Design of Active and Selective CO_2 Reduction Electrocatalysts

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Although a copper catalyst has very interesting properties in CO_2 electroreduction reaction, the high overpotential of this reaction and low selectivity of the catalyst for a single porduct are major hindrances to catalyst immobilization. In this work, monodisperse Cu-Pd nanoparticles (NPs) with various compositions were synthesized using the colloidal method. These Np show a totally different catalytic performance than bulk Cu catalysts. Alloying Cu with Pd suppressed hydrocarbon production on the alloy NP catalyst surface, NPs with a 1:1 Cu-Pd ratio showed the best catalytic activity for the conversion of CO2 to CO.