

# **Hydrodynamics of gas fluidized beds with mixture of Group D and B particles**

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## **Résumé / Abstract**

The dynamics of a gas-solid fluidized bed containing Geldart Group D particles mixed with a small proportion of Geldart Group B particles are investigated using pressure fluctuations data. Time series analysis, using a variety of nonlinear dynamics tools, shows that the slugging present with Group D particles can be suppressed by the addition of a small proportion of Group B particles. The power spectra and the auto-correlation function are used for a preliminary evaluation of dominant slug frequencies. It is shown that the bed fluidized with the mixture of Group D and B particles behaves in a less periodic manner and is dominated by more random bubble motion. On the other hand, the correlation integral is used to analyze the chaotic behaviour of the flow, through evaluation of the fractal structure of the reconstructed attractors. It is shown that the bed fluidized with Group D particles is characterized by a combination of steady slug motion and irregular particles motion. The behaviour of the fluidized bed of Group D/B particles mixture is characterized by a single correlation dimension for a wide range of fluidization velocities.

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