Vanadium based cathode materials for Aqueous Batteries

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Lithium ion batteries have become the main stream for energy storage; however, its toxicity, poor durability (≤5 years) and high cost (≥USD2.35/Wh every 25 years), along with the safety issues (very high degree of reactivity with water, flammable organic solvent) make them difficult to use in smart grids. Therefore, the development of Non-flammable, low cost, and highly durable rechargeable batteries is crucial for renewable energy sustainability.

It was found that oxides represent a unique class of important high capacity materials which can be used in ARLB. Among these oxides, considerable attention has been paid to vanadium oxides as a promising cathode for ARLB, however its cycling performance is very poor due to its dissolution in aqueous electrolyte and low electronic conductivity [1, 2].

In this work, we study polymer coated Vanadium based cathode materials in ARLB. The effects of coating layer were electrochemically investigated by cyclic voltammetry (CV) and charge-discharge measurement. More details and results of work will be presented at the conference.

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