

ASPIRE

Academic Skills Placement Innovation Research
and Exploration

NEWSLETTER

VOLUME 17 | ISSUE 01
JANUARY 2026



CONTENT

VISION

To carve the youth as dynamic, competent, valued and knowledgeable Technocrats through research, innovation and entrepreneurial development for accomplishing the global expectations.

MISSION

M1: To Inculcate academic excellence in engineering education to create talented professionals.

M2: To Promote research in basic sciences and applied engineering among faculty and students to fulfill the societal expectations.

M3: To enhance the holistic development of the students through meaningful interaction with industry and academia.

M4: To foster the students on par with sustainable development goals thereby contributing to the process of nation building.

M5: To nurture and retain conducive lifelong learning environment towards professional excellence.

PATRON

Dr. R. Shivakumar

Chairman- SRM Group of Institutions

Mr. S. Niranjana

Co-Chairman- SRM Group of Institutions

EDITORIAL COMMITTEE

Dr. M. Siva Kumar

Principal - SRM TRP Engineering College

Dr. C. Ramesh Kannan

Vice Principal / Academic

Dr. D. Manikandan

Asst.Professor / Mechanical

Dr. A. Narayanan

Asst.Professor / English

DEPARTMENT COORDINATORS

Dr. D. Manikandan

Asst.Professor / Mech

Dr. Jino

Associate Professor / Civil

Dr.M.P.Flower Queen

Asst.Professor / EEE

Mr. S.RAJESH

Asst.Professor / CSE

Dr. A. Sugantha

Asst.Professor / ECE

CIVIL ENGINEERING

FACULTY ACHIEVEMENTS



Mr. Sanjeev Kumar S, Assistant Professor, SRM TRP Engineering College, has successfully participated in and completed the AICTE Training and Learning (ATAL) Academy Faculty Development Program (FDP) on “Building Sustainable Infrastructure for Urban and Social Resilience: Challenges and Future Pathways”, conducted at S.V.P.M.’s College of Engineering from 5th January 2026 to 10th January 2026.

This FDP, organized under the aegis of AICTE Training and Learning (ATAL) Academy, focused on contemporary challenges and innovative approaches in sustainable infrastructure development, urban resilience, and socially inclusive growth. The program provided valuable insights into future-ready infrastructure planning, policy frameworks, and interdisciplinary strategies essential for addressing emerging urban and societal needs.

Participation in such nationally recognized faculty development initiatives reflects the institution’s continuous commitment to academic excellence, capacity building, and adoption of sustainable engineering practices in teaching and research.

Congratulations to Mr. Sanjeev Kumar S for this professional accomplishment and for contributing to the institution’s academic and research enrichment.



CIVIL ENGINEERING

FACULTY ACHIEVEMENTS



Industry Exposure Visit | Bridging Classroom Learning with Industry Practice 🏗️

The Department of Civil Engineering, SRM TRP Engineering College, through the Industry Institute Interaction Cell, successfully organized an Industry Exposure Visit to M/s. Eversendai India Ltd., Trichy for III Year Civil Engineering students.

The visit provided valuable insights into:

- Large-scale industrial construction practices
- Safety standards and site management
- Real-time application of structural engineering concepts

Such interactions play a crucial role in enhancing students' practical knowledge and preparing them for industry expectations.

We sincerely thank M/s. Eversendai India Ltd. for their support and technical guidance.





Industrial Visit – AAC Block Manufacturing Unit

First Year Civil Engineering students visited ROCO LITE – AAC Block Manufacturing Unit, near Thanjavur, as part of an industrial exposure program arranged by the Industry Institute Interaction (III) Cell.

The visit provided hands-on understanding of AAC block manufacturing processes, plant layout, quality control measures, and the role of sustainable building materials in modern construction practices, thereby strengthening the students' practical and industry-oriented knowledge.



CIVIL ENGINEERING

FACULTY ACHIEVEMENTS



The Department of Civil Engineering, Annasaheb Dange College of Engineering and Technology (ADCET), Ashta, successfully organized a one-week ISTE-Approved Faculty Development Programme (FDP) on "Applications of Artificial Intelligence in Civil Engineering" from 27th January 2026 to 31st January 2026, under the Lead College Scheme of Shivaji University, Kolhapur.

The FDP aimed to equip faculty members with contemporary knowledge and practical insights into the integration of Artificial Intelligence (AI) tools and techniques in various domains of Civil Engineering, including structural analysis, construction management, geotechnical engineering, transportation, and water resources engineering.

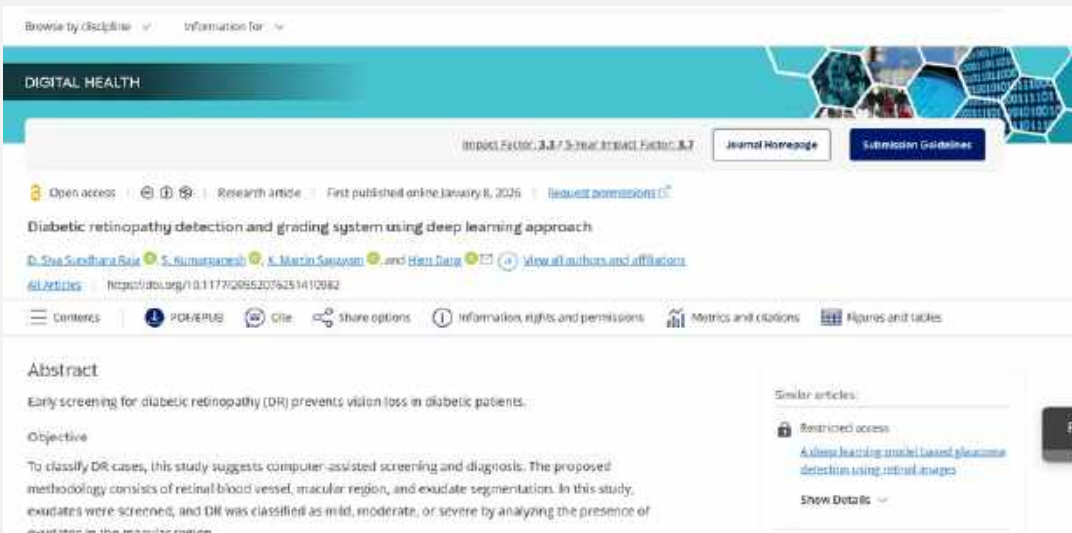
Mr. Sanjeev Kumar S, from SRMTEC, successfully completed the programme and actively participated in the academic deliberations. The programme featured expert lectures, hands-on sessions, and interactive discussions conducted by experienced academicians and industry professionals, highlighting emerging trends and real-world applications of AI in civil engineering practices.

The programme was coordinated by Dr. B. V. Mane and Dr. S. N. Tande, with academic guidance from Dr. M. H. Mota (HoD, Civil Engineering). The initiative received strong institutional support under the leadership of Dr. S. B. Hivarekar (Dean – Faculty & Student Development) and Dr. L. Y. Waghmode (Director, ADCET, Ashta). Such initiatives reaffirm ADCET's commitment to faculty upskilling, innovation-driven teaching, and adoption of advanced technologies in engineering education.



ELECTRONICS AND COMMUNICATION ENGINEERING

FACULTY ACHIEVEMENTS



K. Martin Sagayam , Associate Professor of ECE, has published the paper titled 'Diabetic retinopathy detection and grading system using deep learning approach' in DIGITAL HEALTH, Sage Journal on 8th January 2026.

Mrs.D.Gayathri, Assistant Professor of ECE, participated in the Faculty Development Programme on "Digital Pedagogy and Learning Analytics: Enhancing Student Outcomes through Technology". organized by AIU Poornima University Academic and Administrative Development Centre from 27th to 31st January 2026.





Mrs.M.Vijay Assistant Professor of ECE, participated in the Faculty Development Programme on "Digital Pedagogy and Learning Analytics: Enhancing Student Outcomes through Technology". organized by AIU Poornima University Academic and Administrative Development Centre from 27th to 31st January 2026.



Mrs.S.Mirdula, Assistant Professor of ECE, participated in the Faculty Development Programme on "Digital Pedagogy and Learning Analytics: Enhancing Student Outcomes through Technology". organized by AIU Poornima University Academic and Administrative Development Centre from 27th to 31st January 2026.



Dr. A. Muthu Manokar, Associate Professor, published a research paper titled "10E Analysis of Hemicylindrical Solar Stills with Chlorinated Polyvinyl Chloride with N-Methyl-2-Pyrrolidone Coatings: Comparison and Assessment of Modified Hemicylindrical Solar Still with Conventional Hemicylindrical Solar Still" in the reputed journal Solar Energy Materials and Solar Cells (Elsevier), Volume 295 (2026), Article 113963.

ELECTRICAL AND ELECTRONICS ENGINEERING

FACULTY ACHIEVEMENTS



Electrical Engineering (2026) 108:73
<https://doi.org/10.1007/s00034-025-03588-7>

ORIGINAL PAPER



Advanced modeling techniques for solar radiation estimation: enhancing renewable energy integration in power grids

R. Meenal¹ · V. Vinodhina² · B. Sangeetha³ · K. Vinodh Kumar⁴

Received: 11 August 2025 / Accepted: 27 December 2025
© The Author(s), under exclusive licence to Springer-Verlag GmbH Germany, part of Springer Nature 2026

Abstract

Accurate estimation of global solar radiation (GSR) is vital for integrating solar energy into power grids and optimizing photovoltaic performance. However, the availability of reliable solar radiation data is often limited in remote or rural areas due to the high cost and complexity of direct measurements. This study presents a comprehensive review of solar radiation prediction models, outlining empirical, statistical, and machine learning approaches such as artificial neural networks, fuzzy logic, and hybrid models. Their strengths and limitations in addressing atmospheric nonlinearity and data scarcity are discussed. Building upon the insights gained from the review, the random forest (RF) machine learning model is employed to predict GSR and assess the solar energy potential across 28 districts in Tamil Nadu, India. The RF model is developed using input parameters such as month number, latitude, longitude, and minimum and maximum temperature, while GSR serves as the output variable. RF model performance is validated using experimental India Meteorological Department data. The predicted and observed values show strong agreement, with a correlation coefficient of 0.9714 and an RMSE of 0.7464 for Chennai. The estimated annual GSR ranges from 17 to 21 MJ/m²/day, highlighting the region's significant potential for solar energy development.

Keywords Solar radiation · Renewable energy · Artificial neural networks · Fuzzy logic · Hybrid models · Smart grid · Photovoltaic plants · Energy storage optimization

1 Introduction

The global push toward renewable energy necessitates the accurate estimation of solar radiation for effective solar energy harnessing. Solar radiation plays a crucial role in the planning and operation of photovoltaic (PV) power plants, influencing energy production forecasts, grid stability, and storage management. Despite the significance of direct solar radiation measurements, many regions lack adequate meteorological stations equipped with pyranometers due to their

high cost and maintenance requirements [1]. Consequently, various mathematical and artificial intelligence (AI)-driven models have been developed to estimate solar radiation using meteorological parameters such as sunshine duration, temperature, and humidity.

Solar radiation modeling has evolved significantly, with traditional empirical models being complemented by advanced AI-based methods [2]. The traditional models, such as the Angstrom-Prescott model and other regression-based techniques, establish correlations between solar radiation and meteorological parameters using historical data [3]. However, these models may not capture the complex, nonlinear relationships between atmospheric variables and solar radiation, particularly in regions with highly variable climatic conditions.

Several studies have explored advanced computational methods for solar radiation prediction [4]. Yadav and Chandel [5] reviewed mathematical models for solar radiation prediction, highlighting the importance of incorporating climatic variables for improved accuracy. Another study by Yadav and Chandel [6] applied support vector machine

✉ R. Meenal
meenah140@gmail.com

¹ Department of Electrical and Electronics Engineering, SRM TRP Engineering College, Tiruchirappalli, Tamil Nadu, India

² Department of Computer Science (PG), K. J. Somaiya Institute of Engineering and Information Technology, Mumbai, India

³ Department of Electrical and Electronics Engineering, AVS Engineering College, Salem, Tamil Nadu, India

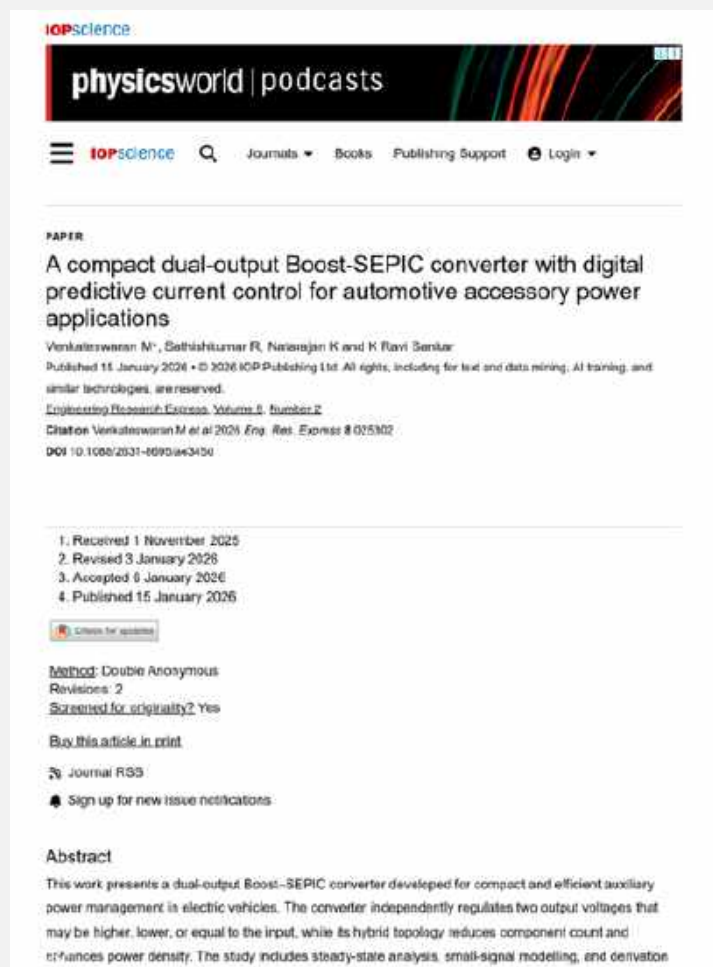
⁴ Department of Electrical and Electronics Engineering, New Horizon College of Engineering, Bengaluru, Karnataka, India

Published online: 08 January 2026



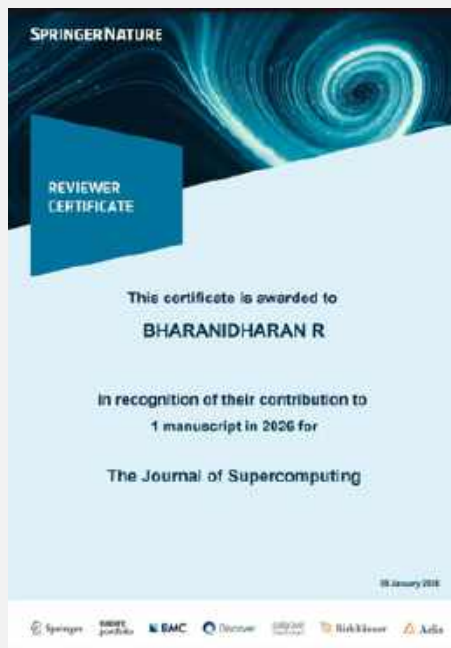
Dr. Sathish Kumar., published a research paper titled “A Compact Dual-Output Boost-SEPIC Converter with Digital Predictive Current Control for Automotive Accessory Power Applications” in the reputed journal Engineering Research Express (IOP Science), Volume 8, Issue 2 (2026).

Dr. R. Meenal, Assistant Professor, published a research paper titled “Advanced Modeling Techniques for Solar Radiation Estimation: Enhancing Renewable Energy Integration in Power Grids” in the reputed journal Electrical Engineering, Springer Nature, Volume 108 (2026), Article 73.



ELECTRICAL AND ELECTRONICS ENGINEERING

FACULTY ACHIEVEMENTS



Mr. Bharanidharan R. has served as a reviewer for the Springer Nature journal The Journal of Supercomputing in 2026. His contribution supported the peer-review process and upheld the quality and integrity of scholarly publications. The institution appreciates his academic service and commitment to research excellence.

Dr. R. Meenal has served as a reviewer for the reputed Elsevier journal Results in Engineering. Her review contribution in January 2026 supported the peer-review process and helped maintain the quality and standards of scholarly publications. The institution appreciates her academic service and commitment to research excellence.



Review History Report		
 Athikesavan MUTHU MANOKAR 		
From: 1 January 2026 To: 28 January 2026 All dates in GMT		
Total journals reviewed for:		1
Total reviews completed:		1
 Desalination and Water Treatment		1

Dr. Athikesavan Muthu Manokar has served as a reviewer for the reputed Elsevier journal Desalination and Water Treatment. His review contribution in January 2026 supported the peer-review process and helped uphold the quality and standards of scholarly publications. The institution appreciates his academic service and continued commitment to research excellence.

ELECTRICAL AND ELECTRONICS ENGINEERING

FACULTY ACHIEVEMENTS



Mr. Vengatesan, Mr. J. Subramanian, Mrs. J. Joylin Mary, Dr. D. F. Jingle Jabha, and Dr. R. Meenal have successfully participated in and completed the AICTE Training and Learning (ATAL) Academy Faculty Development Program. Their active involvement in this program reflects their commitment to continuous professional development and adoption of emerging academic and technological practices. The institution appreciates their efforts toward enhancing teaching-learning effectiveness and academic excellence.

ELECTRICAL AND ELECTRONICS ENGINEERING

FACULTY ACHIEVEMENTS



The Department of Electrical and Electronics Engineering, SRM TRP Engineering College, Trichy, successfully inaugurated the AICTE-ATAL Sponsored Faculty Development Programme (FDP) titled “AI and IIoT Synergies: Transforming Solar-Powered EV Charging for a Greener Future” on 06 January 2026. The inaugural session highlighted the importance of AI and IIoT integration in developing smart and sustainable EV charging systems. The programme emphasized emerging trends in green mobility and IoT-enabled electric vehicle ecosystems. Discussions focused on AI-driven optimization of energy utilization and grid stability. The session underscored the need for continuous faculty upskilling in sustainable energy technologies. The event laid a strong foundation for insightful learning throughout the FDP.

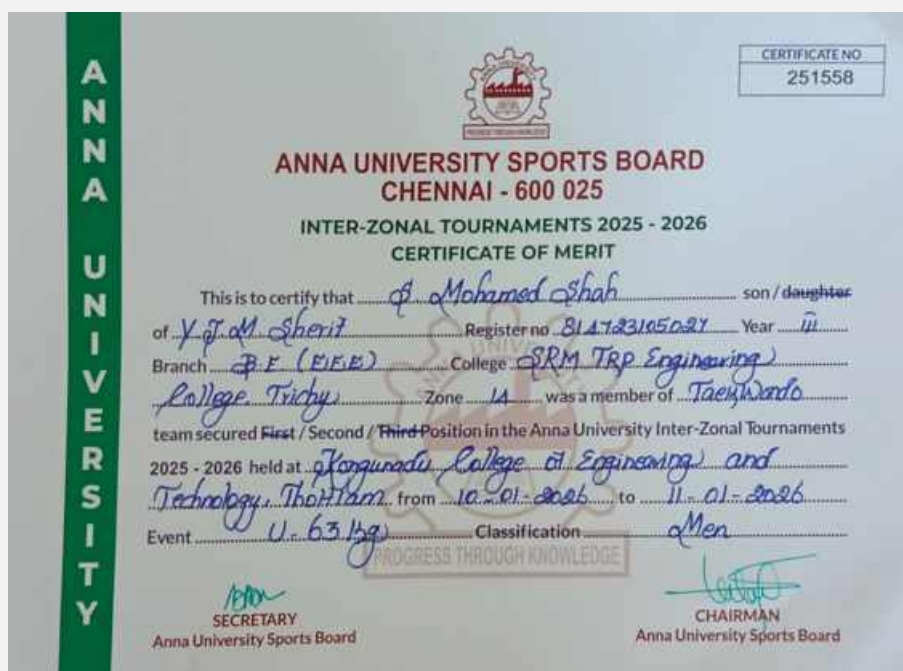




Sathishkumar K, a third-year student of Electrical and Electronics Engineering, has successfully completed the Self-Paced Course on “Electric Vehicle Technologies” offered by the Electronics and ICT Academy, Indian Institute of Technology Roorkee. The 40-hour course enriched his understanding of cutting-edge EV technologies, strengthening competencies in sustainable transportation and electric mobility systems. This accomplishment highlights his enthusiasm for continuous learning and dedication to professional growth in advanced engineering domains.

ELECTRICAL AND ELECTRONICS ENGINEERING

STUDENT ACHIEVEMENTS



SRM TRP Engineering College, Trichy, proudly congratulates Mohamed Shah, a third-year student of the Department of Electrical and Electronics Engineering, for securing the Silver Medal in the Anna University Inter-Zonal Tournaments 2025–2026. The tournament was held at Kongunadu College of Engineering and Technology, Thottiam, from 10 to 11 January 2026, in the Under-63 kg (Men) category. His outstanding performance, dedication, and sportsmanship bring great pride to the institution and the Department of EEE. The college wishes him continued success in both his academic and sporting endeavors.

FACULTY ACHIEVEMENTS



Six-Day Faculty Development Programme Successfully Concluded 🌟

The Department of Computer Science and Engineering successfully concluded a Six-Day Faculty Development Programme (FDP) on “Data Science for Large Language Models and Generative Systems”, marked by enriching discussions, hands-on learning, and meaningful academic-industry collaboration.

📌 Day-wise Session Highlights

- ◆ Day 1: Core Data Science Techniques for LLMs using Hugging Face & NLP Libraries
- ◆ Day 2: Data Engineering & Training Pipelines for LLMs
- ◆ Day 3: Fine-Tuning and Adaptation of Large Language Models
- ◆ Day 4: Building Generative Image Systems using Stable Diffusion & OpenCLIP
- ◆ Day 5: Evaluation, Explainability, and Responsible LLMs
- ◆ Day 6: Deployment and MLOps for LLM Applications using LangChain & FastAPI

SRM TRP ENGINEERING COLLEGE
(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)
SRM Nagar, Near Samayapuram, Trichy - 621 105.

Department of Computer Science and Engineering
In Association with

IEEE
STUDENT BRANCH
SRM TRP ENGINEERING COLLEGE

Six Day Faculty Development Programme
Data Science for Large Language Models and Generative Systems

Who can attend : Faculty Members & Research Scholars

Chief Guest
MS. SORNALATHA KRISHNAMOORTHY
Lead Technical Program Manager,
Vice President at JPMorgan Chase
United States.

Date: 19.01.2026 (Monday) to 24.01.2026 (Saturday) | Time : 06:30 PM - 09:00 PM | Mode : Online

Google Meet Link : meet.google.com/vmm-qkjk-dsu

Resource Persons

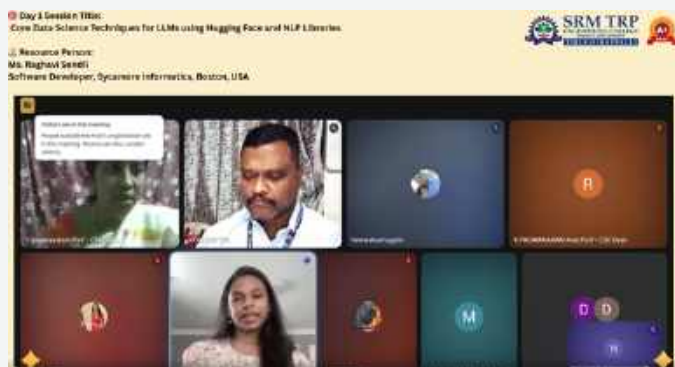
Dr. A. MUTHURAJ Associate Professor, Department of CSE, SRM TRP Engineering College, 20.01.2026 - Day 2 Data Engineering & Training Pipelines for LLMs	Dr. S. PERUMALRAJ Head of the Department, Department of A&IE, SRM TRP Engineering College, 21.01.2026 - Day 3 Fine-Tuning and Adaptation of LLMs
Dr. R. SUDHAKARAN Head of the Department, Department of CSE, SRM TRP Engineering College, 23.01.2026 - Day 5 Evaluation, Explainability and Responsible LLMs	Dr. H. JOHNSON (DR. H. J.) Director at POSTULATE INFO TECH PRIVATE LIMITED, Thiruvallur, Tamil Nadu, India 24.01.2026 - Day 6 Deployment and MLOps for LLM Applications using LangChain and FastAPI

Outcomes:
Understand the Foundations of LLMs
Apply Data Science Techniques for LLM Development
Explore Transformer Architectures and Training Paradigms
Implement LLM Workflows Using Modern Tools
Perform Evaluation and Optimization of Generative Models

Registration Link:
<https://forms.gle/uc72gRwmPMJ1s8>

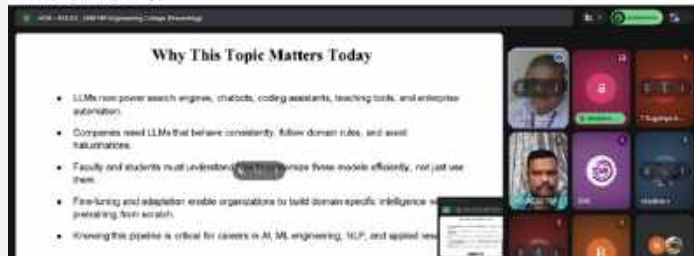
Convener: Dr. R. Sudhakaran, Prof. and Head/CSE
Coordinators: Mrs. T. Suganya, AP/CSE
Mrs. M. Subasri, AP/CSE

Logos: SRM, AICTE, Anna University, IEEE, and various accreditation logos.



FACULTY ACHIEVEMENTS

Day 3 Session Title:
Fine-Tuning and Adaptation of Large Language Models
Resource Person:
Dr. R. Perumalaraja
Head of the Department, AI & DS
SRM TRP Engineering College



Day 4 Session Title:
Building Generative Image Systems
using Stable Diffusion and OpenCLIP



🌟 Programme Highlights

- 🌟 Participation of 150+ delegates, including faculty members, research scholars, and industry professionals
- 🌟 Representation from 65+ institutions
- 🌟 Participants from multiple states across India—Andhra Pradesh, Telangana (Hyderabad), Maharashtra, Madhya Pradesh (Gwalior), Delhi, and beyond
- 🌟 Insightful sessions blending theory, tools, and real-world applications of LLMs and Generative AI
- 🌟 Strong academic–industry interaction, fostering future research and collaboration

🌟 Special Acknowledgement

Convener: Dr. P. Sudhakaran, Professor & Head, Department of CSE

Coordinators:

Mrs. T. Suganya, AP/CSE

Mrs. M. Subasri, AP/CSE

Day 5 Session Title:
Evaluation, Explainability and Responsible Large Language Models
Resource Person:
Dr. P. Sudhakaran
Professor & Head, Department of Computer
Science and Engineering
SRM TRP Engineering College, Tiruchirappalli



Day 6 Session Title:
Deployment and MLOps for LLM Applications using LangChain and FastAPI
Dr. P. Johnson Durai Raj
Director, Postulate Info Tech Private Limited,
Theothukudi, Tamil Nadu, India





Proud Moment for SRM TRP Engineering College, Tiruchirappalli

We are delighted to share that our students of CSE Department and AI&DS Department have received international funding from IEEE, USA under the EPICS in IEEE – Call for Proposals (October 2025) for developing community-centric engineering solutions.

Award-Winning Projects

- ◆ SoundScout: AI Smart Glasses with Haptic Feedback (CSE) – \$1,510
- ◆ Smart Hydraulic EV for Differently Abled Farmers (CSE) – \$3,430
- ◆ Smart Handheld Translator for Hearing & Speech Impaired (AIDS) – \$1,380

These projects reflect our students' commitment to inclusive innovation, assistive technologies, and sustainable development, aligning engineering education with real-world societal impact.

SRM TRP
ENGINEERING COLLEGE
Affiliated to ANNA UNIVERSITY
TIRUCHIRAPPALLI

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Hearty
CONGRATULATIONS
to our students for securing a dream offer in **M/s. TCS**

KOUSHICK GANESAN
Final Year CSE

DHARMA AJAY
Final Year CSE

SHARMILA BALASEKAR
Final Year CSE

SRIHARI N
Final Year CSE

CTC - 7 LPA

TATA
tcs digital
TATA CONSULTANCY SERVICES

trp.srmtrichy.edu.in | srm-trp-engineering-college | trichysrmtp

We are immensely proud to announce that our brilliant CSE department students have secured prestigious placements at TCS Digital with an impressive package of 7 LPA!

Heartfelt Congratulations to

- ★ Koushick Ganesan, Final Year CSE
- ★ Dharma Ajay, Final Year CSE
- ★ Sharmila Balasekar, Final Year CSE
- ★ Srihari N, Final Year CSE

SRM TRP
ENGINEERING COLLEGE
Affiliated to ANNA UNIVERSITY
TIRUCHIRAPPALLI

**DEPARTMENT OF ARTIFICIAL INTELLIGENCE
AND DATA SCIENCE**

Hearty
CONGRATULATIONS

to our students for securing a dream offer in **Tata Consultancy Services**

AJAY DHISONE
Final Year AI&DS

SHAFIYA SANOFER K
Final Year AI&DS

AJAY K
Final Year AI&DS

TCS TATA CONSULTANCY SERVICES | **CTC - 3.3 LPA**

SRM TRP ENGINEERING COLLEGE TIRUCHIRAPPALLI

trp.srmtrichy.edu.in | srm-trp-engineering-college | trichysrmtrp

Hearty congratulations to

- ★ Ajay Dhisone, Final Year AI&DS
- ★ Ajay K, Final Year AI&DS
- ★ Shafiya Sanofer K, Final Year AI&DS

from the AI&DS Dept for securing a prestigious placement in TCS in the Ninja role with a CTC of 3.3 LPA.

This achievement reflects their dedication, technical skills, and consistent efforts. 🌟



We are delighted to announce that our talented CSE department students have successfully secured placements at TCS Ninja with a package of 3.3 LPA!

Best wishes for a bright and fulfilling professional journey ahead!

Congratulations to Our CSE Achievers

- ★ Abarna S, Final Year CSE
- ★ Harris Selvaraj J, Final Year CSE
- ★ Arul Prakash K, Final Year CSE
- ★ M Yasika, Final Year CSE
- ★ Niharika K, Final Year CSE
- ★ Priya Rose M, Final Year CSE
- ★ Rashmika G K, Final Year CSE
- ★ Gokul G, Final Year CSE
- ★ Hariprasad Kannaiyan, Final Year CSE



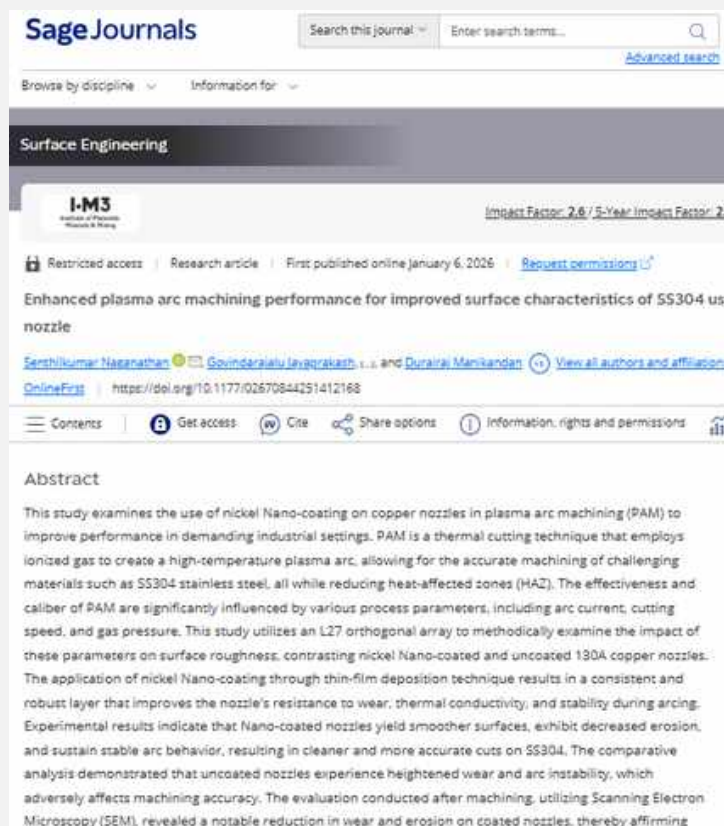
The institution is pleased to record the achievement of Adithya R, III CSE A, who secured Fifth Place in the 54th Junior Mr. Tamil Nadu – 2026 Championship.

Event: 54th Junior Mr. Tamil Nadu – 2026

Organized by: Tamil Nadu Amateur Body Building Association in association with First Fit Zone Gym

Date: 25 January 2026

This accomplishment reflects the individual's commitment, discipline, and dedication to sports excellence and brings pride to the institution.



Faculty Research Publication in International Journal
We are delighted to announce that the research article titled “Enhanced Plasma Arc Machining Performance for Improved Surface Characteristics of SS304 Using Nickel Nano-Coated Copper Nozzle” has been published online in the reputed international journal Surface Engineering, published by SAGE Journals (Impact Factor: 2.6).

The article is authored by Dr. Senthilkumar Naganathan, Dr. Govindarajulu Jayaprakash, Dr. Manoharan Thilak, and Mr. Durairaj Manikandan. The study focuses on improving Plasma Arc Machining (PAM) performance through the application of nickel nano-coated copper nozzles, resulting in enhanced surface quality, reduced nozzle wear, improved machining stability, and higher accuracy in machining SS304 stainless steel.

Dr. Y. Brucely is pleased to share that a research paper titled “Optimization of Engine Performance in Biodiesel Blends Enhanced with Nanoparticles” has been published online in the prestigious journal Renewable and Sustainable Energy, published by AIP Publishing.

The journal is SCI-indexed (Science Citation Index Expanded) with an Impact Factor of 2.3.

The paper is authored by S. Victor Soosai Irudayaraj, V. Thanigaivelan, Y. Brucely, and S. Senthil Kumar, and was published online on 5 January 2026.

This research work contributes valuable insights into improving engine performance using nanoparticle-enhanced biodiesel blends, supporting advancements in sustainable and renewable energy technologies.



3 (etal, Discover Materials (2020) 6:12
<https://doi.org/10.1007/s43939-025-00487-1>

Discover Materials

RESEARCH

Open Access

Microstructural evolution and performance analysis of MWCNT and Gr reinforced aluminium matrix composites

Morimuthu, S¹, Manivannan, S², Brucely, Y³ and Milon Selvam Densison⁴

¹Correspondence:
Brucely Y.
brucely2008@gmail.com;
Milon Selvam Densison
milselvd@gmail.com;
selvam@vsnl.com
²Department of Mechanical
Engineering, Karajalem Academy
of Higher Education,
Chinnasalem-641021, Tamil Nadu,
India
³Department of Mechanical
Engineering, Savitri School of
Engineering, Savitri Institute of
Medical and Technical Sciences
(SIAMT), Savitri University,
Chennai-600 055, Tamil Nadu, India
⁴Department of Mechanical
Engineering, SRM TRP Engineering
College, Tiruchirappalli, Tamil Nadu, India
⁵Department of Mechanical
Engineering, School of Engineering
and Applied Sciences, Kampala
International University, Western
Campus, Ishuku-Bushenyi, Kampala
Uganda

Abstract

The present research focuses on enhancing the thermal conductivity and mechanical strength of MWCNT/Al as a potential solution to the critical heat dissipation issue in contemporary electronic systems, thereby providing an effective and sustainable platform for new electronic devices and applications. MWCNT/Al composites at different ratios were made using compression moulding and tested in terms of their thermal, mechanical, and tribological characteristics. The results indicate that the addition of MWCNTs significantly enhances hardness by as much as 30% and tensile strength by around 25%. Tribological experiments indicated that the 0.1% MWCNTs and 0.1% graphite composite were 77% less than the 0.2% composite at higher sliding rates. Also, when the load was increased, the 0.2% MWCNTs mixed with 0.1% graphite showed a 46% decrease in wear. Electrochemical impedance spectroscopy revealed that the addition of MWCNTs to the Al-based composites did not result in significant changes in their electrochemical characteristics, indicating that their corrosion resistance remained unchanged, even with mechanical reinforcement, and was comparable to that of pure aluminium. The research emphasises the possible use of MWCNTs as strengthening agents in Al matrices, offering a perspective on developing high performance nanocomposites that can enhance thermal management in modern electronic devices.

Keywords: Metal matrix composites, MWCNT, Tribology, Thermal conductivity, Nano material, Corrosion

1 Introduction

The rapid development of electronics manufacturing offers significant benefits to the public. Technology applications have faced obstacles in recent times due to the complex material identification processes required to address industrial needs and consumer preferences. The advancement of electronic innovation faces significant obstacles because of the challenging task of effectively controlling the extreme heat generated by devices in operation. The heat flux of electronic components currently reaches up to 80 W/cm², but upcoming applications may push this value beyond 300 W/cm² in the foreseeable future. The miniaturisation trend and increased electrical power consumption

Research Article Published in Q1 SCI-Indexed Journal
Mr. Y. Brucely has successfully published a research article titled “Microstructural Evolution and Performance Analysis of MWCNT and Gr Reinforced Aluminium Matrix Composites” in the prestigious journal Discover Materials, published by Springer Nature.

The journal is SCI-indexed (Science Citation Index) and ranked in Quartile Q1, with an Impact Factor of 5.1.

DOI: 10.1007/s43939-025-00487-1

This research work investigates the enhancement of mechanical, thermal, and tribological properties of aluminium matrix nanocomposites, highlighting their potential for advanced engineering and industrial applications.

8

Wearable Robotics: Gesture-Based Control for Prosthetic Arms

Aiswarya Kannan¹, Dr. Senthilkumar Vagheesasan², Dr. Nagadeepan Anbazhagan³ and Vinoth M.⁴

¹Assistant Professor, Department of Electronics & communication Engineering, SRM TRP Engineering College, Trichy, Tamilnadu, India

²Professor, Department of Mechanical Engineering, SRM TRP Engineering College, Trichy, Tamilnadu, India

³Associate Professor, Department of Mechanical Engineering, SRM TRP Engineering College, Trichy, Tamilnadu, India

⁴aiswarya.k@trp.srmtrichy.edu.in

⁵trpskt2@gmail.com

⁶nagadeepan.a@gmail.com

⁷vinoth.m@trp.srmtrichy.edu.in

⁸Corresponding Author: nagadeepan.a@gmail.com

Abstract

Loss of upper limb function makes it extremely difficult for people to do daily tasks, underscoring the pressing need for easily accessible and intuitive prosthetic devices. This chapter presents a prototype of a gesture-controlled prosthetic limb that makes use of servo motors, Tinkercad and an Arduino Uno. The device offers an affordable entry-level platform for the creation of assistive technologies by simulating human hand motion through

Book Chapter Publication

Dr. V. Senthilkumar is pleased to share that a book chapter titled “Wearable Robotics: Gesture-Based Control for Prosthetic Arms”, authored by him and co-authored by Dr. Nagadeepan, Ms. Aishwarya (ECE), and Dr. Vinoth (ECE), has been successfully published in the book series IoT and Its Emerging Applications in Healthcare, Agriculture, Transportation and Climate.

ISBN: 978-93-72194-47-0

The book series has been submitted for Scopus indexing. The published chapter presents innovative insights into gesture-based wearable robotic systems for prosthetic arm control, contributing to advancements in assistive technologies and smart healthcare applications.



Prakash et al. *Discover Materials* (2026) 6:10
<https://doi.org/10.1007/s43939-025-00475-5>

Discover Materials

RESEARCH

Open Access



Investigation of micro turning process parameters for titanium alloy using response surface methodology

C. Prakash¹, S. Selva kumar², D. Manikandan^{3*} and Krishnaraj Ramaswamy^{4,5*}

*Correspondence:

D. Manikandan

man2520@gmail.com

Krishnaraj Ramaswamy

krishnarajmech@jdu.edu.in

¹Department of Mechanical Engineering, Roever Engineering College, Perambalur, Tamil Nadu, India

²Department of Mechanical Engineering, M A M School of Engineering, Tiruppur, Tiruchirappalli, Tamil Nadu, India

³Department of Mechanical Engineering, SRM TRP Engineering College, Tiruchirappalli, Tamil Nadu, India

⁴Department of Mechanical Engineering, College of Engineering and Technology, Dantel Dulle University, Dantel Dulle, Ethiopia

⁵Center for Global Health Research, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India

Abstract

The trend of miniaturizing engineering components represents a significant advancement in technology, enabling the production of small, precise parts that are essential in contemporary life. Titanium alloy has become a well-known material in contemporary applications due to its low density and high strength, along with its excellent heat resistance. As a result, it is widely utilized in aerospace and gas turbine industries. This article presents a novel study aimed at investigating the machining effects of titanium alloy through the optimization of micro-turning process parameters, focusing on tool wear and surface roughness. The study indicates that the primary factors influencing reactions are cutting speed and feed rate. The analysis of numerical and graphical methods aims to determine the optimal process parameters. The gathered results indicate that optimal tool wear and surface roughness are achieved simultaneously at 0.149 mm and 0.691 μm , respectively, with cutting parameters set at 3035 rpm for cutting speed, 7.5 $\mu\text{m}/\text{rev}$ for feed, and a depth of cut of 15 μm , resulting in 89% desirability. This approach enhances output and surface quality while minimizing machining costs. A confirmation experiment is conducted and analyzed for the purpose of comparative study, focusing on residual error. The analysis through Scanning Electron Microscopy indicates that the medium order cutting conditions yield superior performance while addressing conflicting objectives, resulting in a smoother surface topography.

Keywords Microturning, Titanium alloy, Response surface methodology, Tool wear, Surface roughness

1 Introduction

At present circumstances, the miniaturization of parts plays an imperative position in a variety of fields such as communications, electronics, automotive, aerospace etc. The miniature pieces can also be found in the succeeding applications: Micro scale devices are preferred to work interior of cellular components in biotechnology and medical engineering. Micro actuators: tiny instruments and soft machines could be assembled using micro actuators. Harsh environments: The traditional machines cannot be possible to operate smoothly, because of these spaces are in void space under elevated pressure with

Research Article Published in Q1 SCI-Indexed Journal

Dr. D. Manikandan is pleased to share that his research article entitled “Investigation of Micro Turning Process Parameters for Titanium Alloy Using Response Surface Methodology” has been successfully published in the reputed journal *Discover Materials*, published by Springer Nature.

The journal is SCI-indexed (Science Citation Index) and ranked in Quartile Q1, with an Impact Factor of 5.1.

✦ DOI: 10.1007/s43939-025-00475-5

The study presents a systematic investigation of micro-turning process parameters for titanium alloys using Response Surface Methodology, contributing valuable insights toward precision manufacturing and advanced machining applications.

MECHANICAL ENGINEERING

FACULTY ACHIEVEMENTS



Faculty Development Programme on Cutting-Edge Technologies in Digital Manufacturing

The Department of Mechanical Engineering, SRM TRP Engineering College, successfully organized a Faculty Development Programme (FDP) on “Cutting-Edge Technologies in Digital Manufacturing” from 20 January 2026 to 24 January 2026 in hybrid mode.

The programme was designed for research scholars, academicians, and industry professionals and aimed to provide insights into emerging trends in digital manufacturing, artificial intelligence, additive manufacturing, advanced materials, and smart manufacturing systems.

The FDP was inaugurated with the presence of the Chief Guest, Mr. P. Senthilkumar, Deputy General Manager and APU Head – Injector Manufacturing, Delphi-TVS Technologies India Ltd., Chennai, who shared valuable industry perspectives on modern manufacturing practices.

SRM TRP ENGINEERING COLLEGE
(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)
SRM Nagar, Near Sankarapuram, Tiruchirappalli - 620 065

Department of Mechanical Engineering
Faculty Development Programme on
CUTTING-EDGE TECHNOLOGIES IN DIGITAL MANUFACTURING
Who can attend: Research Scholar, Academician, Industry Personnel

Date: 20.01.2026 to 26.01.2026 | Time: 10:00 a.m. to 12:30 p.m. and 2:00 p.m. to 4:00 p.m. | Mode: HYBRID

Chief Guest
Mr. P. SENTHILKUMAR
Deputy General Manager
APU Head - Injector Manufacturing
Delphi-TVS Technologies India Ltd, Chennai.

Resource Persons

- Dr. M. MANIKANDAN DURAIRAJ**
Associate Professor, SRM Institute of Science and Technology, Chennai.
Topic: Integrating Artificial Intelligence in Advanced Manufacturing
Session: 20.01.2026 (PM)
- Dr. M. MANI MOHAN**
Associate Professor, SRM Institute of Science and Technology, Chennai.
Topic: Additive Manufacturing in 3D Printing
Session: 21.01.2026 (PM)
- Dr. S. SIVAKUMAR**
Associate Professor, SRM Institute of Science and Technology, Chennai.
Topic: Machine Learning, Smart Enhancements in Advanced Manufacturing
Session: 22.01.2026 (PM)
- Dr. V. S. SATHISH CHANDER**
Associate Professor, SRM Institute of Science and Technology, Chennai.
Topic: Additive Manufacturing and its Emerging Research Frontiers
Session: 23.01.2026 (PM)
- Dr. J. S. SATHISH CHANDER**
Associate Professor, SRM Institute of Science and Technology, Chennai.
Topic: Additive Manufacturing and its Emerging Research Frontiers
Session: 24.01.2026 (PM)
- Dr. S. SATHISH CHANDER**
Associate Professor, SRM Institute of Science and Technology, Chennai.
Topic: Additive Manufacturing and its Emerging Research Frontiers
Session: 25.01.2026 (PM)
- Dr. S. SATHISH CHANDER**
Associate Professor, SRM Institute of Science and Technology, Chennai.
Topic: Additive Manufacturing and its Emerging Research Frontiers
Session: 26.01.2026 (PM)
- Dr. S. SATHISH CHANDER**
Associate Professor, SRM Institute of Science and Technology, Chennai.
Topic: Additive Manufacturing and its Emerging Research Frontiers
Session: 27.01.2026 (PM)
- Dr. S. SATHISH CHANDER**
Associate Professor, SRM Institute of Science and Technology, Chennai.
Topic: Additive Manufacturing and its Emerging Research Frontiers
Session: 28.01.2026 (PM)
- Dr. S. SATHISH CHANDER**
Associate Professor, SRM Institute of Science and Technology, Chennai.
Topic: Additive Manufacturing and its Emerging Research Frontiers
Session: 29.01.2026 (PM)
- Dr. S. SATHISH CHANDER**
Associate Professor, SRM Institute of Science and Technology, Chennai.
Topic: Additive Manufacturing and its Emerging Research Frontiers
Session: 30.01.2026 (PM)

OUTCOMES

- Improve understanding of AI, additive, advanced materials, and smart manufacturing technologies.
- Enhance ability to pursue sustainable, future-oriented manufacturing research and applications.

Registration Link: <https://myurl.com/ide39fw>

Organized by: SRM TRP Engineering College
Co-Organized by: SRM Institute of Science and Technology
Co-Organized by: SRM Institute of Science and Technology
Co-Organized by: SRM Institute of Science and Technology

Happy to share...

I've been appointed as a Member of the
Editorial Board of
scientific reports
(Springer Nature)
an SCI-indexed Q1 journal with
an Impact Factor of 3.9.

Looking forward to contributing
to the editorial and peer-
review process and
supporting research
excellence and publication
ethics.

SCI-Indexed Q1 Journal
- Impact Factor 3.9

Dr. Manikandan Durairaj

Faculty Editorial Board Appointment

Dr. Manikandan Durairaj has been appointed as a Member of the Editorial Board of the reputed international journal Scientific Reports, published by Springer Nature.

Scientific Reports is an SCI-indexed, Quartile-1 (Q1) journal with an Impact Factor of 3.9. As a member of the Editorial Board, Dr. Manikandan Durairaj will contribute to the editorial and peer-review process, supporting research excellence, publication quality, and ethical standards in scholarly publishing.

This prestigious appointment is a significant recognition of his academic expertise and research contributions. The institution congratulates Dr. Manikandan Durairaj on this notable achievement and wishes him continued success in his academic and professional endeavors.



Industrial Visit to M/s RANE (Madras) Ltd., Viralimalai

On behalf of the Department of Mechanical Engineering, we express our sincere gratitude for organizing the Industrial Visit to M/s RANE (Madras) Ltd., Viralimalai, Tiruchirappalli, conducted on 20 January 2026.

The visit provided valuable practical exposure to engine component manufacturing, with special emphasis on IC engine valves, valve guides, and tappets, effectively bridging the gap between theoretical concepts and real-time industrial practices. The programme proved to be an enriching and insightful learning experience for 21 second-year students who actively participated.

As scheduled, the II Year Mechanical Engineering students are currently on an industrial visit to M/s RANE (Madras) Ltd., Engine Valves Division, Viralimalai.

At present, Mr. Lawrence, AGM – HR, is presenting an overview of the organization to the students. This will be followed by a guided visit to the factory bays, where students will gain practical exposure and insights into advanced and sophisticated machinery relevant to their current academic curriculum.



Micro-Credential Course Session on Conference Paper Preparation

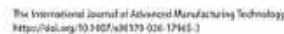
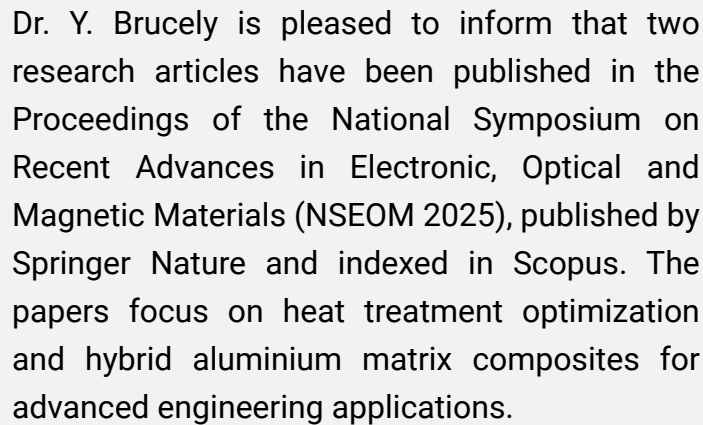
This is to inform that a Micro-Credential Course for IV Year Project Work (PR3811) titled “How to Convert a Major Project into a Conference Publication” was conducted as part of the academic activities.

During the session, Module 4 was covered, which included Session 7: Conclusion and Future Scope and Session 8: Abstract and Keywords. Students were systematically guided on drafting effective conclusions with clear future research scope and on preparing well-structured abstracts with appropriate keywords aligned to conference publication standards.

The sessions were complemented with hands-on activities, enabling students to practically apply the concepts learned and thereby strengthen their conference paper preparation and technical writing skills.



Irungalur, Tamil Nadu, India
Kq23+upms, Irungalur, Tamil Nadu 621105, India
Lat 10.501828° Long 78.762231°
Tuesday, 20/01/2026 10:32 AM GMT +05:30



Anil Moorthy¹ · Dinesh Subbiah² · Mathiazhagan Nallasamy¹ · Sureshkumar Mylsamy³ · Manikandan Durairaj⁴ · Krishnaraj Ramaswamy^{5,6}

Received: 19 November 2013 / Accepted: 7 January 2014
© The Author(s), under exclusive license to Springer-Verlag London Ltd., part of Springer Nature 2014

Abstract

This study presents a comprehensive experimental investigation into the influence of rotary friction-welding parameters on the mechanical integrity, microstructural evolution, and phase stability of similar AISI 304 austenitic stainless-steel joints. A Taguchi L27 orthogonal array involving 27 experimental trials was employed to systematically evaluate the combined effects of rotational speed (800 to 1200 rpm), friction pressure (10 to 60 MPa), forging pressure (20 to 60 MPa), friction time (2 to 6 s), and forging time (2 to 6 s). Mechanical performance was assessed through ultimate tensile strength and elongation, while Vickers microhardness mapping was carried out symmetrically across both sides of the weld interface, covering the base metal and thermomechanically affected zones. Microstructural evolution and fracture behavior were examined using optical microscopy and scanning electron microscopy, and phase stability and process-induced residual strain were analyzed by X-ray diffraction. The results demonstrate that an optimized parameter combination of 1000 rpm rotational speed, 40 MPa friction pressure, 60 MPa forging pressure, and approximately 4 s friction and forging times produced defect-free joints with a maximum tensile strength of 568 MPa, corresponding to about 90 to 95% of the base metal strength. A symmetrical hardness profile with peak values of 219 to 241 HV at the fully deformed zone was observed, attributed to uniform heat generation, balanced metal deformation despite asymmetric rotation, and dynamic recrystallization. Photomicrographs revealed predominantly ductile fracture with fine, uniformly distributed dimples, while XRD confirmed retention of the austenitic γ -Fe phase without deleterious secondary phases. Overall, the study establishes a robust process window for producing high-integrity AISI 304 friction-welded joints with refined microstructure and stable phase constitution.

Keywords: Friction welding; AISI304; Tiguchi L27; Dynamic recrystallization; Microhardness mapping; Tensile characteristics

- ✉ Manisharan Dattaraj
maes720@gmail.com
- ✉ Krishnaji Ramaswamy
prof.krishnaji@cinba.ubc.ca

- ² Department of Mechanical Engineering, Anna University, Chennai, Tamil Nadu, India

- 1 Department of Mechanical Engineering, Bharati Vastu Institute of Technology, Suryavaram, Tami Nadu, India
- 2 Department of Mechanical Engineering, SRMIST Engineering College, Tiruchirappalli, Tamilnadu, India
- 3 Department of Mechanical Engineering, College of Engineering and Technology, Dandi Dals University, Dandi Dals, Ethiopia
- 4 Center for Global Health Research, Saxena Institute of Medical and Technical Sciences, Sonmuth University, Chumna, Tamilnadu, India

Published online: 28 January 2006





SRM TRP
ENGINEERING COLLEGE
Affiliated to ANNA UNIVERSITY
TIRUCHIRAPPALLI

COUNSELLING CODE : 3795



SRM TRP ENGINEERING COLLEGE
(SRM GROUP)

IRUNGALUR - 621105, MANNACHANALLUR - TALUK,
TIRUCHIRAPPALLI, TAMILNADU

PHONE : 0431 - 2258681, 2258947

<https://trp.srmtrichy.edu.in/>

 @Trichysrmtrp  @SRMTRPEngineeringCollege  @srm_trp  @TrichySRMTRP

 @srm-trp-engineering-college