

Asymmetric of the Segregation-Enhanced Brazil Nut Effect

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Abstract : We study the motion of particles in cylinders which are subjected to a sinusoidal vertical vibration. We measure the rising time of a large intruder from the bottom of the container to free surface of the bed particles and find that the rising time as a function of intruder density increases to a maximum and then decreases monotonically. The result is qualitatively accord to the previous findings in experiments using relative humidity of the bed particles and found speed convection of the bed particles containers it moving slowly, and the rising time of the intruder where a minimal instead of maximal rising time in the small density region was found. Our experimental results suggest that the topology of the container plays an important role in the Brazil nut effect.

Keywords : granular particles, Brazil nut effect, cylinder container, vertical vibration, convection

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