Special Session 15: Emerging AI Techniques for Nexus of Electricity, Gas, Heating, and Transportation on System Modelling and Forecasting

Session Organizer：

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Brief Description of the Session Thematic:

A whole-system perspective encompassing electricity, gas, heating, and transportation is crucial for a sustainable energy transition. Traditionally, electricity, gas, heating, and transportation systems were operated independently to fulfill individual energy needs. With advancements in technologies, such as hybrid heating systems and hydrogen production through advanced electrolysis, the interactions between these systems are increasing with new interfaces. AI technologies offer innovative solutions. Big data analytics and machine learning algorithms develop a comprehensive understanding of the entire energy system, considering various dimensions, including technological, economic, social, and environmental factors. The special issue, therefore, provides a forum for researchers and scientists to exchange quality research solutions and results to tackle the whole energy system issues utilizing emerging AI-related technologies. Both data-driven and physical model-based forecasting techniques are interesting, targeting more interpretable and efficient integrated energy system modeling and evaluation.

Topics and Keywords:

1. Smart integration of electrical, thermal, and hydrogen systems with AI
2. Data-driven models for energy generation and consumption forecasting
3. Clean energy usage optimization with AI
4. Nexus of electricity, gas, heating, and transportation in a new era