

Dynamics of the Amine-based Carbon Capture Process on Various Disturbances

임다습, 김선형, 이재형†

KAIST

(jayhlee@kaist.ac.kr†)

Carbon capture and storage has become an important research issue for reducing the greenhouse effect. Among the various carbon capture technologies, post-combustion capture could be applied at existing coal-fired power plant that emits the lots of carbon dioxide. Amine-based absorption process which is the most mature process of post-combustion capture could be developed at commercial scale. However, this process decreases the power production because a large amount of energy for solvent regeneration is needed in the stripper. Therefore, there are many attempts to reduce the energy use of the process. Dynamics study and developing efficient control strategies are important for reducing the energy consumptions. In this study, the amine-based carbon capture process is simulated using the Kent-Eigenberg as the thermodynamic model as well as equilibrium stage and reaction models. Dynamic responses are observed under change of various operation variables.