

Electrochemical properties of tungsten based double perovskite electrocatalysts

한경원, 김희수, 이기천, 김형진, Rasika Bharat Mane, 전유권<sup>†</sup>

연세대학교

(ykjeon@yonsei.ac.kr<sup>†</sup>)

Perovskite structured materials have been studied in various fields, due to the outstanding chemical properties depending on their synthesis method, structure and particle sizes. Perovskite materials can also have excellent electrocatalytic properties by modifying the structure and metal compositions. Here, we design a double perovskite structured catalyst with tungsten as b-site doping material at the layer by layer structure, where tungsten has great electrochemical properties. To increase the catalytic properties and conductivity, transition metals like nickel are doped to the b-site at the perovskite using solid-state methods, and forms a strong bonding structure with tungsten. The electrochemical properties are evaluated by the cyclic voltammetry measurements using rotating disk electrodes (RDE) system. Moreover, depending on the doped active metals, oxygen reduction reaction(ORR) and/or oxygen evolution reaction(OER) are carried out to investigate the oxygen reaction mechanisms to produce low-price, high performance oxygen electrocatalysts.