

# Power storage device and material for its electrode

Achieve energy density equivalent to lead battery by using only organic material!

Safe, Low cost, and Long life

## Overview

The applicability of quinone compound for both cathode and anode has been considered, aiming for low cost and safe energy storage material that does not contain rare or toxic element. However, even if quinone compound is supported on a porous material such as activated carbon, the quinone compound leaches out from the porous material, resulting in a short life span (that is to say poor cycle life) as an energy storage material.

This invention solves the issue of cycle life. Consequently, we have demonstrated that the energy density of the new power storage device reaches the same level as a lead battery even though it is composed only of organic material.

## Product Application

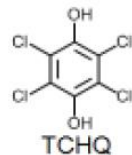
- Stationary storage battery application for smart grid
- Home energy storage system
- Distributed power source for industrial application

## IP Data

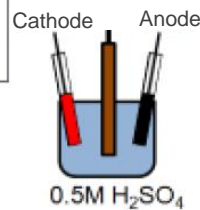
IP No. : JP6158308,US9620297,CN201480017828.6,KR1834623  
 Inventor : HONMA Itaru, MITANI Satoshi, TOMAI Takaaki  
 Admin No. : T12-175

Reference electrode (Ag/AgCl)

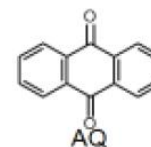
Cathode **Au mesh**  
 TCHQ/Maxsorb 90 wt%  
 PTFE 10 wt%



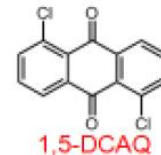
(Tetrachlorohydroquinone)



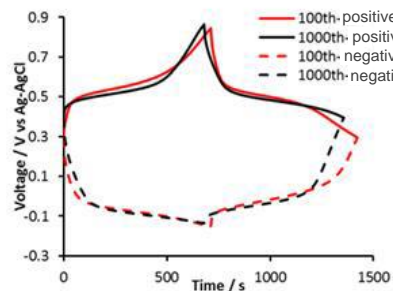
Anode **Au mesh**  
 1,5-DCAQ/Maxsorb 90 wt%  
 PTFE 10 wt%



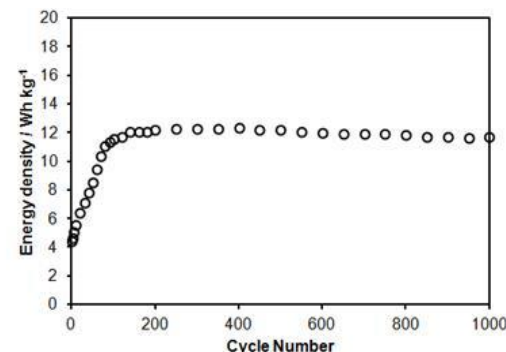
(Anthraquinone) or (1,5-Dichloroanthraquinone)



## Cycle life



Cycle life at 0.26A/g  
 (1,5-DCAQ)



Keeps 95% energy density of the highest value after 1000 cycles

## Related Works

[1] Takaaki Tomai, Satoshi Mitani, Daiki Komatsu, Yuji Kawaguchi, Itaru Honma Sci. Rep. 4, 3591 (2014).

## Contact

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