Special Issue

Catalysis by Design: Advances and Challenges in Electrochemical CO_2 Reduction

Message from the Guest Editors

Since the industrial revolution in the 19th century, CO2 emission has experienced a remarkable increase in the atmosphere over the subsequent decades, which has led to serious greenhouse effect, abnormal climate change, ocean acidification and ice melting. To address these threats, substantial efforts have been deployed to develop a range of sustainable neutral or negative CO2 footprint technologies to capture and convert atmospheric CO2, including utilization and storage. This Special Issue aims to attract high-quality short communications, original research papers and review articles that report the recent advances, developments and existing challenges in the field of electrochemical CO2 reduction for chemical products (adsorption and photocatalysis). Articles that highlight oxide materials, 2D materials, nanoparticles, carbon-based materials, Metal Organic Frameworks (MOFs) and linked properties (transport, optical, micro-structural, morphological, nanostructuring) are of particular interest. The relevant fundamentals for CO2ER, including reaction mechanisms and crucial parameters, are also interesting and will be taken into consideration.

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