

Comprehensive evaluation for synthesis of methanol using syngas generated from high temperature co-electrolysis

오재우, 이재형[†]

KAIST

(jayhlee@kaist.ac.kr[†])

CO₂ capture and utilization(CCU) has attracted significant attention, since it can achieve generation of valuable liquid fuel and chemicals as well as green house gas reduction. Power to liquid(P to L) process is an option of CCU which produce useful liquid product using excess renewable energy as an energy source and CO₂ as an carbon source. Among various P to L, liquid fuel production using syngas produced through high temperature co-electrolysis(HT co-electrolysis) is regarded as promising process due to its higher energy efficiency compared to other processes. However, evaluation for aforementioned process has been focused on economic aspect without considering quantitative green house gas reduction potential of it. Therefore, in this research, comprehensive feasibility study for methanol production process based on HT co-electrolysis is conducted by performing techno-economic analysis(TEA) and CO₂ life cycle assessment(LCA).