

In situ XANES Study of MnO₂ Electrode for Supercapacitors

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Manganese dioxide (MnO₂) is one of the most studied electrode materials for use in supercapacitors due to its distinguished properties such as high specific capacitance, environmental compatibility, and low cost. In this study, local and electronic structures of Mn in MnO₂ electrode have been investigated by in situ X-ray absorption spectroscopy technique. *In situ* Mn K-edge XANES spectra measured during constant voltage charge-discharge processes within the potential window of 0-1 V were recorded. The results (Fig. 1) show some little changing of the oxidation state of Mn because of redox reaction on only the surface of electrode. This result indicates that within this potential window, ideal capacitive behavior or surface redox reaction occurs, and the intercalation does not occur.

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