

Effect of different experimental conditions on morphology of copper powder using a planetary ball mill with DEM simulation

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Abstract

The ball milling process involves a repeated collision between ball to ball or balls to the wall and gives the deformation, welding, and fracture. In this study, the effect of different experimental conditions on the morphology of copper powder using a planetary ball mill was studied. The experimental results suggest that the morphology of copper particles can easily be controlled by experimental conditions during the ball milling process. In DEM simulations, the displacement of particles per time step is calculated according to Newton's laws of motion. The relationship between impact energy and particle morphology change was analyzed with experimental conditions by calculating the impact energy through DEM simulation.

Keywords: Particle morphology, DEM simulation, Planetary ball mill, Copper