

## **Special Session 29: AI-empowered Electricity-Hydrogen Integrated Energy System**

### **Session Organizers:**

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### **Brief Description of the Session Thematic:**

This session explores cutting-edge AI applications in electricity-hydrogen integrated energy systems, adopting a bottom-up perspective from stacks and equipment to system-level. It aims to enhance efficiency, reliability, and flexibility, advancing the coupling of power and hydrogen for decarbonization.

### **Topics and Keywords:**

1. Multiphysics simulation acceleration for stacks
2. Parameter identification for equipment
3. State estimation and fault diagnosis for equipment
4. Energy management and scheduling for hydrogen stations
5. Source-grid-hydrogen-X integrated system optimization and configuration
6. Market trading simulation for source-grid-hydrogen-X VPPs
7. Load forecasting and scenario generation
8. Training AI models for the electricity-hydrogen integrated scope

**Keywords:** Electrolyzers and fuel cells; Planning and optimization; Scheduling and control; Diagnosis and prognosis; Data analytics