

Water gas shift reaction with the catalyst for RPF gasification-melting system

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Water gas shift reaction is the intermediate step used for CO₂ removal and hydrogen enrichment of syngas from gasification. For the application to the syngas from RPF gasification-melting system, water gas shift reaction has been performed. Water gas shift reaction with the catalyst has been performed in lab scale tube reactor and two stage reactors, a high temperature shift (HTS: 300-380oC) reactor and a low temperature shift reactor (LTS:200-220oC) in series. Effects of the reaction temperature, steam/carbon ratio and residence time on CO conversion have been investigated. The operation temperature was 200-400oC and steam/carbon ratios were between 2.0 and 5.0. The composition of reactant was CO : 40 vol%, H₂ : 25 vol%, CO₂ :25 vol%.