

Gasoline Fuel Processing System for Fuel Cell Applications

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Fuel processor to produce hydrogen from gasoline has been developed for hydrogen station applications. In order to develop of a gasoline fuel processor system for integration with a proton exchanged membrane fuel cell (PEMFC), we investigated ATR reaction of iso-octane, high temperature water gas shift (HTS) reaction and low temperature shift (LTS) reaction, and developed a gasoline fuel processor system with three different reaction stages. Catalytic properties of the prepared transition metal oxides and the ceria based catalysts were compared to those of commercial ATR and LTS (Cu/Zn/Al₂O₃) catalysts, respectively. It was found that the prepared catalysts formulations in the fuel processor system with three different reaction stages were more active than those of the commercial catalysts. The concentration of CO in the exit gases of LTS reactor was reduced to less than 2200 ppm in KIST gasoline fuel processor system without PROX reactor.