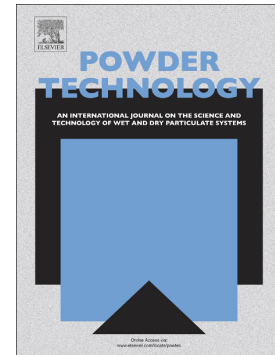


Accepted Manuscript

DEM investigation of the axial dispersion behavior of a binary mixture in the rotating drum

Shiliang Yang, Liangqi Zhang, Kun Luo, Jia Wei Chew



PII: S0032-5910(18)30143-8
DOI: doi:[10.1016/j.powtec.2018.02.021](https://doi.org/10.1016/j.powtec.2018.02.021)
Reference: PTEC 13197
To appear in: *Powder Technology*
Received date: 19 November 2017
Revised date: 11 January 2018
Accepted date: 9 February 2018

Please cite this article as: Shiliang Yang, Liangqi Zhang, Kun Luo, Jia Wei Chew , DEM investigation of the axial dispersion behavior of a binary mixture in the rotating drum. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Ptec(2017), doi:[10.1016/j.powtec.2018.02.021](https://doi.org/10.1016/j.powtec.2018.02.021)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

DEM investigation of the axial dispersion behavior of a binary mixture in the rotating drum

Shiliang Yang^a, Liangqi Zhang^a, Kun Luo^b, Jia Wei Chew^{a,c,*}

^aSchool of Chemical and Biomedical Engineering, Nanyang Technological University, Singapore 637459, Singapore

^bState Key Laboratory of Clean Energy Utilization, Energy Department, Zhejiang University, Hangzhou 310027, P.R. China

^cSingapore Membrane Technology Center, Nanyang Environment and Water Research Institute, Nanyang Technological University, Singapore 637141, Singapore

* Author for correspondence: Jia Wei Chew; Tel: +65 6316 8916; E-mail: JChew@ntu.edu.sg

Abstract

The granular motion of binary-size mixture in a three-dimensional rotating drum operating in the rolling regime is numerically tracked via the discrete element method (DEM), with a focus on the axial dispersion behavior of the different particle types in response to the inherent size-segregation. Accordingly, the evolution with time, the frequency distribution and the space-time profiles of the axial dispersion coefficients are evaluated. The results demonstrate that (i) the fast radial segregation gives rise to the sharp increase and decrease of the axial dispersion coefficients of respectively the large and small particles in both the active and passive regions; (ii) the axial dispersion coefficients in the active region is an order-of-magnitude higher than that in the passive region; (iii) after the radial segregation, the frequency distributions of the axial dispersion coefficients of the large particles, the small particles and all the particles are normal distributions; (iv) the greatest axial dispersion coefficients of both particle types are at the upper part of the active region near the bed surface; (v) increasing the rotating speed and particle

Download English Version:

<https://daneshyari.com/en/article/6674975>

Download Persian Version:

<https://daneshyari.com/article/6674975>

[Daneshyari.com](https://daneshyari.com)