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Indoor particulates removal using water microdroplets based on wet scrubbing method¹ JEONGJU KIM, Pohang Univ of Sci Tech, JEONG JAE KIM, Hanbat Univ, SANG JOON LEE, Pohang Univ of Sci Tech — Particulate matter (PM) is microscopic particles suspended in the air. PM has a lot of adverse effects on human. Therefore, various studies have been conducted to reduce PM, but an outstanding method has not been introduced. The wet scrubbing, which is one of the existing methods for remove PM, has a disadvantage that fine PM (PM_{2.5}) removal efficiency is rapidly reduced compared with PM₁₀. In this study, we experimentally investigated PM removal effect by water microdroplets based on the wet scrubbing method and observed temporal variations of PM concentration in a test chamber. When the microdroplets were sprayed, the removal effect of PM concentration increased with time, and PM removal efficiency and deposition constant were calculated. The experimental results were compared with analytical results based on semi-empirical models proposed by previous studies. To analyze the models, PIV technique was utilized to obtain the flow velocity around the outlet. The experimental results showed higher performance compared with both the previous results of wet scrubbing and the analytical results. These results suppose that microdroplets sprayed into an indoor space helps to decrease PM, and PM_{2.5} more effectively.

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