

Evaluation of Sustainable CO₂ utilization processing paths for CO₂ reduction and economics:
DRM and SRM

임형묵, 노고산¹, 이재형[†]
한국과학기술원; ¹아헨 공대

The global warming due to the anthropogenic greenhouse gas (GHG) emission such as fossil fuel usage and industrial processes has become an intensely debated issue recently. To manage the GHG (especially, CO₂) emission, CO₂ conversion has attracting much attention. There are various options of CO₂ conversion such as dry reforming of methane, combined reforming, tri-reforming, and etc. Especially, Dry reforming of methane (DRM) is one of the promising CO₂ conversion reactions because one of its feed, natural gas, is cheap and the high CO₂ feed ratio (CH₄:CO₂=1:1) can lead to large CO₂ reduction effect comparing to other reforming. Also, produced H₂, CO syngas can be utilized for synthesizing chemical product. When producing H₂, Steam reforming of methane (SRM) is well known process and compared with various kinds of CO₂ reforming. Therefore, design and analysis of chemical process based on DRM and SRM within the framework of CO₂ reduction and economic cost is performed. Finally, finding out which reforming process is promising to produce certain chemical product in this study.