

Abstract Submitted  
for the NEF15 Meeting of  
The American Physical Society

**A Study of the Dielectric Materials and Nano Particles Used in the Electrochemical Capacitors** HOJUNG CHUN, SOOHYUN KIM, HYUN-JEONG CHANG, CRG(Choice Research Group) — In many technological fields, such as electro chemical fields, the development of nano technology has been arising in recent years. The capacitance of the capacitor is predicted to improve, when the space between the plates of a capacitor is filled with an insulator. In this research, the influence of multiple dielectric materials inserted in one capacitor on the electric field distribution, in the capacitor system was studied. Patterns of the capacitances were found, and the electric charges and electric energy in the capacitor plates were calculated. Compared to a standard capacitor, a super-capacitor can hold hundreds of times more electrical density. In this study, we show how nano particles, the metal-organic frameworks (MOFs) can be integrated into super-capacitor devices. How the flexibility with which their metal oxide and organic constituents, can be varied and used to uncover their high capacitance and long life-cycle behavior, are also shown. This study examines how metal-organic frameworks (MOFs) made as nanocrystals (nMOFs), can be successfully incorporated into electrical devices to be used as super-capacitors. Using this mechanism, a MOF with multiple metal ions and organic functionalities is suggested.

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Date submitted: 14 Oct 2015

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