



**The 9th International Symposium
on Heating, Ventilation and Air Conditioning
(ISHVAC)
and
The 3rd International Conference
on Building Energy and Environment
(COBEE)**

Abstracts

Editors:

Xiong Shen

Yuexia Sun

Yudi Liu

July 12-15, 2015

Tianjin, China

Organizer
Tianjin University



Co-organizers

Tsinghua University

Dalian University of Technology

Purdue University

University of Colorado at Boulder



ISBN: 978-194327809-1

Service E-mail: ISHVAC_COBEE@tju.edu.cn

<http://www.cobee.org>

Copyright © 2015 by ISHVAC-COBEE 2015

All rights reserved

T2-319 Experimental Studies on Removal of Air-Borne Haloanisoles by Photocatalytic Oxidation and Plasma Air Purifiers	175
Lei Fang* and Raúl Bermúdez.....	175
T2-538 Strategy Study on Measurement of Fine and Ultrafine Particle in Machining Factory	176
Jie Zhang and Zhengwei Long*	176
T2-569 Research on Air Filter Material for Household PM_{2.5} Control	177
Yuanzhi Xiao, Henggen Shen, Lin Liu, and Xingcheng Liu*	177
T2-758 Simulation on the Resistance of the Filter Media with Lattice Boltzmann Method	178
Jiaqi Fan, Bin Zhou*, Paolo Tronville, Da Gong, Jinxiang Liu, and Liping Chen.....	178
T2-844 Preparation of Co-Doped TiO₂ with F and Fe and its Photocatalysis under Visible Light.....	179
Cong Ding, Yufei Zhang, Ting Yang and Yanhua Liu*	179
T2-846 Photocatalysis of N/Fe Co-Doped TiO₂ under Visible Light.....	180
Ting Yang, Yufei Zhang, Cong Ding, and Yanhua Liu*	180
T2-855 Numerical Studies on Purification Effect of a Novel Double Skin Facade Integrated with Photocatalysis.....	181
Jialu Liu and Yanhua Liu*	181
T2-863 Influence of Installation Modes and Latitude on the Collector Performance... 	182
Caiqin Hou*, Rongxia Yang, and Languang Xu.....	182

T2-758 Simulation on the Resistance of the Filter Media with Lattice Boltzmann Method

Jiaqi Fan¹, Bin Zhou^{1*}, Paolo Tronville², Da Gong¹, Jinxiang Liu¹, and Liping Chen¹

¹Department of HVAC, College of Urban Construction, Nanjing Tech University, 210009 Nanjing, China;

²Department of Energy, Politecnico di Torino, Corso Duca degli Abruzzi 24, I-10129Turin, Italy

*Corresponding email: zhoubinwx@hotmail.com

Keywords: Air Filter, Fibrous Media, LB Method, Slip Boundary, Resistance.

SUMMARY

To simulate the resistance of fibrous air filter media it is first necessary to develop an accurate simulation model for the gas flow through the media structure. In this paper we use an approach making only one basic simplification to the media geometry. Then the flow through microscale porous geometries on the slip and no slip boundary conditions with Lattice Boltzmann method (LBM) is investigated. Our numerical simulations are performed for the resistance of two kinds of filter media (F6, F8) models with various inlet velocities. The computational predictions of the resistances are compared with the experimental and analytical data and their validity is discussed, which lay the foundation for further research on fibrous air filter media with LB method.