A NEW SCALING STRATEGY OF BUBBLING FLUIDIZED BED REACTORS BASED ON POPULATION-BALANCE MODEL

Robert Macias¹, Juan Maya¹, Farid Chejne¹, Carlos Londoño¹, and Javier De La Cruz¹

¹Universidad Nacional de Colombia Sede Medellin

November 21, 2021

Abstract

This work proposes a new strategy for the scaling of bubbling fluidized bed reactors. This strategy is based on the bubble size distribution, bubble coalescence phenomenon, and the chemical reactivity, allowing to deduct the dimensionless number Chejne-Macias-Maya that must remain constant at different scales to guarantee the fluidization regime. The proposed strategy is validated from computational simulations carried out at different operating conditions. Additionally, limits for the validity of this scaling strategy were determined, which agrees with those reported in the literature.

Hosted file

A NEW SCALING STRATEGY OF BUBBLING FLUIDIZED BED REACTORS BASED ON POPULATION.docx available at <https://authorea.com/users/327056/articles/546355-a-new-scaling-strategy-of-bubbling-fluidized-bed-reactors-based-on-population-balance-model>