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***CHARACTERIZATION OF THE ELECTRON
TRANSFER REACTION MECHANISM OF
TiOSO₄ AND MnSO₄ IN SULFURIC ACID
SOLUTION***

Abstract

An electrochemical characteristic evaluation of the Ti-Mn electrolyte system in sulfuric acid aqueous solution is studied in different acid concentrations with and without the mixing of TiOSO₄ and MnSO₄ electrolyte system for a redox flow battery application. The overall anodic behavior of the Mn system can be described by the oxidation reaction of Mn²⁺ to MnO₂ where Mn³⁺ is an intermediate species. As the acid concentration increases, less MnO₂ is formed on the working electrode and more Mn³⁺ is formed in the solution. The formed MnOOH by the Mn³⁺ hydrolysis reaction is proven to be electrochemically active. For Ti system, in 1M H₂SO₄, Ti⁴⁺ is found to be the dominant electro-active species, and in 3M H₂SO₄, TiSO₄²⁺ is found to be the dominant electro-active species. The electrochemical behavior of the Ti(IV)/Ti(III) redox couple tends toward the reversibility when the H⁺ and SO₄²⁻ concentrations increase in the system.

Date:

**Wednesday,
Dec 2nd,
2020**

Time:

**Starts @
10:00AM**

**Zoom Meeting
Details:**

[HYPERLINK](#)

**Meeting ID:
953 7897 5648**

**Password:
034310**

Committee Chair:

**Professor
Trung van
Nguyen**