

Evaluation of the chemical stability of crosslinked organic/inorganic hybrid membrane for redox flow battery

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The redox flow battery is one of the efficient energy storage systems that can smooth daily and seasonal load fluctuations of renewable energy. One of the most important property of ion exchange membrane in the redox flow battery is stability. Chemical stability as well as mechanical stability have a huge effect on consistent operation of redox flow battery containing vanadium sulfate solution. In previous study, crosslinked organic/inorganic hybrid membranes based on sulfonated poly(ether ether ketone) and silica oxide was prepared. In this study, evaluating of the long term chemical stability of Nafion and fabricated membrane was conducted and compared. Weight loss and change in absorbance of vanadium solution were detected to confirm change of membrane chemical structure and oxidation of membrane after 40 days of immersion.