Li Zhongyuan et al., J Pet Environ Biotechnol 2015, 6:5
http://dx.doi.org/10.4172/2157-7463.C1.010

OMICS International
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3rd World Congress on
Petrochemistry and Chemical Engineering
November 30-December 02, 2015 Atlanta, USA

Numerical simulation of the liquid-solid counter-current fluidization processes inside an extraction column based on the particle trajectory model

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The liquid-solid counter-current fluidization processes in an extraction column were numerically simulated based on the particle trajectory model of Eulerian-Lagrangian method. The simulation approach was previously validated by experiments. A power function correlation between the dimensionless slip velocity U_{slip}/Ut and hold-up fraction was proposed, and the operational zone in the countercurrent fluidization process was determined. Moreover, the simultaneous countercurrent fluidization of multi-particles with different diameters was also simulated. The comparison between the simulation results and the calculating values of the multi-particle free sedimentation model based on non-interference assumption shows considerably consistent, which also verified the reliability of the simulation approach used in present work.

Biography

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