Simulation of Indoor Fine Suspension Particle Deposition

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Abstract

In this paper, the migration and deposition of particles are simulated using the Moment Dynamic Equation (MDE). Indoor fine suspension particle depositions and particle distribution function are obtained. Gas phase flow is simulated by v^2-f model. The simulated results of particle concentration profiles show that a uniform concentration exists in the middle region of the room with a low supplying speed. At the same time, the total number of particles deposited is also obtained using Gradient diffusion model. Through the comparison of velocity predictions among several CFD $k-\varepsilon$ models and v^2-f model and experimental data, it is concluded that the results obtained by v^2-f model more accurately approximate the experimental data. So that the MDE combined v^2-f model will gain in popularity amongst building engineers and it will gradually be adopted as an attractive alternative tool to predict contaminant particle dispersion and distribution.

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