

Hollow sphere bimetallic(Co, Fe) electrocatalyst using spray pyrolysis and improvement stability in acid

오시운, 임경민, 유성종¹, 김진수[†]

경희대학교; ¹한국과학기술연구원

(jkim21@khu.ac.kr[†])

Platinum (Pt)-based materials are used as cathode catalysts for boosting the reaction kinetics of oxygen reduction reaction (ORR) in proton exchange membrane fuel cell (PEMFCs). However, their high cost and scarcity on the earth prevent PEMFCs from large-scale applications. M-N-C catalysts for ORR from low-cost and earth abundant elements have exhibited a great promise to replace current platinum-based catalysts for proton exchange membrane fuel cells (PEMFCs). But insufficient stability is the major hurdle to prohibit their practical applications. In our study, we designed bimetallic electrocatalysts which have good stability in acid condition and good activity for ORR by making metal interaction. We synthesized particles using spray pyrolysis. Spray pyrolysis have advantages of component dispersibility and making hollow sphere that is ideal structure for mass transport without template. It provides good surface area and capacity of mass transport and its characteristics are condition of good electrocatalyst. The synthesized chemicals were analyzed by BET, XRD, FE-SEM and Breakthrough experimental.