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Proceedings of
International Conference on

Emerging Trends on Mathematical, Physical, Chemical Sciences and Literatures for Sustainable Development (ETMPCSL '26)

Sponsored by



INDIAN SOCIETY FOR
TECHNICAL EDUCATION

06th & 07th March, 2026



AAA COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution)

Panjurajan-Amaravathy Trust, Sivakasi-Virudhunagar
Kamarajar Educational Road, Amathur - 626 005
Tamil Nadu, India.



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International Conference on
**Emerging Trends on Mathematical, Physical,
Chemical Sciences and Literatures for
Sustainable Development (ETMPCSL-26)**

06th - 07th March, 2026 | Sivakasi, Tamil Nadu, India

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INDIAN SOCIETY FOR
TECHNICAL EDUCATION

Organised by

Department of Science and Humanities



AAA College of Engineering and Technology

(An Autonomous Institution)

Panjurajan-Amaravathy Trust, Sivakasi-Virudhunagar
Kamarajar Educational Road, Amathur - 626 005
Tamil Nadu, India.

Proceedings



<https://aaaengcoll.ac.in/>



Dr. P. Karvannan

Chairman & Secretary
AAA College of Engineering and Technology

Message

On behalf of AAA College of Engineering and Technology, I extend my warm greetings and heartfelt welcome to all the delegates, academicians, researchers, students, and industry experts participating in the International Conference on Emerging Trends in Mathematical, Physical, Chemical Sciences and Literatures for Sustainable Development (ETMPCSL-2026), organized by the Department of Science and Humanities.

This conference, conducted in hybrid mode on 6th & 7th March 2026, provides a distinguished platform for knowledge exchange, scholarly interaction, and interdisciplinary collaboration. It reflects our institution's commitment to academic excellence, research innovation, and sustainable development.

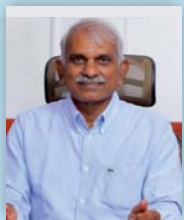
In today's rapidly evolving world, scientific research and literary studies play a vital role in addressing global challenges and shaping a better future. Conferences like ETMPCSL-2026 encourage critical thinking, creativity, and meaningful dialogue among scholars from diverse disciplines.

I deeply appreciate the sincere efforts of the organizing committee, faculty members, and volunteers who have worked tirelessly to make this event a success. I am confident that the deliberations and discussions will inspire innovative ideas and lasting collaborations.

I wish the conference every success and hope it becomes a memorable and enriching academic experience for all participants.

Dr. P. Karvannan
Chairman & Secretary





Dr. P. Ganesan

Correspondent

AAA College of Engineering and Technology

Message

It gives me immense pleasure to welcome all the participants to the International Conference on Emerging Trends in Mathematical, Physical, Chemical Sciences and Literatures for Sustainable Development (ETMPCSL-2026), organized by the Department of Science and Humanities of our institution.

This conference serves as a valuable forum for researchers, academicians, and students to share their knowledge, research findings, and innovative perspectives. The integration of science and literature in this conference highlights the importance of interdisciplinary approaches in solving real-world problems.

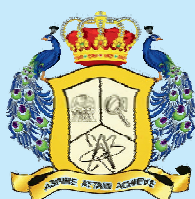
The hybrid mode of this conference enables wider participation and strengthens global academic connectivity. Such initiatives reflect our commitment to fostering research culture, intellectual growth, and sustainable development.

I congratulate the organizing team for their dedication and perseverance in planning this prestigious event. I am confident that this conference will contribute significantly to academic advancement and societal progress.

I wish all the delegates fruitful deliberations and a highly successful conference.

Dr. P. Ganesan

Correspondent





Dr. K. Vignesh Kumar

Joint Secretary
AAA College of Engineering and Technology

Message

I am delighted to extend my best wishes to all the participants of the International Conference on ETMPCSL-2026, organized by the Department of Science and Humanities of AAA College of Engineering and Technology.

This conference provides an excellent opportunity for scholars and researchers to engage in meaningful discussions on emerging trends in science and literature with a focus on sustainable development. It encourages innovation, collaboration, and intellectual excellence.

In the present era, interdisciplinary research is essential for addressing complex societal challenges. ETMPCSL-2026 promotes such integration and nurtures a spirit of inquiry and creativity among young minds.

I sincerely appreciate the efforts of the organizing committee for their meticulous planning and execution. I am confident that this conference will inspire participants to pursue impactful research and professional excellence.

I wish the event great success and all the delegates a rewarding academic experience.

Dr. K. Vignesh Kumar
Joint Secretary





Dr. M. Sekar

Principal
AAA College of Engineering and Technology

Message

It is with great pleasure that I welcome all the delegates to the International Conference on Emerging Trends in Mathematical, Physical, Chemical Sciences and Literatures for Sustainable Development (ETMPCSL-2026), organized by the Department of Science and Humanities.

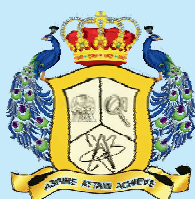
This conference reflects our institution's vision to promote academic excellence, research competence, and sustainable development. It provides a dynamic platform for sharing ideas, exploring innovative concepts, and strengthening academic networks.

The convergence of science and literature in this conference emphasizes the importance of holistic education and interdisciplinary learning. Such initiatives prepare our students and researchers to face global challenges with confidence and responsibility.

I express my sincere appreciation to the organizing committee and faculty members for their dedicated efforts in making this event possible. I am confident that the conference proceedings will serve as a valuable academic resource.

I wish all the participants fruitful interactions and a highly successful conference.

Dr. M. Sekar
Principal





Dr. K. Anand

Convenor

ETMPCSL-2026

AAA College of Engineering and Technology

Message

This conference aims to provide a vibrant platform for academicians, researchers, scientists, and scholars to share innovative ideas, recent advancements, and interdisciplinary research that contribute to sustainable development. The integration of Mathematical, Physical, and Chemical Sciences with Literature, strengthened by the vital role of the English language as a global medium of communication and knowledge dissemination, emphasizes the need for a holistic and human-centred approach to addressing global challenges.

ETMPCSL-2026 seeks to foster meaningful discussions, collaborative research, and dynamic knowledge exchange that promote scientific excellence and social responsibility. The conference features keynote addresses, technical sessions, and poster presentations reflecting emerging trends and transformative research across diverse domains.

I sincerely thank the organizing committee, advisory members, resource persons, and participants for their valuable contributions and enthusiastic support in making this International Conference a grand success.

Wishing all participants an enriching, productive, and intellectually stimulating experience.

Dr. K. Anand

Convenor

ETMPCSL-2026



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Title : Labeling of Graphs

06-03-26 - Friday

Dr. S.V. Bharanedhar

Assistant Professor, Department of Mathematics,
Central University of Tamil Nadu,
Thiruvavur.



2

Title : Applications of Linear Algebra in Science and Engineering

06-03-26 - Friday

Dr. M. Rajesh Kannan

Associate Professor,
Department of Mathematics,
Indian Institute of Technology, Hyderabad.



3

Title : Linear Algebra and AI for image Processing

06-03-26 - Friday

Dr. Suresh Rasappan

Department of Mathematics,
University of Technology and Applied Science,
IBRI, Oman.



4

Title : Emerging Trends in English Language Learning

07-03-26 - Saturday

Dr. R. Suriya Prakash Narayanan

Assistant Professor, Department of English,
Alagappa University College of Arts and Science for Women
Thondi



5

Title : Perovskites for Light Emitting Applications

07-03-26 - Saturday

Dr. M. Jeevaraj

Post Doctoral Researcher,
Institute of Physics and Technology,
Ural Federal University Yekaterinberg, Russia.



6

Title : The Mathematical Language of Physics: From Fundamentals to Applications

07-03-26 - Saturday

Dr. K. Ramachandran

Professor, Department of Physics,
Bharathiyar University, Coimbatore



7

Title : Emerging Phosphor Materials for High Performance White LED Lighting

07-03-26 - Saturday

Dr. Sivaganesh Dhanushkodi

Post Doctoral Researcher,
College of Chemical Engineering,
Zhejiang University of Technology, Hangzhou, China.



INTERNATIONAL CONFERENCE ON EMERGING TRENDS ON MATHEMATICAL, PHYSICAL, CHEMICAL SCIENCES AND LITERATURES FOR SUSTAINABLE DEVELOPMENT (ETMPCSL-26)

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ETMAT-118

Predictive Analysis of Molecular Refractivity in Quinolone Antibiotics Using Degree-Based Topological Descriptors

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Abstract: Quantitative Structure–Property Relationship (QSPR) analysis has become an important computational approach for understanding the relationship between molecular structure and physicochemical properties of chemical compounds. Topological indices derived from molecular graphs provide a powerful mathematical representation of chemical structures and have been widely used in drug discovery and cheminformatics. In this study, degree-based topological indices are employed to investigate the structural characteristics of quinolone antibiotics, a significant class of synthetic antibacterial agents widely used in the treatment of various bacterial infections. The main objective of this research is to evaluate the predictive capability of selected topological descriptors in estimating physicochemical properties, particularly molecular refractivity (MR), which is closely associated with molecular volume, polarizability, and intermolecular interactions.

Initially, the molecular structures of selected quinolone antibiotics are represented as molecular graphs, from which several degree-based topological indices are calculated. These descriptors capture the connectivity patterns of atoms and bonds within the molecules and serve as numerical features for predictive modeling. To establish relationships between the computed indices and molecular refractivity, different curvilinear regression models, including linear, quadratic, and cubic regression techniques, are applied. These regression models allow the exploration of both linear and nonlinear relationships between structural descriptors and physicochemical properties.

The performance and accuracy of the proposed models are evaluated using Root Mean Square Error (RMSE) as the primary statistical metric. Comparative analysis of the regression models reveals that certain topological indices exhibit strong correlations with molecular refractivity. Among the evaluated descriptors, the harmonic index demonstrates the highest predictive capability, producing the lowest RMSE values and indicating a strong relationship between molecular topology and physicochemical behavior. The results confirm that degree-based topological indices can effectively serve as reliable predictors for molecular properties of quinolone antibiotics.