

Selective Production of C₂ Chemicals from CO₂ by Morphology Controlled Cu Mesh Electrodes

Min Hyung Lee

Department of Applied Chemistry, Kyung Hee University, South Korea

In recently, a lot of efforts have been devoted to developing electrocatalysts capable to convert CO₂ into chemical fuels. Especially, CO₂ conversion into multiple carbons ($\geq C_2$) are desired due to higher volumetric energy density and lower volatility than C₁ chemicals. Among transition metals, Cu is the only one that can produce C₂ products; however, selectivity of the C₂ chemical is very low. In this presentation, the selectivity control of C₂ chemicals depending on morphology of Cu nanomeshes will be introduced. Faradaic efficiencies of 38 % and 46 % for ethylene and ethane, respectively, have been achieved thanks to local pH and flow field controls in small nanopores. Our approach provide a new strategy for systematic tunability of the product selectivity and reaction kinetics of CO₂ reduction.

