

Analysis of physical characteristics of grinding equipment by discrete element method (DEM) simulation and its application for research on the grinding mechanism of each equipment - (2) study on stirred ball mill

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A simulation of the three-dimensional motion of grinding media in the stirred ball mill for the research of grinding mechanism and investigating of physical characteristics of equipment have been carried out by 3-dimensional discrete element method (DEM). The movement of ball was graphically displayed with movie from start of the milling to several seconds. . The motion of the balls and the forces acting on them were calculated, and the results showed that the forces applied to the balls increased greatly as the revolution speed of the mill was increased to 900 rpm with comparing experimental results. The main force acting on the balls was the normal force, and was higher than the tangential force. The power changing the rotation speed of pot was examined based on the micro interactive forces at all the contact points between ball-to-ball. DEM is a very powerful tool for the microanalysis of movement of balls, which could not have been solved by a conventional experimental method.