**Preface: Conference on Advanced Technologies in Engineering (CATE 2025)**

The *Conference on Advanced Technologies in Engineering (CATE 2025)* was held on **October 8–10, 2025**, at **Tashkent State Transport University** (TSTU), Tashkent, Uzbekistan. The conference served as a vibrant platform for researchers, engineers, scientists, and policymakers to present and discuss recent advances in engineering, physics, materials science, energy, and sustainability.

The primary goal of CATE 2025 was to foster interdisciplinary collaboration and share cutting-edge research that addresses the challenges of modern engineering systems — from seismic resilience and intelligent automation to energy efficiency and transport sustainability. The conference reflected Uzbekistan’s strategic focus on technological innovation and resource-efficient engineering solutions aligned with global sustainability goals.

The scientific program featured six parallel tracks, each emphasizing a core aspect of modern engineering science and its applications:

1. **Mathematical Modeling and Computational Physics** – advanced numerical methods for simulating physical and industrial processes, predictive modeling for energy systems, and optimization techniques integrating mathematics and physics.
2. **Materials Science and Engineering** – innovations in material design for high-performance applications, computational analysis of materials under extreme conditions, and the development of resilient, earthquake-resistant materials.
3. **Physics-Driven Industrial Automation** – application of artificial intelligence, IoT, robotics, and digital-twin technologies to optimize physics-intensive industrial systems.
4. **Energy Physics and Sustainability** – studies on energy storage, transfer, and conversion, physics-based efficiency models, and intelligent energy-management systems for sustainable development.
5. **Seismology and Earthquake Engineering** – computational research on seismic wave propagation, risk assessment, and the creation of innovative structures and materials for improved seismic resilience.
6. **Transport Systems in Applied Physics** – modeling, optimization, and integration of advanced materials and sustainable technologies in transport networks and infrastructure.

CATE 2025 was organized by Tashkent State Transport University in collaboration with academic and industrial partners from Uzbekistan and abroad. The conference provided an open forum for sharing innovations in engineering education, research integration, and technological development for a sustainable future.

The Organizing Committee expresses its sincere gratitude to all authors, reviewers, session chairs, and participants for their invaluable contributions. Their collective efforts made this conference a truly inspiring and impactful event, strengthening international collaboration and advancing engineering science toward a smarter, safer, and greener world.

**Conference Organizing Committee**

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Tashkent State Transport University, Tashkent, Uzbekistan