

**High Energy Lithium Power Source with Cathode  
Based on MnO<sub>2</sub>**

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Manganese dioxide is an effective and environmental friendly material which is used in lithium power sources.

In spite of a great number of investigations of this oxide and the power sources on its base the possibilities of this material have not been used to the full extent yet.

The prospects are connected with the development of a multi charge power source Li-MnO<sub>2</sub>. Such a power source combines high energy of primary lithium power sources, possibility of multiple cycling and low self discharge.

In the work the investigation results of the mutual influence of structural characteristics of initial manganese dioxide, nature of binder, coating process technology, type of current collector and conducting additive on the electrochemical characteristics of cathodes and Li-MnO<sub>2</sub> power sources as a whole are presented.

For the investigations of initial oxide, cathode mass and electrodes the following methods were used: TG, DTA, XRD, particle size distribution of catalytic material by laser light scattering, total surface area by nitrogen adsorption.

Electrochemical characteristics were investigated using galvanostatic, potentiodynamic cycling and impedance spectroscopy. The analysis of power source material balance optimization aimed at increasing specific weight and volume characteristics has been carried out.

The power source prototypes are manufactured inside of glove box lines. Size of the flat pouch cell is up to 100x100x5 mm.