - Sub Project - (funded by DEPARTMENT OF SCIENCE & TECHNOLOGY)	3 rd Oct 2022 to 31 th March 2023	5 Months 28 Days
2	Indian Institute of Technology Madras- (IITM) Chennai, INDIA	Half-Time Research Assistantship	Half time Assistantship for Institute course and laboratory (funded by MINISTRY OF HUMAN RESOURCE DEVELOPMENT)	13 th Aug 2021 to 10 th July 2022	10 Months 28 Days
3	Indian Institute of Technology Madras- (IITM) Chennai, INDIA	Senior Project Officer (SPO)	Development of Low Cost and Efficient Filler Material for Single Tank Energy Storage for Concentrating Solar Power and Process Heat System - (funded by INDIAN OIL CORPORATION LIMITED (IOCL) FARIDABAD)	02 nd Dec 2019 to 12 th Aug 2021	20 Months 10 Days
4	Indian Institute of Technology, Madras- (IITM) Chennai, INDIA	Senior Project Officer (SPO)	Development and characterization of PCM-based thermal energy storage for solar process heat applications – (funded by DEPARTMENT OF SCIENCE & TECHNOLOGY)	01 st April 2017 to 30 th Nov 2019	31 Months 29 days
5	Indian Institute of Technology, Madras - (IITM) Chennai, INDIA	Project Officer (PO)	Development of Solar Trigenation System for Cooling, Heating (funded by DEPARTMENT OF SCIENCE & TECHNOLOGY)	16 th Feb 2016 to 31 st March 2017	13 Months 15 days
6	Indian Institute of Information Technology Design and Manufacturing, Kancheepuram, (IIITDM)- INDIA	Teaching Assistant (T.A)	Handled Classes and Laboratory for Under Graduate Students Introduce Metrology and Inspection Laboratory for Under Graduate Students	4 th Aug 2015 to 16 th Feb 2016	6 Months 12 Days
7	MAR College of	Lecturer	Handled Classes and	11 th July 2012	10 Months



	Engineering and Technology, Trichy - INDIA		Laboratory for Under Graduate Students Handled Metrology and Inspection Laboratory & Heat Transfer Laboratory for Under Graduate Students	to 24 th May 2013	13 Days
8	BHEL Heavy Electrical Limited - Trichy	Project Trainee	Study of Orbital TIG Welding Process and its Weld Defects Analysis	2 nd Dec 2011 To 6 th Jan 2012	1 Month 4 Days
9	Precitech Manufacturing Pvt. Ltd - Trichy	Intern	Inplant training for heavy machining process for power sectors	22 nd Dec 2010 to 02 nd Jan 2011	11 days

Academic Project:

S.No	Project	Location	Duration
1	Experimental Analysis of Automotive Vapor Compression Refrigeration system by WHR	Anna University – Tiruchirappalli	August 2014 to May 2015
2	Study of Orbital TIG Welding Process and its Weld Defects Analysis	Bharat Heavy Electricals Limited (BHEL) - Tiruchirappalli	August 2011 to July 2012

Patent:

- (i) Patent licensed on “SMART AND SUSTAINABLE DEVICES(SSD) FOR INFECTIOUS MASK & PPE WASTE TREATMENT” (Patent No: 415252, Dated: 30/06/2020, Date of Grant: 23/12/2022).

Journals:

Communicated:

- (i) Nadiya Philip, N.Pradeep, K.S.Reddy, “ Techno Enviro Economic analysis of Phase Change Material based Thermal Management System for Proton Exchange Membrane Fuel Cell Vehicles, **Energy Conversion and Management** (Submitted)
- (ii) **N.Pradeep** and K.S.Reddy, Multi-Physics Modelling of SS316L Macro-encapsulation for Commercial PCMs for Thermocline Thermal Energy Storage System, **Applied Energy** (Submitted)
- (iii) **N .Pradeep**, U.Nithiyandham, and K.S.Reddy, Investigations of Silicon Carbide (SiC) Nano-Particle doped with Solar Salt for Thermal Energy Storage at Solar Process Heating Applications, **Solar Energy Materials and Solar Cell** (Submitted).
- (iv) U.Nithiyandham, **N.Pradeep**, and K.S.Reddy, Development and Comparison of Multi-walled Carbon Nanotubes and Graphite Nano-Flakes doped Molten Salt for Thermal Energy Storage in



Concentrated Solar Power and Process Heating Applications, **Journal of Molecular Liquids** (Revision Submitted).

- (v) **N.Pradeep** and K.S Reddy, Review of Filler Material to System Design of Thermocline Thermal Energy Storage System for Solar Process Heating Applications, **Thermal Science and Engineering Progress** (Waiting for Submission)

Published:

- (vi) K.S. Reddy and **N.Pradeep**, Design and Techno-Economic Investigation of Solar Dish Collector Waste Treatment System for Infectious Personal Protection Equipment and Masks, **Sustainable Energy Technologies and Assessments**, 2023, 58, 103316. <https://doi.org/10.1016/j.seta.2023.103316> (IF:8.0).
- (vii) **N.Pradeep** and K.S.Reddy, Performance Enhancement of Packed Bed Thermal Energy Storage System for Solar Cogeneration of Power and Potable Water Production, **Journal of Cleaner Production**, 2023, 136754. <https://doi.org/10.1016/j.jclepro.2023.136754> (IF:11.10).
- (viii) **N.Pradeep** and K.S.Reddy, Design and investigation of solar cogeneration system with packed bed thermal energy storage for ceramic industry, **Renewable Energy**, 2022, 192, 243-263. <https://doi.org/10.1016/j.renene.2022.04.087> (IF:8.70).
- (ix) **N.Pradeep** and K.S.Reddy, Development of an effective algorithm for selection of PCM based filler material for thermocline thermal energy storage system, **Solar Energy**, 2022, 236, 666-686. <https://doi.org/10.1016/j.solener.2022.02.044> (IF:7.18).
- (x) K.S.Reddy and **N.Pradeep**, Stability analysis of the thermocline thermal energy storage system during high flow rates for solar procesi heating applications, **Solar Energy**, 2021, 226, 40-53. <https://doi.org/10.1016/j.solener.2021.08.026> (IF:7.18).
- (xi) **Pradeep.N** and Sivakumar .D. B “Experimental analysis of automotive refrigeration system by waste heat recovery”, International Journal of Applied Engineering Research (IJAER) Vol. 10 No.57 (2015), pp.357-360. [ISSN 0973-4562](https://doi.org/10.1016/j.ijaer.2015.07.026)
- (xii) **Pradeep N** and Sivakumar .D.B “Theoretical analysis of automotive refrigeration system by waste heat recovery” International Journal of Engineering Research & Technology (IJERT), 2015, Vol. 3, No. 16, pp.1-4. <https://doi.org/10.17577/IJERTCONV3IS16053>.
- (xiii) **Pradeep.N** and Sivakumar .D.B “Effect of Automotive Refrigeration Compressor Work done on Refrigeration System and Engine Performance” International Journal of Advanced Research Trends in Engineering and Technology (IJARTET), 2015, Vol. II, Special Issue XXIV, pp.41-45. [ISSN 2394-3785](https://doi.org/10.1016/j.ijaer.2015.07.026).

Workshop/ Conferences:

- (i) U.Nithiyanandham, N.Pradeep, and K.S.Reddy, Enhancement of thermophysical properties of hitec and solar salt via silicon carbide nanoparticle for solar thermal energy storage system, International Conference on Sustainable Materials for Engineering Applications, 1 -3 February 2024, India – *Oral Presentation*.
- (ii) U.Nithiyanandham, N.Pradeep, and K.S.Reddy, Comparision Study of Structural and thermophysical properties of SiC nanoparticle doped hitec and solar salt for thermal energy storage system, International Conference on Sustainable Materials for Engineering



Applications, 1-3 February 2024, India – *Poster presentation.*

- (iii) N.Pradeep, K.S.Reddy, Implementation of a solar cogenerative system for power and potable water production with thermal energy storage for residential sectors, World Society of Sustainable Energy Technologies, 2023, UK – Newsletter.
- (iv) N.Pradeep, K.S.Reddy, Development and Investigation of Nitrate Phase Change Filler Material for Solar Process Heating Applications, 29th SolarPACES conference, 10-13 October 2023, Sydney, Australia – *Oral Presentation.*
- (v) N.Pradeep, K.S.Reddy, Instability analysis of thermocline thermal energy storage system for solar process heating, 20th International Conferences on Sustainable Energy Technologies (SET 2023), 15-17 August 2023, University of Nottingham, UK.
- (vi) INECC & SCINDeA Workshop, Locally Developed Choices for Nationally Determined Contributions (LDC for NDC), Chennai, 10th March 2023 – *Invited Speaker.*
- (vii) Workshop on Photovoltaics Fundamentals Device Characterization, Simulation and Emerging Concepts, Indian Institute of Technology Madras, India, 10th March 2018.
- (viii) TEQIP II Sponsored Workshop on Thrust Areas of Research and Student Projects, Anna University, Tamil Nadu, 17 -18 October 2013.
- (ix) N.Pradeep, D.B.Sivakumar, Experimental Investigation and Numerical Modelling of Solar PV Panel Performance with Passive PCM Cooling Process, International Conference on Innovative Trends in Mechanical and Civil Engineering (ICITMC 2015), 10 April 2015, India – *Oral Presentation.*
- (x) N.Pradeep, D.B.Sivakumar, Experimental analysis of Automotive Refrigeration System by Waste Heat Recovery, International Conference on Innovative Trends in Mechanical and Civil Engineering (ICITMC 2015), 10 April 2015, India – *Oral Presentation.*
- (xi) N.Pradeep, D.B. Sivakumar, Effect of Automotive Refrigeration Compressor Work done on Refrigeration System and Engine Performance, 2nd International Conference on Trends in Technology for Convergence associated with Nizwa College Of Technology Oman (TITCON 2015), 10 - 11 April 2015, India – *Oral Presentation.*
- (xii) N.Pradeep, D.B. Sivakumar, Theoretical analysis of automotive refrigeration system by Waste heat recovery, 2nd International conference on Recent Trends in Engineering and Technology (ICRTME 2015), 23-24 March 2015 – *Oral Presentation (Best Paper award).*
- (xiii) N.Pradeep, E.Mohan, Regenerative Chatter Suppression during Boring Operation, A National Level Student Technical Symposium MEchonance'11, 18th March 2011, India – *Oral Presentation.*
- (xiv) N.Pradeep, S.Palani, Electricity Energy Generation from Speed Breakers, Intra College Technical Symposium MECHTRIX'10, 20th Sep September 2010, India – *Oral Presentation (Best Paper).*
- (xv) N.Pradeep, S.Palani , Composite Materials, A National Level Student Technical Symposium MECHNOVATION'10, 8-9 September 2010, India – *Oral Presentation.*



Skills:

- **Softwares** - Ansys - Fluent, Comsol, Auto CAD, Autodesk Inventor, Solid Works, CatiaV6, (Python- Beginner)
- **Languages Known** - English (SRW), Tamil (SRW)

Membership:

- Lifetime member in IAENG (International Association of Engineers), Hongkong (154591)
- Associate member in IRED (Institute of Research Engineers and Doctors), USA (AM10100050703)

Co-curricular:

NCRTME (2013)

Organizer at the 2nd National Conference on Mechanical Engineering at MARCET, Tamil Nadu

Personal Details:

Permanent Address

: [REDACTED]

INDIA.

Phone No

: [REDACTED]

Personal E-mail ID

: [REDACTED]

Institute Mail ID

: [REDACTED]

Declaration:

I hereby declare that all the details mentioned above are in accordance with the truth and facts as per my knowledge. I hold the responsibility for the correctness of the particulars mentioned above.

Place: IITM – Chennai

Yours Faithfully

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(N. PRADEEP)

