

## Water Oxidation Catalysts using Host-Guest Reaction between Layered Clay and Organometallic Compounds

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Recently, developing clean and sustainable energy have been studied to decrease air pollutants and global warming gas emission from fossil fuel consumption. Electrochemical water splitting is considered as a clean energy production method in the ambient condition. However, spontaneous water splitting without external bias is difficult to achieve mainly due to high over potential of oxygen evolution reaction. To figure out these problems, electrocatalysts with low overpotential and long-term stability are required. Until now, most of researches have been focusing on developing homogenous and heterogenous OER catalysts, but not many studies have been performed to synthesize hybrids to utilize advantages of both type. In this poster, we report hybrid type OER catalysts synthesized by introducing various transition metal based organometallic complexes in layered clay materials. When Ni, Co, Fe, and Mn transition metal complexes were inserted, they showed improved catalytic activity compared to clay minerals alone. We found that the overvoltage is in the order Ni < Co < Fe < Mn, and current density is in the order Co > Ni > Fe > Mn.