



PYRIDINIUM DERIVATIVES MADE BY HYDROTHERMAL SYNTHESIS FOR USE AS ANOLYTES IN ELECTROCHEMICAL CELLS

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The Invention

UW researchers have developed a sustainable viologen redox species synthesized from a common industrial organic species, 3-chloro-2-hydroxypropyl trimethylammonium chloride. Also known as Dextrosil, this organic compound is widely used as a precursor for starch treatment, as an additive in paper and textile manufacturing, and in surfactant development. Dextrosil was used in a one-step, high-yield reaction to synthesize Dex-Vi, which exhibits similar solubility, voltage, and chemical stability in neutral aqueous solution to BTMAP-Vi, one of the industry's current promising aqueous anolytes. In contrast to BTMAP-Vi, Dex-Vi should cost less and is able to be synthesized at higher yield. This simplified, efficient synthetic procedure that utilizes a readily available precursor with existing bulk-quantity supply chains is an ideal anolyte to enable Aqueous Organic Redox Flow Batteries (AORFBs) for grid-scale energy storage and to facilitate the integration of renewable electricity generation technologies.

Tech Fields

- [Clean Technology : Energy storage, delivery & resource efficiencies](#)
- [Materials & Chemicals : Synthesis](#)

For current licensing status, please contact Michael Carey at mcarey@warf.org or 608-960-9867