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The effect of temperature on the impact process of SiO_2 particle onto a planar surface MING DONG, Associate Professor, SUFEN LI, Professor, YAN SHANG, Doctor — This paper presents the results of a comprehensive program of experiments in which SiO_2 particles were impacted under controlled conditions against a planar steel surface. The overall aim of these experiments was to gain an understanding of the ash deposition process in a pulverized coal boiler system. A continuous nitrogen flow carrying particles was used to simulate the flue gas in boiler, and planer steel surface was used to simulate the heat transfer tube in boiler. The effect of particle incident velocity, particle temperature and planar surface temperature on the normal restitution coefficient was examined. The results show that the normal restitution coefficient increases firstly with increasing incident velocity, and then decreases with increasing incident velocity in the measurement range (ranging from 8m/s to 13m/s). The normal restitution coefficient decreases with increasing particle temperature and surface temperature, and with temperature difference between particle and surface. The experiments are carried out in an atmospheric column, and individual impacts are recorded by a digital camera system.
Keywords: Normal restitution coefficient, impaction experiments, particle, rebound characteristics.

Ming Dong
Associate Professor

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