



## Frontiers in Catalysis for CO<sub>2</sub> Methanation

Guest Editor:

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### Message from the Guest Editor

CO<sub>2</sub> methanation is a highly exothermic reaction, the composition of the feed stream may vary over time or can be contaminated with various compounds, hence the presentation of new theoretical and experimental results concerning the course of the methanation reaction, demonstration of innovative synthesis methods, catalysts with a new chemical composition or microstructure, allowing to improve the activity and selectivity at low temperatures, and on the other hand, durability at high temperatures, resistance to sintering or poisoning, as well as the discussion on the development of new types of reactors with improved heat and mass transfer, integrated with associated processes, including co-electrolysis or biogas valorization, may be essential for further progress. Such goals can be achieved, e.g. by the application of supports with specific structural, acid-base or redox properties, stabilisation of small metal nanoparticles within porous oxide materials, introducing of promoters and modifiers, formation of alloys, synthesis of catalysts based on organometallic systems, as well as development of new catalysts designed for microstructured, membrane or photocatalytic reactors.

