OAK RIDGE NATIONAL LABORATORY
Managed by UT-Battelle for the Department of Energy

Highly Soluble Alkoxy-based Magnesium Electrolytes for Rechargeable Magnesium Batteries

Disclosure Number

201303105

Technology Summary

Magnesium batteries are the most promising alternative technology to replace lithium ion batteries. In this report, air-stable and non-pyrophoric, magnesium electrolytes were developed based on alkoxy-based magnesium compounds. Because of the considerably enhanced stability associated with these magnesium electrolytes, Mg-Mo6S8 magnesium batteries can be successfully cycled at 50 oC. Cells were cycled at rates ranging from 0.1 C to 2 C, and exhibited reversible capacities of 100 and 130 mAh/g are obtained under the rate of 0.1 C at 20 and 50oC, respectively, with the latter value being close to the theoretical capacity of Mo6S8. The safe nature of the electrolyte components and the use of low-cost materials high-lights a promising technology for magnesium battery applications.

Inventor

DAI, SHENG

Chemical Sciences Division

Licensing Contact

CALDWELL, JENNIFER T

Rm 137, Bldg 4500N

1 Bethel Valley Road 6196

Oak Ridge, TN 37831

Office Phone: (865) 574-4180

E-Mail: CALDWELLJT@ORNL.GOV

8/20/2013