CO$_2$ 광변환용 Au 나노입자/CaFe2O4 광캐소드

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Research of CO2 fuel conversion selectivity have been critical issue because products are mixed during CO2 photo-conversion. Some of metal oxide catalysts to improve conversion selectivity have been available for different products. In this study, Au/CaFe2O4 photo-cathode was prepared by polyol method, chemical bath deposition and oxidation after electrodeposition using FTO glass. Grown heterojunction nano-structures were confirmed by means of both FESEM (field emission scanning electron microscope) and TEM (transmission electron microscope). CO2 to CH3OH conversion selectivity test was conducted using three electrode system under visible light that of intensity 100mW/cm2. Products of CO2 reduction was collected by micro-syringe and subsequently transferred to the NMR (nuclear magnetic resonance) and Raman spectroscope to identify inside solution composition. Quantitative measurement of CH3OH was evaluated by GC-MS (gas chromatography-mass spectrometer) and stability of Fe/CaFe2O4 also was studied.