**Flow Batteries for Grid-Scale Energy Storage**

**Robert F. Savinell**

**Department of Chemical Engineering**

**Case Western Reserve University**

**Cleveland, OH 44106**

Large-scale energy storage is required to meet a multitude of current energy challenges. These challenges include modernizing the grid, incorporating intermittent renewable energy sources (so as to dispatch continuous electrical energy), improving the efficiency of electricity transmission and distribution, and providing flexibility of storage independent of geographical and geological location. In addition, such storage should be scalable for centralized or distributed use.

Through efforts supported by ARPA-E and the Department of Energy Office of Electricity, the technology approach we are developing is based on using very low cost iron electrolytes in a flow battery that will be economically feasible. Additional advantages of the IFB include abundant, non-toxic, and non-corrosive materials that are used to provide an energy storage solution that has inherently safe operation and is environmentally friendly. The Iron Flow Battery will further reduce downstream lifecycle costs (including maintenance and disposal) that are often underestimated.

In this presentation I will describe aspects of the research my group is doing on understanding performance limiters and approaches to improve storage capacity.

Also, as Editor of the Journal of the Electrochemical Society and of the ECS Electrochemistry Letters, I will talk about the role of the ECS journals to our professional community, describe the editorial process and policies, and discuss plans to improve the value of ECS journals.