Kinetic study on the catalysts for the Steam-CO_2 Reforming of Methane

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This work was carried out to investigate the kinetics of Cr modified Ni-based catalysts for Steam-CO_2 reforming of methane (SCR). The Ni and Cr loading amount were fixed at 10~15 wt% and 3, 5, 7 wt%, respectively. The catalytic reaction was conducted at 700℃ and 1 atm with reactant feed ratio of CH_4 : CO_2 : H_2O = 1.0 : 0.7 : 1.4. Power law rate model was adopted to calculate kinetic parameters under various partial pressures of reactants. In order to obtain the activation energies of each catalyst Arrhenius equation was used. Methane and CO_2 showed the opposite effect on the reaction rate and the activation energies were near to 28 kJ/mol for all catalysts.