

## Effects of Additives for Structure Property of Ni Based Tri-Reforming Catalyst

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The tri-reforming technology, combination of CO<sub>2</sub> reforming, steam reforming, and partial oxidation of CH<sub>4</sub> in a single reactor, was investigated over Ni based catalysts. The effect of additives such as TiO<sub>2</sub> and SiO<sub>2</sub> over the catalysts was investigated to prevent the coarsening of the Ni particles and the collapse of the microstructure during tri-reforming operation. The catalysts were prepared by physical mixing and impregnation methods. The tri-reforming reaction was carried out with various feed molar ratio of reactants and temperature in a fixed bed reactor system. The characteristics of catalysts were measured by N<sub>2</sub> physisorption, XRD, TPR, SEM, TEM and Elemental analysis. With increasing amount of additives, the characteristics of surface and microstructural changes were reduced.