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Title: Mechanics of Workpiece Motion in Vibrationally Fluidized Granular Media

Description:

Granular materials can be fluidized and made to flow in a vibrating container. Workpieces entrained in these flows are subject to the impact of the vibrating particles so that surfaces can be smoothed and hardened. This is known as vibratory finishing.

Very little is known about the factors that determine the path of a workpiece that is entrained in such granular flows. The project will use discrete element software (EDEM) to examine this for beds of spherical particles under the conditions that are typical of those found in an actual vibratory finisher. Experiments will aim to verify the path predictions of the software. The overall objective is to predict the path of a workpiece in a flowing vibrationally-fluidized bed by identifying the characteristics of the flow over the entrained workpiece and relating this to the forces that act on and propel it.