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# Analysis of drying characteristics in mixed pulsed rectangle fluidized beds<sup>1</sup>

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## Abstract:

On the study of pulsated fluidized bed, the pulsed flow has already been shown to be effective in overcoming defluidization, reducing channeling and by-passing, improving the fluidization quality of coarse particles greatly. In this work a rectangle pulsed fluidized bed was used to investigate the hydrodynamic and drying characteristics. In this experiment, the gas flow contains two streams, one is the continuous flow and the other is pulsed flow. When the total gas flow rate is small, increasing the pulsed flow will strengthen the drying progress. When the total flow rate is larger, the continuous gas flow velocity should be stabilized close to the minimum fluidization velocity. The effects of gas flow rate, gas temperature, pulsation frequency on drying performances have been investigated. At low inlet pulsed gas velocity, moist particles could get a higher drying rate when the pulsed gas frequency is 0.25Hz. However, when the pulsed gas velocity increased, the pulsation frequency should be increased. Pulsed gas flow fluctuation graph and gas enthalpy value curve interpretation method were also introduced to explain the relevant conclusions in this paper.

Keyword: pulsed gas wave form analysis, pulsation frequency, gas distribution, drying.

## 1 Introduction

Drying is an important process of preserving food. The major objective of drying agricultural products is to reduce the moisture to a low level, which allows safe storage over an extended period. The drying of biological materials is a complex process, the moisture changes over time is accompanied by changes of other phenomena, such as the structure, the quality and the size of

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