Special Issue

Electroreduction of CO_2 to Fuels and Chemicals

Message from the Guest Editors

Anthropogenic emissions of greenhouse gasses such as CO2 have been pointed out to contribute to climate change. In order to mitigate climate change, a number of approaches have been proposed to reduce the levels of CO2 in the atmosphere. In this sense, electroreduction of CO2 allows the potential reutilization and transformation of CO2 into high added value chemicals by using renewable energy such as wind power and solar energy. A wide variety of products including CO, syngas (CO/H2), CH4, and methanol, among others, have been obtained with high faradaic yields via electroreduction of CO2. Nevertheless, research is still required on: (i) new (and cheaper) electrocatalyst formulations with high faradaic selectivities; (ii) new electrochemical reactor configurations able to overcome kinetic/mass transport limitations and therefore reduce the overpotential of the reduction processes; and (iii) mitigation of the competing H2 evolution reaction. The present special issue is devoted to gather these efforts of the research community worldwide and present the most relevant technologies allowing this paradigmatic conversion.

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