

High-temperature water gas shift reaction over CuNi/Fe<sub>2</sub>O<sub>3</sub> catalyst

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To develop high-temperature water gas shift reaction catalyst for hydrogen production, Cu/Fe<sub>2</sub>O<sub>3</sub>, Ni/Fe<sub>2</sub>O<sub>3</sub>, and CuNi/Fe<sub>2</sub>O<sub>3</sub> catalysts have been applied for the target reaction. Among the tested catalysts, CuNi/Fe<sub>2</sub>O<sub>3</sub> catalyst showed the highest CO conversion (85%) at a very high GHSV of 101,000 h<sup>-1</sup>. The improved performance of CuNi/Fe<sub>2</sub>O<sub>3</sub> catalyst is mainly due to the increase of the lattice strain, the decrease of the binding energy of lattice oxygen, and the formation of surface CuNi-alloy.