Special Issue

Advances in Insulation Materials for Power Systems: Performance, Reliability, and Sustainability

Message from the Guest Editors

The reliability and efficiency of power systems depend on insulation materials. With rising demand for high-voltage applications and renewable energy, advancements in these materials are essential for system stability and longevity. Recent research focuses on novel dielectric materials, aging resistance, and monitoring techniques to prevent failures and optimize performance. The push for sustainable, eco-friendly insulation alternatives addresses both performance and environmental concerns. This Special Issue aims to present the latest research on insulation materials in power systems, covering theoretical developments, material characterization, degradation mechanisms, condition monitoring, and application techniques. Topics of interest include:

- Novel dielectric materials and nanocomposites for high-voltage insulation
- Aging and failure mechanisms of insulation materials
- Condition monitoring and diagnostics
- Eco-friendly insulation solutions
- HVDC insulation materials and challenges
- Advanced testing methodologies
- Partial discharge analysis and mitigation
- Impact of thermal and electrical stress
- Computational modeling of insulation behavior

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Message from the Editor-in-Chief

Energies is an international, open access journal in energy engineering and research. The journal publishes original papers, review articles, technical notes, and letters. Authors are encouraged to submit manuscripts which bridge the gaps between research, development and implementation. The journal provides a forum for information on research, innovation, and demonstration in the areas of energy conversion and conservation, the optimal use of energy resources, optimization of energy processes, mitigation of environmental pollutants, and sustainable energy systems.

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