

Component Effect of Palladium–Copper Bimetallic Nanoparticles in Electrochemical CO₂ Performance for CO production

이승현, 이진우^{1,†}

포항공과대학교; ¹KAIST

(jwlee1@kaist.a.c.kr[†])

Recently, various bimetallic nanoparticles have been investigated as the candidates for CO₂ reduction reaction catalysts. Bimetallic nanoparticles have totally different characteristic compare to bulk metal with breaking scaling relationship of protonation reaction on metal surface. In this study, palladium–copper bimetallic nanoparticle (CuPd_x) was reported, which are electrocatalysts for CO₂ reduction with superior activity and high selectivity toward carbon monoxide production. Especially, CuPd nanoparticles show very high Faradaic efficiency (~96% at 0.9V vs RHE) toward CO production, and higher mass activity than Pd nanoparticles. This superior catalytic performance is attributed to the alloying effect, which change geometric and electronic structure of copper and palladium atoms.