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(54) **REDOX FLOW BATTERIES BASED ON SUPPORTING SOLUTIONS CONTAINING CHLORIDE**

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This patent is subject to a terminal disclaimer.

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(52) **U.S. Cl.**

CPC ***H01M 8/08*** (2013.01); ***H01M 8/188*** (2013.01); ***H01M 8/20*** (2013.01); *H01M 2300/0005* (2013.01); *H01M 2300/0011* (2013.01); *Y02E 60/528* (2013.01)

(58) **Field of Classification Search**

CPC H01M 8/08
USPC 429/105, 199, 204, 302
See application file for complete search history.

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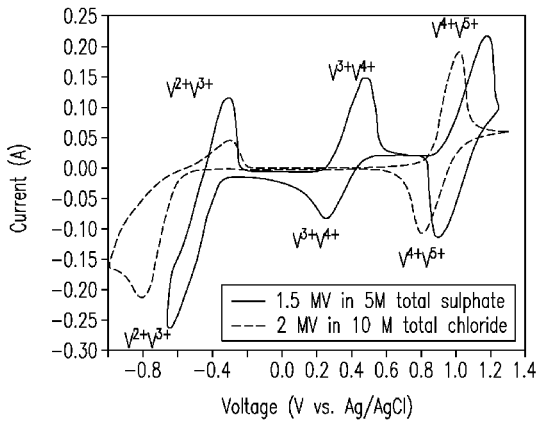
(57) **ABSTRACT**

Redox flow battery systems having a supporting solution that contains Cl^- ions can exhibit improved performance and characteristics. Furthermore, a supporting solution having mixed SO_4^{2-} and Cl^- ions can provide increased energy density and improved stability and solubility of one or more of the ionic species in the catholyte and/or anolyte. According to one example, a vanadium-based redox flow battery system is characterized by an anolyte having V^{2+} and V^{3+} in a supporting solution and a catholyte having V^{4+} and V^{5+} in a supporting solution. The supporting solution can contain Cl^- ions or a mixture of SO_4^{2-} and Cl^- ions.

17 Claims, 11 Drawing Sheets