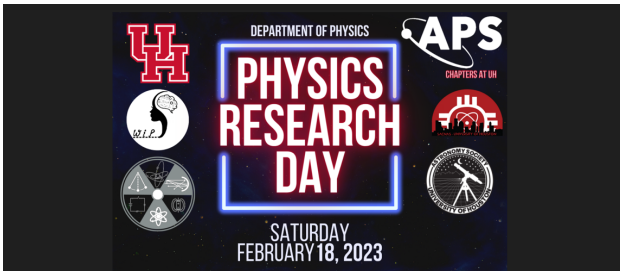

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Proton Exchange Membrane for Fuel Cell and Water Electrolysis Application

Saturday 18 February 2023 14:15 (15 minutes)

Proton exchange membrane fuel cell (PEMFC) and water electrolysis (PEMWE) systems have been paying attention in recent decades in order to adapt to the increase in demand for green hydrogen and the fast development of electric vehicles. The proton exchange membrane (PEM) is one of the prime components of those technologies which plays a vital role to obtain the high efficiency and stability of the system. It also acts as barrier between cathode and anode to prevent the electron and gas crossover. To adopt the requirements of the global market, current research is focusing on the sustainable and high ion-conductive electrolyte membranes. The NafionTM, perflurosulfonic acid is the state-of-art proton exchange membrane used in PEMFC and PEMWE over 50 years. However, the hydrogen crossover through the membranes is the primary issue as it leads to the membrane degradation and directly affect the performance and stability of the PEM system. Herein, our research focus on blocking the hydrogen crossover through the membrane by modifying the Nafion membrane.

Keywords: Proton Exchange Membrane, gas crossover, NafionTM , membrane degradation

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