Special Issue

Membrane Materials and Processes for Advanced Electrochemical Energy Systems

Message from the Guest Editor

At present, global energy demand is increasing at an unsustainable rate, with an estimated rise by 48% between 2012 and 2040. Global energy-related CO2 emissions are expected to increase by 46% within the same time interval. Therefore, the development of clean energy technologies able to alleviate the skyrocketing energy demand and mitigate the rising CO2 emissions is urgently required. Membrane materials and processes now play a crucial role, among others, for the design and development of novel electrochemical technologies for energy conversion and storage systems. In particular, ion exchange membrane materials have been used as a key component to construct highly efficient and economically affordable energy technologies. This Special Issue will therefore aim at a systematic analysis of the existing and new ion-exchange membranes and processes, opportunities, and challenges for developing advanced electrochemical energy conversion and storage technologies including reverse electrodialysis, water electrolysis and flow batteries, and related processes. Papers related to the aforementioned electrochemical energy systems towards establishing a sustainable society are welcome.

Guest Editor

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