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The revised bed collapse model for sound assisted fluidization.

Sound assisted fluidization is a fluidization of powder with an assistance of sound. Major objectives of sound assertion through the fluidizing powder are to improve fluidization quality and to prevent an agglomeration of cohesive powders. One important hydrodynamics behavior of the sound assisted fluidized bed is an expansion characteristics. And, it was suggested that the bed expansion characteristics should be investigated using 1-valve and 2-valve bed collapse experiment. Beside, to obtain an intrinsic bed expansion characteristics, a bed collapse model was recommended for an extraction of an accurate bed expansion data from 1-valve and 2-valve bed collapse curves or 1-valve and 2-valve collapsing bed pressure drop profiles. However, considering the fact that with an assertion of the sound wave through the fluidizing bed, a standing wave is formed throughout and a gas oscillation velocity is induced. Additionally, the gas oscillation velocity was known to impart its effect on fixed bed pressure drop and the bed expansion characteristics. Therefore, on applying the bed collapse model with the bed collapse experimental data of the sound assisted fluidized bed, the model should be revised carefully. In this work, we presented the revised bed collapse model by taking into account the gas oscillation velocity, which impacted mainly a momentum balance equation. This resulted in the bed collapse structure and the collapsing bed pressure drop profile. Finally, a comparison between the bed expansion datas by the use of the bed collapse model and one by the use of our revised bed collapse model were discussed.

Biography

Parimanan Cherntongchai has completed her PhD in chemical engineering since 2006 from University College London, London, UK. Currently, she works at Faculty of Science, Chiang Mai University, Chiang Mai, Thailand as a senior lecturer. She has published approximately 10 papers in reputed journals.