

The Numerical Process of MBA for CO₂ capture

손용호, 김기웅, 이광순*
서강대학교
(kslee@sogang.ac.kr*)

The process named MBA for CO₂ capture consists of adsorption and desorption bed separately. The process enables to continuous operation at a fixed high efficiently operating point on which the operating cost is minimized. It can be accomplished by the numerical optimization procedures. In this research, the balance equations and constitutive equations are constructed for each bed and these equations after discarding all the terms with respect to the time domain by applying mathematical technique are solved using MATLAB. The Cubic Spline Collocation Method(CSCM) and the far-side boundary condition (FSBC) are employed to ensure the efficient computation. As the process is a continuous counter-current system which has some characteristics causing numerical problems in computation, we considered the boundary discontinuity and Danckwerts conditions. We simulated adsorption and desorption bed and studied the simulation results through appropriate physical sense. From these results, we can specifically study the economy evaluation. The heat exchanger and heat integration concept will be also used for additional cost saving in economy evaluation.