Synthesis Gas Production from Combined H_2O and CO_2 Reforming of CH_4 for Gas to Liquid (GTL) over Supported Ni Catalysts

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Supported Ni catalysts have been prepared and applied for combined H_2O and CO_2 reforming of CH_4 to produce synthesis gas with a H_2/CO ratio of 2, which is suitable to gas to liquid (GTL) process. Ni/MgO-Al_2O_3 catalyst exhibits the highest activity as well as stability among the catalysts tested in this study. The high activity and stability of Ni/MgO-Al_2O_3 catalyst is mainly ascribed to enhanced steam adsorption, basic property, fine dispersion of nano-sized NiO, and strong metal to support interaction (SMSI).