

Combined H₂O and CO₂ Reforming of Methane to Produce Synthesis Gas over Ni
Incorporated into
Ce-ZrO₂ Catalysts for Gas to Liquid (GTL) Process

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For gas to liquid (GTL) process, synthesis gas has been produced from combined steam and carbon dioxide reforming of methane (CSCRM) over co-precipitated Ni-Ce-ZrO₂ catalysts (Ni=15wt%). The ratio of CeO₂ to ZrO₂ has been systematically changed to optimize the co-precipitated Ni-Ce-ZrO₂ catalysts. The prepared catalysts have been characterized by BET, XRD, TPR, H₂-chemisorption, and TEM. It has been found that Ni-Ce_{0.8}Zr_{0.2}O₂ catalyst exhibited the highest activity as well as stability due to nano-sized crystallite of both Ce_{0.8}Zr_{0.2}O₂ and NiO resulting in intimate contact between Ni and support, better Ni dispersion, and enhanced oxygen transfer during the reaction.