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Abstract

The coefficient of restitution is widely used to characterize the energy loss rate in numerical simulations of discrete element modelling. The accurate input parameters can obtain the accurate simulation results for discrete element modelling. The determination of the coefficient of restitution for the single component particle is the relatively simple process, however, when considering multicomponent particles like fly-ash and humidity environment, the unpredictable property of particle after impact makes the analysis of the coefficient of restitution more complicated. This paper presents an experimental setup to determine normal coefficient of restitution using the high-speed digital camera in different humidity condition. The normal coefficient of restitution was measured for fly-ash micro-particles with different relative velocities and humidity, with a focus on collision velocities below 7 m/s. Therefore, this work focused on the effect of humidity and incident velocity on the normal coefficient of restitution.

Keywords: Normal coefficient of restitution; critical capture velocity; relative humidity; normal impaction; micro-particle.

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