

# Accepted Manuscript

Measuring indoor particulate matter concentrations and size distributions at different time periods to identify potential sources in an office building in Taipei City

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PII: S0360-1323(17)30324-4

DOI: [10.1016/j.buildenv.2017.07.025](https://doi.org/10.1016/j.buildenv.2017.07.025)

Reference: BAE 5004

To appear in: *Building and Environment*

Received Date: 9 May 2017

Revised Date: 16 July 2017

Accepted Date: 17 July 2017

Please cite this article as: Cheng Y-H, Measuring indoor particulate matter concentrations and size distributions at different time periods to identify potential sources in an office building in Taipei City, *Building and Environment* (2017), doi: 10.1016/j.buildenv.2017.07.025.

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1 **Measuring indoor particulate matter concentrations and size**  
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12 **ABSTRACT**

13 In this study, indoor PM concentrations and size distributions were measured at  
14 different time periods to identify the sources of indoor PM in an office building. The  
15 measurement results indicate that indoor PM concentration was affected by outdoor  
16 air quality conditions, building ventilation system operations, and indoor activities.  
17 The results demonstrated that the indoor PM<sub>10</sub> concentration was significantly affected  
18 by the outdoor air quality conditions when the ventilation system was turned on.  
19 However, the outdoor and indoor PM<sub>10</sub> concentrations were less correlated when the  
20 ventilation system was turned off. Moreover, fine PM was the major component of the  
21 indoor PM in the air supply device. Additionally, the indoor particle mass size  
22 distributions exhibited a triple-mode pattern on working days. The dominant mode  
23 was at approximately 0.33  $\mu\text{m}$ , and the other two modes were at 2–4  $\mu\text{m}$  and 12–14  
24  $\mu\text{m}$ . Specifically, an extremely coarse mode at 12–14  $\mu\text{m}$  could be observed during  
25 working hours, demonstrating that these coarse particles in the indoor environment  
26 were caused by indoor activities during working hours. Moreover, the indoor particle

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