

Special Issue

Fault Diagnosis and Health Management of Fuel Cell Systems

Message from the Guest Editors

Proton Exchange Membrane Fuel Cells (PEMFCs) hold significant application potential in future transportation and distributed power generation due to their advantages, such as high power generation efficiency, low startup temperature, and good transient response characteristics. However, the durability of fuel cells remains a major bottleneck hindering their large-scale commercial adoption. The primary reason lies in the tendency of internal moisture and heat states to deviate from the optimal range during operation, leading to faults such as membrane drying, flooding, and gas starvation. Prolonged accumulation of these conditions can cause irreversible damage and accelerate performance degradation. Therefore, the real-time fault diagnosis and health management of fuel cells are essential to extend their service life. Addressing the aforementioned needs, this Special Issue focuses on the design and development of health management systems for PEMFCs, including, but not limited to, the following topics:

- Modeling and state estimation;
- Fault feature analysis and diagnosis;
- Degradation and lifetime prediction;
- System fault-tolerant control;
- AI-enabled state recognition and control.

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Message from the Editor-in-Chief

Electronics is a multidisciplinary journal designed to appeal to a diverse audience of research scientists, practitioners, and developers in academia and industry. The journal is devoted to fast publication of latest technological breakthroughs, cutting-edge developments, and timely reviews of current and emerging technologies related to the broad field of electronics. Experimental and theoretical results are published as regular peer-reviewed articles or as articles within Special Issues guestedited by leading experts in selected topics of interest.

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