

Photoelectrochemical reduction of carbon dioxide on NiO/quantum dots heterostructure electrodes

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Recently, as the global warming is serious problem, the conversion of carbon dioxide to carbon monoxide or hydrocarbons which are the promising renewable chemical fuels is expected to solve this environmental problem. However, the product selectivity of CO<sub>2</sub> conversion is not good compared to H<sub>2</sub> generation. The study about electron-transfer kinetics is expected to be a major role for understanding the CO<sub>2</sub> selectivity. Here, we used NiO/quantum dots heterostructure electrodes for photoelectrochemical (PEC) reduction of CO<sub>2</sub> with various size of QDs and compared the product selectivity of CO<sub>2</sub> reduction depending on the size of nanocrystal with electron-transfer kinetics.