Title
Development and application of numerical prediction method for Indoor Air Quality and exposure concentration

Abstract
A majority of people in the developed world spend much of their lives in indoor spaces and hence indoor air quality problems are being addressed intensively corresponding to the rise of health consciousness. From the viewpoint of management of public health for residents, the prediction and control of the contaminant concentration in occupational exposure will be critically important for the design of healthy indoor environments. The overarching objective of this research is to develop comprehensive integrated numerical procedures of computational fluid dynamics (CFD) based non-uniform/ unsteady contaminant distribution analysis and epidemiological model for prediction of residential exposure concentration level from building scale to nasal airway scale (respiratory tract) inside of the human body. Toward this end, numerical models of convection/ diffusion, chemical reaction, adsorption/ desorption and deposition for various contaminant in indoor environment, and Virtual Manikin and respiratory tract model have been proposed and model parameters were also identified by developing original experimental/ measurement method. This proposed numerical prediction method will be applicable and contribute to design for creating healthy and sustainable indoor environment.