discharge, give high energy densities (up to 2 Ah g^{-1}) in comparison with conventional inorganic battery depolarizers like MnO_2, HgO, CuO, AgO etc. Hence, it is worthwhile fabricating and studying the performance of a battery system combining magnesium and 2,4-dinitro phenol (DNP) using aqueous halide electrolytes like $MgCl_2$, $MgBr_2$ and $Mg(ClO_4)_2$. This poster describes the preparation of DNP cathodes after standardization of the cathode mixture. One volt, one Ah Mg/DNP cells were assembled using the above cathode in conjunction with AZ31 magnesium alloy anodes and discharged at current densities of 1.7, 3.3, 5.6 and 6.6 mA cm^{-2} in 2 M $MgCl_2$, $MgBr_2$ and $Mg(ClO_4)_2$. Cyclic voltammagrams of DNP were recorded in 2 M $Mg(ClO_4)_2$ at various sweep rates and concentrations in order to understand the reduction behaviour. This study suggests that DNP is a capable organic compound for use as cathode material in magnesium reserve batteries.

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P6

Rechargeability of natural manganese dioxide (NMD) modified by Bi_2O_3

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It has been reported in the literature that modified MnO_2 cathode materials containing bismuth allow multiple rechargeability over a two-electron capacity. All the reported researches are related to chemically or physically modified materials starting from high purity MnO_2 This work reports some results obtained with a natural manganese dioxide (NMD) with starting composition of 45% Mn, 15% Fe, 0.6% Si and 1.7% Al, which was modified by the addition of Bi_2O_3. X-ray diffractions show that this material has different crystallographic phases, among which pyrolusite is predominant. The reduction reversibility of NMD and NMD/Bi in 9 M KOH has been studied by slow scan voltammetry and constant current discharge and recharge. The results have shown good rechargeability and a discharge reaching 80–95% of the theoretical two-electron capacity in each cycle for the natural manganese dioxide modified by Bi_2O_3.

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P7

Investigation of the system: lithium accumulator and a battery of solar cells on a long-cycling regime

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The aim of this work was to study the combined influence of polarization characteristics of lithium accumulators and a battery of solar cells and the cycling characteristics of lithium accumulators when charged from batteries of solar cells (BSC).

Tests were carried out with lithium accumulators having operating voltages of 3.0 V (Li–MnO_2) and 4.0 V (Li–$LiMn_2O_4$). Manganese oxides, synthesized in our laboratory by different methods, were used as cathode materials. The lithium accumulators were made as both coin (2325) and spiral-wound (R 20 size) cells.

Changes in the internal resistance of the cells at different stages of cycling regime were calculated from impedance measurements taken in the frequency band: 0.2 Hz–200 kHz.

The investigations showed how the charging characteristics of the lithium accumulators depended on the conditions of BSC illumination, the characteristics of BSC, the electrochemical properties of the synthesized manganese oxides and the composition of the non-aqueous electrolyte.

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P8

Influence of the composition of non-aqueous polymer electrolytes on the characteristics of the electrode/electrolyte interface and the efficiency of their use in lithium accumulators

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The aim of this work is to study the influence of the chemical nature of polymers, lithium salts and aprotic solvents on the conductance of non-aqueous electrolytes, on the interaction with electrode materials, system stability