

Production of Synthetic Natural gas (SNG) from the hydrogenation of Carbon dioxide

Janardhan L. Hodala¹, 정재선^{1,2}, 홍기훈^{1,2}, 박지인^{1,3},
주가영¹, 문동주^{1,2,†}

¹한국과학기술연구원; ²UST; ³고려대학교
(djmoon@kist.re.kr[†])

Increase in the CO₂ level in the atmosphere, which makes few cascading process on the earth, like, increase in the global temperature, resulting in melting of polar ice caps, increase in sea levels, climate change, etc. Reversing these effects may take a long time but further increase in the global temperature can be checked by controlling the CO₂ and other greenhouse gas emissions. Major source of CO₂ emission is the coal based power plants. Utilization of CO₂ from coal based power plants and to chemically fix it to methane for the later use can reduce the carbon foot print. The stored gas is a sustainable and versatile energy carrier that can be used for reconversion into electricity for heating purposes or as an alternative fuel option for transportation.

Nickel based catalyst supported on different metal oxides were prepared by co-precipitation method and characterized by XRD, CO₂-TPD, TPR, N₂ sorption etc.,. Catalyst performance was studied in down flow continuous reactor at the temperature of 300 - 400 °C and the pressure of 1-5 bar. Observed conversion was near to thermodynamic equilibrium (50 %) with 98 % selectivity to methane, the results are discussed based on the characterization of catalyst.