Special Issue

Heterogeneous Electrocatalysts for CO_2 Reduction

Message from the Guest Editor

The utilization of CO2 in value-added products has attracted much attention. The electrochemical conversion of CO2 and H2O into alcohol, hydrocarbon, synthesis gas, etc., presents a potential approach under mild conditions using renewable electricity. It is a challenge to find an electrocatalysis process with a low cost that is efficient in energy transformation and product selection.

Due to the sluggish kinetics of CO2, a high activation energy is needed to initiate CO2 electroreduction by forming the CO2•– intermediate, and thus the onset potential is significantly more negative than the equilibrium potential of CO2 reduction. Although the electroreduction of CO2 to high-energy density fuels and value-added chemical feedstocks is promising, the large overpotential of this process and the low activity and durability of the currently available catalysts still restrict this technique in terms of its large-scale commercialization.

This Special Issue is focused on the electrocatalytic CO2 reduction reaction (CO2RR). Substantial efforts are focused on suppressing the hydrogen evolution reaction (HER) and activating CO2 through the catalyst design.

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Deadline for manuscript submissions
closed (15 November 2022)

Catalysts

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Impact Factor 4.0
CiteScore 7.6

mdpi.com/si/102977

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