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## **Influence of temperature on the synthesis of MnO<sub>2</sub>: Characterization and application for supercapacitor**

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Synthesis temperature is one of the most important factors to control both morphology and phase of the manganese dioxides. In this work, precipitation method was employed to synthesize manganese dioxide varying temperature from room temperature to 80°C. Synthesized samples were analyzed by various methods, such as X-ray diffraction (XRD), scanning electron microscopy (SEM), transmission electron microscopy (TEM), and Brunauer-Emmett-Teller analysis (BET). With increase of synthesis temperature, the changes in morphology pore sized, and surface area were clearly observed. To improve electrical conductivity, manganese dioxides were physically mixed with Ketjen black by sonication, and then the mixtures were cast onto nickel forms. The electrochemical properties were investigated by cyclic voltammetry (CV). Although all of the synthesized samples showed similar of capacitance at low scan rate, rate capability was found to increase with increase of synthesis temperature. This phenomenon can be explained by increase of pore size and crystallinity with synthesis temperature, resulting in the improving mass transfer.

### **Biography**

Inyeong Park has finished her Bachelor's degree in 2014 and now been master degree candidate under Prof. Sung-Hyeon Baeck in Department of Chemistry and Chemical Engineering, Center for Design and Applications of Molecular Catalysts, Inha University from Korea.

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