

Dynamical Characteristics of Interaction between Water Droplet and Aerosol Particle in Dedusting Technology

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Abstract : With the rapid development of national modern industry, people begin to pay attention to environmental pollution and harm caused by industrial dust. Based on above, a numerical study on the dedusting technology of industrial environment was conducted. The dynamic models of multicomponent particles collision and coagulation, breakage and deposition are developed, and the interaction of water droplet and aerosol particle in 2-Dimension flow field was researched by Eulerian-Lagrangian method and Multi-Monte Carlo method. The effects of the droplet scale, movement speed of droplet and the flow field structure on scavenging efficiency were analyzed. The results show that under the certain condition, 30 μ m of droplet has the best scavenging efficiency. At the initial speed 1m/s of droplets, droplets and aerosol particles have more time to interact, so it has a better scavenging efficiency for the particle.

Keywords : water droplet, aerosol particle, collision and coagulation, multi-monte carlo method

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