

# Preface

## III International Conference on advances in applied physics and mathematics for energy, environment and earth science (AAPM-III 2025)

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**Abstract.** The III International Conference on Advances in Applied Physics and Mathematics for Energy, Environment and Earth Science (AAPM-III 2025) was held on January 20-21, 2025, in Tashkent, Uzbekistan. This conference brought together researchers, scientists, and engineers from around the world to share their latest findings in applied physics and mathematics, with a focus on energy, environmental, and earth science applications. With approximately 250 submissions received, a rigorous peer review process and originality checks resulted in the selection of 70 high-quality papers for presentation and publication in EPJ Web of Conferences.

The III International Conference on Advances in Applied Physics and Mathematics for Energy, Environment and Earth Science (AAPM-III 2025) was held on January 20-21, 2025, in Tashkent, Uzbekistan. This conference based on the success of the previous ones, providing a platform for researchers, scientists, and engineers from different countries to share their latest findings, exchange ideas, and promote collaborations in the fields of applied physics and mathematics for energy, environment and earth science.

Under the guidance of an honoured scientific committee, including Predrag Stanimirovic from the University of Nis, Serbia; Takhirjon Sultanov from Andijan Institute of Agriculture and Agrotechnology, Uzbekistan; Komil Astanakulov from TIAME - National Research University, Uzbekistan; Long Jin from Lanzhou University, China; and Yuri Gulyaev from the Russian Academy of Sciences, Russia, the conference included six key sections:

- Applied Physics and Mathematics in Energy Systems;
- Environmental Physics and Mathematical Modeling;
- Applied Physics in Earth Sciences and Resource Management;
- Computational Physics and Mathematical Methods;

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- Advanced Materials, Electromagnetic and Optical Physics;
- Physical Phenomena in Materials and Environmental Systems.

These sections covered a wide range of topics, reflecting the interdisciplinary nature of modern research and the increasing convergence of various fields to challenge complex problems related to applied physics for energy, environment, and earth science.

The conference attracted participants from various Asian countries, including Uzbekistan, Azerbaijan, Iraq, Bangladesh, Kazakhstan, Belarus, Russia, and India, developing international scientific collaboration and knowledge exchange. This diverse participation highlighted the global importance of the topics discussed and provided valuable opportunities for cross-cultural scientific exchange.

The scientific sessions of AAPM-III 2025 in Tashkent included a diverse range of scientific presentations across six main sections mentioned above, each addressing critical areas of research in applied physics and mathematics. These presentations were not only highly interesting and important but also provoked lively discussions and numerous questions from the attendees.

The Applied Physics and Mathematics in Energy Systems section investigated advancements in physics and mathematical methods related to energy production, storage, and distribution. Environmental Physics and Mathematical Modeling explored environmental issues and their mathematical representations, while Applied Physics in Earth Sciences and Resource Management examined the application of physical principles to earth sciences and natural resource management. Computational Physics and Mathematical Methods discussed innovative techniques and approaches for solving complex problems in these fields, generating significant interest among participants. The Advanced Materials, Electromagnetic and Optical Physics section covered latest research in material science, electromagnetics, and optics, with potential applications in energy and environmental technologies. Lastly, Physical Phenomena in Materials and Environmental Systems discussed recent developments in topics from construction materials to radiation analysis. The research presented here demonstrates innovative approaches to material science, environmental monitoring, and energy-related technologies.

These presentations collectively covered a wide spectrum of topics in applied physics and mathematics, reflecting the interdisciplinary nature of modern research in energy, environment, and earth science. The enthusiasm and engagement demonstrated by the participants highlighted the significance and relevance of these topics in addressing current global challenges in use of applied physics for solving problems related to energy, environmental, and earth sciences.

AAPM-III 2025 implemented a rigorous peer review process using the EPJ Web of Conferences norms and ethical standards. Reviewers rated manuscripts on a scale of 1-10 across various aspects and provided detailed comments on strengths, weaknesses, and recommendations for improvement. To maintain integrity, reviewers confirmed they had no conflicts of interest. In addition to peer review, all submissions underwent a thorough originality check using iThenticate, demonstrating the conference organizers' commitment to academic integrity. The conference received approximately 250 submissions, and following the rigorous review process, only 70 papers were selected for inclusion, resulting in a competitive acceptance rate of 28%.

AAPM-III 2025 provided a remarkable opportunity for academic and industrial communities to address new challenges, share solutions, and discuss future research directions in the field of applied physics and mathematics, with a specific focus on energy, environmental, and earth science applications. We believe that this conference has successfully built upon the foundations laid by its predecessors and will continue to serve as a catalyst for new ideas, collaborations, and breakthroughs in applied physics and mathematics.

We encourage all participants to actively engage in discussions, share their knowledge, and explore potential collaborations that could lead to future advancements in these critical fields of study. The strict selection process ensures that the reports presented at AAPM-III 2025 and papers subsequently published in the EPJ Web of Conferences proceedings represent significant contributions to their respective fields, maintaining the conference's reputation for excellence and providing attendees and readers with access to urgent research and insights in applied physics and mathematics.

We express our sincere gratitude to EPJ Web of Conferences for publishing the proceedings of AAPM-III 2025. This publication will ensure wide dissemination of the research presented at the conference. We are confident that these proceedings will become a valuable resource for researchers and practitioners in the fields of applied physics and mathematics, demonstrating the latest advancements and encouraging further collaborations in use of applied physics and mathematics for energy, environment, and earth science.

### **PROGRAMME COMMITTEE**

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