

# Contact electrification of particles considering effect of relative

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*Abstract*— There are many works conducted out to investigate the effect of ambient humidity on contact electrification/triboelectrification. However, the current existing results about the effect of relative humidity on contact electrification are significantly different. Some results show that the amount of net contact electrification increases with the relative humidity increasing, and some show that it decreases with the increase of relative humidity, while the other results state that with the increase of relative humidity it increases at lower relative humidity then decreases at higher relative humidity. In this paper, firstly we experimentally investigate the contact electrification of a glass particle due to single collision with other glass particle under different relative humidity and then build a model of contact electrification to explain how and why the relative humidity has an effect on the contact electrification. Finally, the model is used to simulate the contact electrification of particles due to multiple collisions in a mixed-size granular system.