

Steam reforming of methane over supported Ni-Co catalysts

하씨니, 한종희, 임태훈, 남석우*
한국과학기술연구원
(swn@kist.re.kr*)

Fuel cell requires hydrogen as its fuel source for generating electric power. In general, hydrogen is produced in a fuel processor by the catalytic reforming of hydrocarbons. Ni based bimetallic catalysts usually improve both activity and selectivity and even stability of the catalysts as compared to mono metallic (Ni) catalysts. Bimetallic catalysts often show mutual promotion effects towards reduction and increasing thermal stability against sintering. The objective of this work is to develop, test and characterize efficient catalysts for hydrogen generation from methane steam reforming. Ni-Co containing catalysts supported on different oxides and mixed oxides were successfully prepared. The catalytic properties of the catalysts have been evaluated in terms of conversion of CH₄, yield and selectivity to H₂ and carbon compounds as function of reaction temperature (773–1173K), space velocity and steam/fuel molar ratio, by using a not diluted mixture as feed. Durability tests have been carried out in order to investigate the catalyst stability and resistance towards carbon deposition. XRD, SEM, BET was analyzed for all the samples..