National Institute of Technology, Tiruchirappalli:
Performa for CV of Faculty/ Staff Members

Curriculum Vitae

Brief Profile: 1-2 paragraphs (not exceeding 500 words)

I am a Mechanical Engineer with a Ph.D. from the Indian Institute of Technology Madras (2024), specializing in advanced thermal engineering and sustainable energy systems. My expertise spans thermal energy storage, phase change materials, thermocline systems, solar thermal technologies, and high-performance thermal management for next-generation applications such as AI data centers and fuel cells. My work is distinctly positioned at the intersection of fundamental research and translational engineering, integrating experimental investigations, multi-physics modeling, and product-oriented design to deliver high-efficiency, scalable, and industry-relevant thermal solutions.

Prior to joining NIT Tiruchirappalli as an Assistant Professor, I served as a Senior R&D Engineer at Full Chain Materials International Ltd., Taiwan, where I led the development of advanced thermal management technologies and contributed to multiple patented innovations. My research and development contributions are strongly aligned with technology creation, intellectual property generation, and real-world deployment, reflecting a consistent focus on impact-driven engineering. At NIT Tiruchirappalli, I am actively advancing cutting-edge research, building interdisciplinary collaborations, and mentoring students toward high-impact outcomes in research, innovation, and entrepreneurship. My long-term vision is to establish a globally competitive research ecosystem in thermal engineering and sustainable energy systems, contributing significantly to technological leadership, industrial relevance, and the development of next-generation energy solutions.

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2. Designation: Assistant Professor
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6. Field(s) of Specialization: Heat Transfer (Macro/Micro), Solar Energy, Thermal Energy Storage System, Multi-Physics Modelling, Encapsulation Techniques, Solid-Liquid Phase Change, Thermal Management, CO_2 Capture and Storage, Hydrogen & e-Methanol Production and Storage.

7. Employment Profile

Job Title	Employer	From	To
Senior R&D Engineer & R&D Head (incharge)	Full Chain Electronics Materials International India Private Limited	July 2025	Dec 2025
Senior R&D Engineer	Full Chain Materials International Ltd, Taiwan	July 2024	July 2025
Senior Project Officer	Indian Institute of Technology Madras (IITM)	Oct 2022	Mar 2023
Half-Time Research Assistantship	Indian Institute of Technology Madras (IITM)	Aug 2021	July 2022
Senior Project Officer	Indian Institute of Technology Madras (IITM)	Dec 2019	Aug 2021
Project Officer	Indian Institute of Technology Madras (IITM)	Feb 2016	Nov 2019
Teaching Assistant	Indian Institute of Information Technology Design and Manufacturing, Kancheepuram, (IIITDM)	Aug 2015	Feb 2016
Lecturer	MAR College of Engineering and Technology, Trichy	July 2012	May 2013

8. Academic Qualifications (From Highest Degree to High School):

Examination	Board / University	Year	Division/ Grade	Subjects
Ph.D	Indian Institute of Technology Madras	2024	First Class	Mechanical Engineering (Title: Development and Experimental Investigation of Encapsulated Phase Change Material Thermocline Energy Storage Integrated Solar Medium Temperature Process Heat Systems)

M.E	Anna University	2015	First Class	Energy Engineering
B.E	Anna University	2012	First Class	Mechanical Engineering
H.Sc	Tamil Nadu State Board	2008	First	Science and Maths
SSLC	Tamil Nadu State Board	2006	First	General

9. Academic/Administrative Responsibilities within the University

Position	Faculty/Department/Centre/Institution	From	To
PG (Thermal Engineering) – Project Review Committee	Mechanical Engineering	2026	2026

10. Academic/Administrative Responsibilities outside the University

Position	Institution	From	To

11. Awards, Associateships etc.

Year of Award	Name of the Award	Awarding Organization

12. Fellowships

Year of Award	Name of the Fellowship	Awarding Organization	From (Month/Year)	To (Month/Year)

13. Details of Academic Work

(i) Curriculum Development

Proposed and developed a new course code and titled **MEOE24 -Engineering Product Realization**, aimed at bridging the gap between theoretical design concepts and industrial product development practices, with a focus on innovation, prototyping, and techno-economic considerations.

(ii) Courses taught at Postgraduate and Undergraduate levels

MEPC15- Fluid Mechanics and Machinery - UG

(iii)Projects guided at Postgraduate level

Abhishek Yadav (211324002) PG Thermal Engineering – **Phase Change Dynamics of Molten Salt PCM Thermal Batteries with Multi-Mode Heat Transfer for AI Data Center Waste Heat Recovery** – 2026

(iv)Other contribution(s)

D. Keerthi Vaasan (111122055) & V. Naga Pujitha (111122135) UG Mechanical Engineering – **Experimental Investigation on Thermal Regulation of Photovoltaic modules using Phase Change Material (PCM)** – 2026

14. Details of Major R&D Projects

Title of Project	Funding Agency	Duration		Status
		From	To	Ongoing/ Completed

15. Number of PhDs guided

Name of the PhD Scholar	Title of PhD Thesis	Role(Supervisor/ Co-Supervisor)	Year of Award

16. Participation in Workshops/ Symposia/ Conferences/ Colloquia /Seminars/ Schools etc. (mentioning the role)

Date (s)	Title of Activity	Level of Event (International/ National/ Local)	Role (Participant/ Speaker/ Chairperson, Paper presenter,	Event Organized by	Venue

			Any other)		
16th Aug 2024	Symposium	International	Speaker	IIT Delhi	IIT Delhi
16th Aug 2024	Symposium	International	Paper Presenter	IIT Delhi	IIT Delhi
1st-3rd Feb 2024	Conference	International	Speaker	IIT Madras	IIT Madras
1st-3rd Feb 2024	Conference	International	Paper Presenter	IIT Madras	IIT Madras
10th March 2023	Workshop	Local	Invited Speaker (Energy Domain)	Indian Network on Ethics and Climate Change & SCINDeA & LAYA	Chennai
10th March 2018	Workshop	National	Participant	IIT Madras	IIT Madras
10th April 2015	Conference	International	Paper Presenter	PET Engg. College	Vallioor
10th April 2015	Conference	International	Paper Presenter	PET Engg. College	Vallioor
24th March 2015	Conference	International	Paper Presenter	Mount Zion College	Pudukkottai
18th Oct 2013	Workshop	National	Participant	TEQIP II – Anna University	Trichy
18th March 2011	Symposium	National	Paper Presenter	MITS	Anantapur
20th Sep 2010	Symposium	Local	Paper Presenter	Mount Zion College	Pudukkottai
8th Sep 2010	Symposium	National	Paper Presenter	Shanmuganathan College	Pudukkottai

17. Workshops/ Symposia/ Conferences/ Colloquia/Seminars Organized (as Chairman/ Organizing Secretary/ Convenor / Co-Convenor)

Title of Activity	Level of Event (International/ National/ Local)	Date (s)	Role	Venue

18. Invited Talks delivered

Topic	Date	Inviting Organization

19. Membership of Learned Societies

Type of Membership (Ordinary Member/ Honorary Member / Life Member)	Organization	Membership No. with date

20. Academic Foreign Visits

Country	Duration of Visit	Programme

21. Publications

(A) Refereed Research Journals:

Author(s)	Title of Paper	Journal	Volume (No.)	Page numbers	Year	Impact Factor of the Journal (Optional)
Nadiya Philip, N. Pradeep,	Techno-enviro-economic analysis	Applied Thermal	278	1-16	2025	6.9

Prakash C. Ghosh, K.S.Reddy	of phase change material based thermal management system for fuel cell vehicle	Engineering				
N. Pradeep, U. Nithiyandham,, K.S.Reddy	Impact on thermophysical properties of solar salt with different concentrations of SiC nanoparticles for thermal energy storage system	Solar Energy Materials and Solar Cell	277	1-11	2024	6.3
U. Nithiyandham, N.Pradeep, 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	402	1-14	2024	6.0
K.S. Reddy 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	58	1-13	2023	7.0
N.Pradeep, 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	404	1-23	2023	10.0
N.Pradeep,	Design and	Renewable	192	243-263	2022	9.1

K.S.Reddy	investigation of solar cogeneration system with packed bed thermal energy storage for ceramic industry	Energy				
N.Pradeep, K.S.Reddy	Development of an effective algorithm for selection of PCM based filler material for thermocline thermal energy storage system	Solar Energy	236	666-686	2022	6.6
K.S.Reddy, N.Pradeep	Stability analysis of the thermocline thermal energy storage system during high flow rates for solar process heating applications	Solar Energy	226	40-53	2021	6.6

(B) Patents

Date	Patent Name	Patent No	Country
30/6/2020	Smart And Sustainable Devices(Ssd) For Infectious Mask & PPE Waste Treatment	415252	India
11/03/2025	Ammonia Cracking System	M667876	Taiwan
01/04/2025	Thermal Energy Storage – Via Sand	M668446	Taiwan
01/04/2025	Methanol Production System – Via CO2 Effective Utilization	M668622	Taiwan

(C) Conferences/Workshops/Symposia Proceedings

Author(s)	Title of Abstract/ Paper	Title of the Proceedings	Page numbers	Conference Theme	Venue	Year
N. Philip, N. Pradeep, P. C. Ghosh,	Influence of heat transfer fluid on the thermodynamic	2024 International Conference on Electrical,	1-6	International Conference on Electrical, Computer and	Sydney, Australia	2024

K. S. Reddy	performance of PCM-based thermal management system in fuel cell vehicle	Computer and Energy Technologies (ICECET)		Energy Technologies		
N. Pradeep, K.S. Reddy	Development and Investigation of Nitrate Phase Change Filler Material for Solar Process Heating Applications	SolarPACES 2023	1-10	International Conference on Concentrating Solar Power, Thermal, and Chemical Energy Systems	Sydney, Australia.	2024
N.Pradeep, D.B. Sivakumar	Experimental Analysis of Automotive Refrigeration System by WHR	ICITMC - 2015	1-4	Innovative Trends in Mechanical & Civil Engineering	India	2015
N. Pradeep, D.B. Sivakumar	Theoretical Analysis of Automotive Refrigeration System by Waste Heat Recovery	TITCON-2015	1-4	International Conference On Trends In Technology For Convergence	India	2015

(D) Books & Monographs

Author(s)	Title of Book/Monograph	Name of Publishers	Year of Publication	ISSN/ISBN Number