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Electrochemical Characterization of MnO_2 for Supercapacitor Applications[1] AMIR OMIDWAR, SETH GAGNON, PETER K. LEMAIRE, RAHUL SINGHAL, Central Conn State Univ — Manganese dioxide (MnO_2) has been found to be useful in applications involving supercapacitors, due to its high theoretical capacity, environmental compatibility, safety, low environmental toxicity, and cost effectiveness. We have synthesized MnO_2 using hydrothermal method. The precursor materials manganese (II) sulfate ($MnSO_4$), potassium permanganate ($KMnO_4$) were dissolved in water and then placed in Teflon lined stainless steel autoclave at 160°C. The resultant precipitate was washed with distilled water and dried at 80°C to obtain MnO_2 powder. The phase purity of resulting MnO_2 powder were studied using X-ray diffraction and thermal characterizations were carried out using differential scanning calorimetry (DSC) and thermogravimetric analysis (TGA). Electrochemical characterization were carried out by studying charge – discharge and cyclic behavior of MnO_2 cathode materials. The electrodes were prepared by coating a slurry of 80% of active materials, 15% carbon black and 5% PVDF binder, onto a Ni mesh. The detailed results and analysis will be presented and discussed during the APS-NES Fall 2017 meeting

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