TECHNO MARKET - By Ouest Valorisation

L'accompagnement sur-mesure de vos projets d'innovation

Notre mission :
Proposer aux entreprises des ressources d'innovation attractives issues de plus de 160 laboratoires et 7200 chercheurs.

Non-polymerised organic materials, insoluble in salt water (Zn2+) in all their redox states (neutral and salt).

Electrochemical energy storage, such as ion insertion batteries, is crucial for stabilizing the electricity system in a carbon-neutral future. Aqueous zinc-ion batteries offer high safety and the potential for cost-effective manufacturing processes, associated with zinc availability and absence of organic solvent.

Zn-ion batteries comprise a Zn metal anode, coupled with a cathode material which usually contains inorganic compounds such as Mn and V metal oxides. Despite their ability to deliver high electrical capacity, they exhibit relatively low cycle-life and Zn2+ insertion kinetics, along with toxicity issues. Search has thus been made to substitute these inorganic cathode materials by organic ones.
Quinone derivatives are considered promising candidates to obtain performant batteries. They show good environmental friendliness and provide the advantage of simple synthesis, corresponding to reduced costs. However, many quinone molecules are prone to dissolution in aqueous electrolytes, which induces a loss of capacity of the battery, along with possible corrosion or dendrite problems on the zinc anode.

To render the use of quinone type molecules more suitable in aqueous zinc-ion battery, the inventors have functionalized the hydroquinones with hydrophobic groups that strongly mitigate their solubility in zinc aqueous electrolytes. Consequently, the capacity of the battery upon cycling is maintained. They also improved the battery operating potential (+300 mV gain vs Li+) by associating these hydrophobized hydroquinones with an appropriate aqueous zinc electrolyte.

Cette solution est faite pour vous si vous êtes :

- Une entreprise qui souhaite utiliser la solution
- Une entreprise qui souhaite commercialiser la solution
- Une entreprise qui souhaite adapter la solution à son besoin

Nature de l'offre :

- Organic redox derivatives, quinone or hydroquinone type molecules functionalized by hydrophobic groups, enabling them not to be dissolved in an aqueous electrolyte, and presenting interesting performances for the associated Zn-ion battery.

Votre contact :
Benjamin TRINEL
Benjamin TRINEL
06 34 10 64 81
benjamin.trinel@ouest-valorisation.fr
DV n°4712 - Organic material for zinc-ion aqueous batteries