Short Communication

High specific energy of CuO as a thermal battery cathode

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doi: 10.20964/2020.10.49

Received: 5 June 2020 / Accepted: 26 July 2020 / Published: 31 August 2020

As the high specific energy and long working time of the thermal battery development requires the cathode that has high thermal stability and excellent conductivity. As a semiconductor, the microstructure of CuO keeps stability below 830°C. In this of case, the CuO has been first designed as the cathode material for thermal battery. With a cut-off voltage of 1.5 V, the specific energy of CuO thermal battery is up to 1040 Wh/kg under the working environment of 500°C, 100 mA/cm². That is higher than commercial FeS₂ and CoS₂ of 327 Wh/kg and 256 Wh/kg, respectively. We believe that our work will afford insights into the alternative of the cathode materials in the high specific energy thermal batteries.

Keywords: CuO; Cathode material; Thermal battery; High specific energy.

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