

# International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI)

(An Autonomous R&D Centre of Department of Science and Technology, Government of India)  
Balapur P.O., Hyderabad – 500005, Telangana, India



## Development of Electrically Rechargeable Zinc-air Battery

### Overview

Electrically rechargeable Zinc-air batteries exhibit high specific energy and interesting from an economical and ecological point of view. One of the challenges with Zn-Air batteries is to make them rechargeable in aqueous based system. Scientists at CFCT are addressing this issue and have initiated a program to develop rechargeable Zn-air battery and eventually other metal - air batteries. In the first instance, we have developed and demonstrated rechargeable 12 V Zn-Air battery using air breathing electrodes and ionic liquid electrolyte. The cyclic stability studies were also reported. Presently CFCT has initiated work on development of aqueous electrolyte based rechargeable Zinc-air secondary battery and carried out preliminary studies. The electrode area of the cell has been scaled up from 5 sq.cm to 30 sq.cm and results shows improved cycle life and capacity of the cell and it has provided the scope for further improvement, which is in progress.

### Key Features

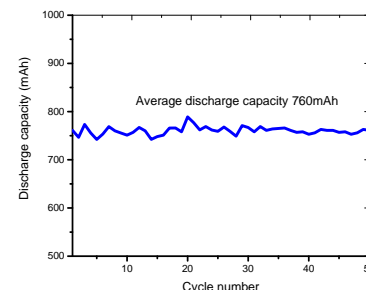
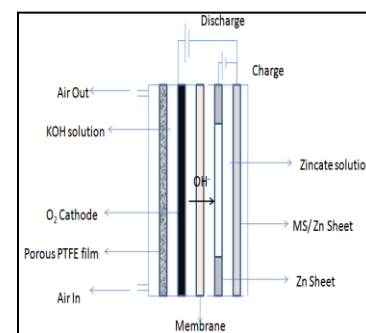
- High Energy Density
- Materials are low cost, non-toxic and environmentally friendly.
- Easy fuel storage
- Non-flammable and non-explosive nature

### Potential Applications

- Smart and green grid storage
- Automobile (Electric Vehicle)
- Portable

### Intellectual Property Development Indices (IPDI)

- Performance and stability are validated at single cell level
- Scale-up and prototype module fabrication underway



**Schematic and Performance of Developed Zinc-air cell**

IPDI Status	1	2	3	4	5	6	7	8	9	10

### Major Publications

1. Bifunctional electrocatalyst for oxygen/air electrode  
N.Sasikala, K.Ramya, K.S.Dhathathreyan  
Energy Conversion and Management. 77, 2014, 545-549.

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