Special Issue

Advanced Research of Perovskite Materials as Catalysts

Message from the Guest Editor

Perovskite-type oxides have received significant attention because of their important electric, magnetic, ferromagnetic, pyroelectric, and piezoelectric properties. Perovskite-type oxides offer an attractive alternative to noble metal catalysts due to their high activity, high thermal stability and low cost. They have been used extensively and can be grouped into: (1) perovskites with oxygen vacancies as catalysts for oxidation reactions, such as catalytic energy production reaction (DME combustion), decontamination reactions (methane, acetyl acetate, toluene, n-hexane, and soot combustion), carbon monoxide and hydrocarbons oxidation, hydrogen evolution reaction and nitrogen oxides and oxygen reduction reaction; (2) perovskites as precursors to prepare nanosized catalysts for hydrogenation reaction. For a typical ABO3 perovskite, the A-site is a larger rare earth and/or alkaline earth cation and the B-site is a smaller transition metal cation. Additionally, perovskite-type A2BO4 mixed oxides with the K2NiF4 structure, consisting of alternating layers of ABO3 perovskite and AO rock salt, have also been studied, which exhibit variable oxygen stoichiometry.

Guest Editor

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Deadline for manuscript submissions

closed (31 March 2024)

Catalysts

an Open Access Journal by MDPI

Impact Factor 4.0
CiteScore 7.6

mdpi.com/si/170266

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