

Special Issue

Catalytic CO₂ Methanation Reactors and Processes

Message from the Guest Editors

CO₂ methanation plays an important role in balancing the time-variant supply and demand of electrical energy from intermittent nature renewable sources such as wind and solar. Methane is easier to store and transport than electrical energy and has a good storage capacity combined with high charge/discharge periods.

Commercial and environmental benefits have made CO₂ methanation one of the most important research projects all over the world today. Catalytic or thermochemical CO₂ methanation (CCM) operates at high temperatures between 200 and 550 °C and pressures up to 100 bar due to thermodynamic equilibrium. Therefore, CCM is characterized by a high production rate and methane selectivity. The reaction is highly exothermic, and proper heat management is necessary to avoid hot spots which are detrimental to catalyst performance. Here, we aim to gather contributions from researchers and engineers to examine the issues of a flexible process and reactor design for CCM that is suitable for commercialization in many different countries.

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