

Enhanced electrocatalytic activity of activated carbon by inserting boron atoms to carbon lattices

백서연, 이재우*

KAIST

(jaewlee@kaist.ac.kr*)

The effect of boron insertion to carbon materials as catalysts for oxygen reduction reaction (ORR) in fuel cell was investigated using commercial activated carbon and boric acid as a C and B precursors, respectively. Simple mixing of precursors and pyrolysis method was used with respect to varying temperatures (700°C, 850°C, and 1000°C) and mixing ratios (10:1, 1:1). The synthesized carbon materials were structurally analyzed and used as electrocatalysts for ORR to investigate the electrocatalytic activities. According to the structural and electrochemical analysis, boron was successfully doped at high temperature (1000°C) and boron-doped carbon materials show enhanced electrocatalytic activity for ORR, especially for the case of higher doping contents. The result shows potential of boron-doped activated carbon as a cost-effective alternative for oxygen reduction reaction in fuel cell.