

Mn-doped TiO₂ Nanowires Catalysts for the Oxidative Coupling of Methane

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The direct conversion of methane to hydrocarbons with higher carbon numbers has been studied and the oxidative coupling of methane (OCM) is a promising example of the direct conversion methods. The OCM is an ideal method to produce C₂ hydrocarbons, including ethane and ethylene. In this study, the OCM using the Mn-doped TiO₂ nanowire catalysts was performed, which was selected for the OCM because of high preparation temperature that can secure the stability of the nanowire catalysts during the OCM reaction (700 – 850 oC) and because the transition metal doping to TiO₂ nanowire may adjust the catalytic activity of TiO₂. A 2wt% Mn-doped TiO₂ nanowire catalyst exhibited the highest conversion and C₂ yield because of its moderate oxidation activity. It was also observed that the wire/rod-shaped nanostructures exhibited the best catalytic properties.