

PREPARATION OF ELECTROLESS NICKEL DEPOSITION ON ELECTROLYTIC MANGANESE DIOXIDE

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ABSTRACT

Electrolytic manganese dioxide (EMD) is one of the active materials in an alkaline manganese dioxide cell. Several researchers have looked upon to further enhance the rechargeability and cycle life of EMD. This study will look into the optimization of nickel deposition on EMD to further improve the conductivity of EMD. Electroless nickel deposition technique was employed for this purpose. This technique utilizes a plating bath consisting of solutions of sodium hypophosphite and sodium pyrophosphate as the reducing agent, nickel sulphate as the nickel source, tin chloride as a nucleating agent and catalysed by palladium chloride in an ultrasonic bath. The concentration of nickel sulphate, tin chloride and palladium chloride were varied to optimize the percentage of nickel doped. The resultant samples of nickel doped EMD were analyzed using SEM and EDAX techniques. It was found that variation of the concentration of the plating solutions greatly influenced the amount of nickel being doped.

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