Special Issue

Gel-Based Materials for Sensors, Self-Powered Nanogenerators, and Artificial Intelligence Prospects

Message from the Guest Editors

This Special Issue involves the development of the synergy between gel-based materials and AI-driven analytics. This opens new opportunities for the development of autonomous soft electronic systems. In addition, the other key points for this Special Issue are as follows:

- Gel-based materials for energy harvesting, sensors, and AI-driven analytics.
- Self-healing mechanisms, biocompatibility, and structure-property relations within gel-based materials.
- Factors influencing the response time, gauge factors, sensitivity, linearity, stretchability, shape, conformation, and real-time monitoring in gels.
- Factors influencing performances like conversion efficiency in nanogenerators, flexibility, and stiffness of gels,
- Reinforcing factors and efficiency of filler additives, energy coefficients, sustainable and green power source for gels.
- Algorithms in AI prospects such as Random Forest, Gradient Boosting, and Specific Neural Network architectures.
- Machine-learning algorithms that can analyze complex material–property–performance relationships.
- Low-power AI chips that facilitate autonomous, self-sustaining Internet of Things networks.

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About the Journal

Message from the Editor-in-Chief

Gels (ISSN 2310-2861) is recently established international, open access journal on physical and chemical gel-based materials. The journal aim is to encourage scientists to publish their experimental and theoretical results in as much detail as possible. General topics include but not limited to synthesis, characterization and applications of new organogels, hydrogels and ionic gels made either from low molecular weight compounds or polymers, composite and hybrid materials where a metal is by some means incorporated into the gel network, and computational studies of these materials in order to provide a better understanding of gelation mechanism. We cordially invite you to consider publishing with us and contribute with your own grain of sand to the advance in this fascinating field.

Editor-in-Chief

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manuscripts are peer-reviewed and a first decision is provided to authors approximately 12.5 days after submission; acceptance to publication is undertaken in 2.7 days (median values for papers published in this journal in the first half of 2025).