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**THE RELATIONSHIP BETWEEN FLUIDIZATION VELOCITY AND SEGREGATION IN
TWO-COMPONENT GAS FLUIDIZED BEDS: DENSITY- OR SIZE-SEGREGATING
MIXTURES**

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ABSTRACT

A model is proposed to predict the axial profile of solid concentration obtained by slowly defluidizing a binary mixture from the complete gas fluidized condition the bed down to the fixed state. The model predictions are compared with experiments on beds of two solids differing either in density or size. The initial and final fluidization velocities of these mixtures as well as the concentration profiles at various overall composition are determined. It is shown that the theoretical equations used to predict the fluidization velocity interval of the two-solid system can also be used to calculate the axial distribution of its components at the end of the defluidization process. This is achieved by inferring an equilibrium relationship between the fluidized and the fixed region of the bed during defluidization. Despite the simplicity of the approach, an encouraging level of agreement between predictions and experiments is obtained, demonstrating that the extent of segregation is strongly related to the progress of binary fluidization.

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