Special Issue

Novel Research in Hydrogen System Optimization and Supply Chain Model

Message from the Guest Editor

This Special Issue aims to explore novel approaches to optimizing medium and large-scale electrolysis-based hydrogen production and storage systems and their integration into power grids and supply chains, with a particular focus on improving system efficiency, reducing system costs, and enabling large-scale deployment. Topics include advances in modelling and control of electrolysis-based hydrogen hubs, including technologies such as Alkaline Electrolysis (AE) and Proton Exchange Membrane Electrolysis (PEME), supply chain optimization models for hydrogen distribution, and the role of hydrogen storage in enhancing the electricity grid flexibility and resilience. Additionally, the Issue covers the application of AI and machine learning to optimize hydrogen production, storage, and transportation, highlighting the potential for integrated power and hydrogen systems to leverage renewable energy sources and support the deep decarbonization of power grids. By bridging theoretical research with practical applications, this collection aims to address the challenges of scaling up hydrogen technologies, contributing to the development of a sustainable and resilient hydrogen economy.

Guest Editor

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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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