

Peking University Bioaerosol Laboratory Bulletin (PKU-BLB) Volume 7, Issue 2

August
2019

Prof Yao organized the 657 Xiangshan
Science Conference on Environmental ARG
and ARB spread and control !

第657次香山科学会议“环境中耐药细菌及耐药基因的传播与控制”
北京福建大厦·2019年8月20-21日



Environmental
Science & Technology

ES&T's Best Papers of 2018

Researchers who started their careers in the previous biennium may recall the days before the Internet liberated them from the task of sorting through the exceedingly thin pages of Chemical Abstracts, finding obscure journals out of the library stacks and stapling together copies of papers. More recently, those same computers have started to make recommendations about papers we might want to read. They also edit our grammar and spelling and suggest polite responses to routine e-mails. In the coming decades, it seems likely that artificial intelligence will continue to alter the way that researchers spend their time. I expect that the last thing the machines will learn to do is select the best papers of the year. A computer may be able to determine when a manuscript exceeds some minimal threshold with respect to presentation, data quality, and analysis, but it will be difficult for an algorithm to identify aspects of the work that separate a truly exceptional paper from one that is good enough to publish.

Decisions about excellence in research still require the judgment of experts who have years of research experience, diverse skill sets, and a global perspective. For this reason, when it is time to pick the best papers of the year, *Environmental Science & Technology* relies upon our Editorial Advisory Board. Each year we follow a similar process. The Board reads and ranks approximately 100 papers that our Associate Editors had identified as exceptional contributions. From among the top-ranked papers, I choose best papers in the categories of Environmental Science, Environmental Technology, Environmental Policy, and Feature. Ranking all of these papers was a tough job, and we are particularly grateful for the tireless efforts of Professor Patricia Holden (U.S. Santa Barbara), the chair of the selection committee.

If I were asked to advise a computer scientist about how to create a program that could choose a best paper, I would tell them to look for those papers where researchers report on a series of unexpected findings. For example, our top science paper puts together the cause-and-effect relationships between the neonicotinoid pesticides that have become a staple of modern agriculture and the increase in resistant insects in a heavily farmed region. I would tell the computer scientist to pay attention to research that builds upon recent developments in rapidly evolving fields and applies them to conditions that are encountered in the environment. Our top technology paper is a perfect example of how developments in materials science and electrochemistry are allowing researchers to create electrodes that can turn the dream of chemical reduction of nitrate into a reality. Finally, I would advise her to seek those papers that had implications for public policy and future decisions about where additional research should be directed. This year, I would suggest that our computer scientist use all three of our top Features to train their computers how to recognize insightful, policy-relevant research.

We are grateful to the exceptional researchers whose papers we recognize with these awards. We also appreciate the thousands of other authors whose research is reported in the journal. And finally, we are appreciative of the effort of our

Editorial Advisory Board. The machines are not going to replace you anytime soon!

ENVIRONMENTAL SCIENCE

Top Paper. Anders S. Hansen, Thomas M. Chappell, Anitha Chittari, Alana L. Jacobson, and George G. Kennedy. Insecticide Resistance Signals Negative Consequences of Widespread Neonicotinoid Use on Multiple Field Crops in the U.S. *Cotton Belt*. *Environ. Sci. Technol.* 2018, 52 (4), pp 2314–2322. doi.org/10.1021/acs.est.7b08015.

First Runner-Up. Ana Calverton, Derek C. G. Muir, Ginter Krick, Deborah Iguchi, and Xiaoyu Wang. Climate Influence on Temporal Trends of Polychlorinated Biphenyls and Organochlorine Pesticides in Landfilled Chai from Lakes in the Canadian High Arctic. *Environ. Sci. Technol.* 2018, 52 (18), pp 10360–10369. doi.org/10.1021/acs.est.8b01860.

Second Runner-Up. Jing Li, Junyi Cao, Yongping Zhao, Qinglin Chen, Fangfang Shao, Yan Wu, Siyu Xu, Hongping Fan, Guilan Du, Ruijin Huang, Jing Wang, Alma Losler de Jesus, Laila Mironova, Chai K. Chan, Jordan Pechin, and Manabing Yan. Global Survey of Antibiotic Resistance Genes in Air. *Environ. Sci. Technol.* 2018, 52 (19), pp 10975–10984. doi.org/10.1021/acs.est.8b02204.

ENVIRONMENTAL TECHNOLOGY

Top Paper. Pralay Gayen, Jaum Spataro, Sumant Aravali, Abdul-Melid Ali, Jose M. Corral, and Brian P. Chaplin. Electroanalytical Reduction of Nitrate Using Magnolia Phenyl-TiO₂ Reactive Electrochemical Membranes Doped with Pd-Rhod Catalyst. *Environ. Sci. Technol.* 2018, 52 (16), pp 9370–9379. doi.org/10.1021/acs.est.8b03036.

First Runner-Up. Hao Li, Huan Shang, Xuemei Cao, Zhenyong Zhang, and Laila Zhang. Oxygen Vacancies Mediated Complete Visible Light NO Oxidation via Side-On Binding Superoxide Radicals. *Environ. Sci. Technol.* 2018, 52 (15), pp 8659–8665. doi.org/10.1021/acs.est.8b01849.

Second Runner-Up. Hanyan Duan, Liu Ye, Xuanyu Liu, Danyun J. Battistoni, and Zhiguo Yuan. Self-Sustained Nitrate Accumulation at Low pH Greatly Enhances Volatile Solids Destruction and Nitrogen Removal in Aerobic Sludge Digestion. *Environ. Sci. Technol.* 2019, 53 (3), pp 1225–1234. doi.org/10.1021/acs.est.8b04495.

ENVIRONMENTAL POLICY

Top Paper. Wei Zhang, Yu Liu, Kunsheng Feng, Klaus Hubacker, Jintan Wang, Minmin Lu, Ling Jiang, Honggang Jiang, Nianke Liu, Pengyan Zhang, Ying Zhou, and Jin Ji. Reversing Environmental Inequality in China's Interregional Trade. *Environ. Sci. Technol.* 2018, 52 (13), pp 7171–7181. doi.org/10.1021/acs.est.8b02009.

First Runner-Up. James H. Gower, Gregory A. Kozlowski, Robert D. DeKor, Timothy J. Wallington, and Hyung Chul Kim. Life Cycle Assessment of Connected and Automated Vehicles. *Environ. Sci. Technol.* 2019, 53 (3), pp 1235–1244. doi.org/10.1021/acs.est.8b04496.

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ACS Publications

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Environ. Sci. Technol. 2019, 53, 3343–3349

Prof Yao 's
work about
“GLOBAL
SURVEY of
ARG in Air”
was awarded
the “ES&T's
Best Papers of
2018 Award!

北京大学生物气溶
胶实验室

Beijing, China

Scientific Publications

1. Our work about “Differing toxicity of ambient particulate matter in global cities” by Li et al (2019) was accepted for publication in *Atmospheric Environment*

DOI:

<https://doi.org/10.1016/j.atmosenv.2019.05.048>



2. Dr. Yao invited Prof Don Milton from University of Maryland to give a presentation titled “Aerosol Transmission of Influenza” in CESE, PKU.



Other Selected Scientific Activities

1. Prof Yao invited Prof Richard Flagan from CalTech to give a talk titled “Pollen and Airborne Nanoparticles” in College of Environmental Sciences and Engineering, Peking University.



3. Dr. Yao co-chaired with Prof Hua Qian from Southeast University for the 4th Bioaerosol Symposium, congrats on Prof Qian.



4. Prof Yao was appointed as one of executive chairs for the 657th Xiangshan Science Conference.





5. Prof Yao along with other colleagues organized a Bioaerosol session at the 10th National Conference on Environmental Chemistry held in Tianjin.



Prof Yao, Prof Hwang and Prof An Taicheng



Prof Yao, Prof Mainelis and Prof Zifeng Yang



Research Grants

1. Dr. Yao was awarded another NSFC grant aiming at developing new bioaerosol detection technique. This is the 7th research grant from National Natural Science Foundation of China (NSFC).

Other Scientific Activities

1. Dr. Yao co-chaired the plenary session of the 4th bioaerosol symposium.



2. Prof. Yao was invited to give a keynote talk at the 5th Microbiota Symposium held in National Seoul University, Seoul, Korea



2. Graduate student Ting Zhang won the National Student Scholarship award.

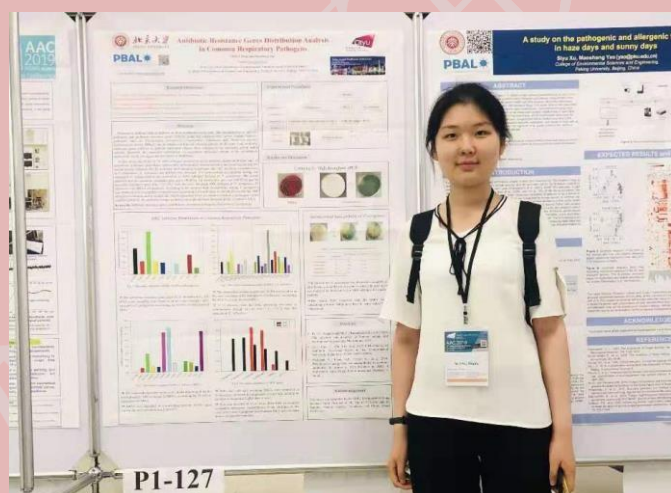
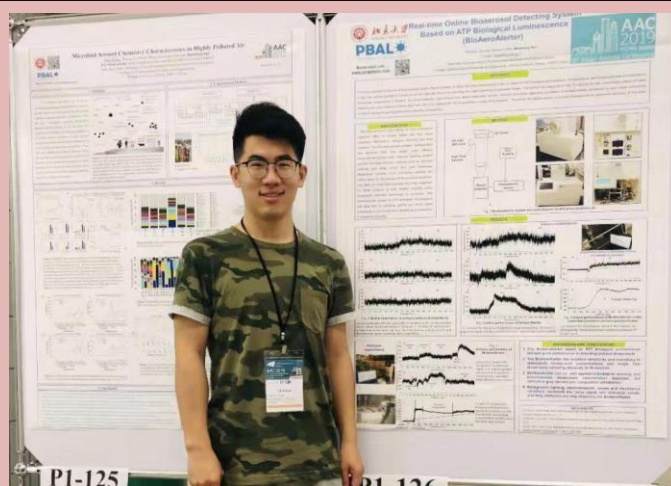
3. Graduate students Xinyue Li, Minfei Wang, Lu Zhang, Haoxuan Chen, and postdoc Siyu Xu gave presentations during the 4th Bioaerosol symposium and also the 10th National Conference on Environmental Chemistry.



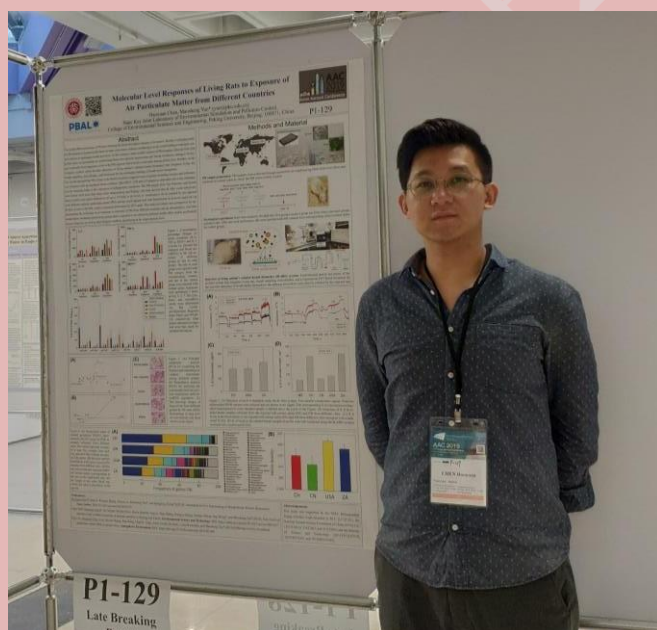
Student Activities

1. Graduate student Xinyue Li won the best poster/presentation awards during the 9th Indoor Environment and Health Branch Meeting and the 4th Bioaerosol Symposium held in Nanjing and 10th NCEC2019.



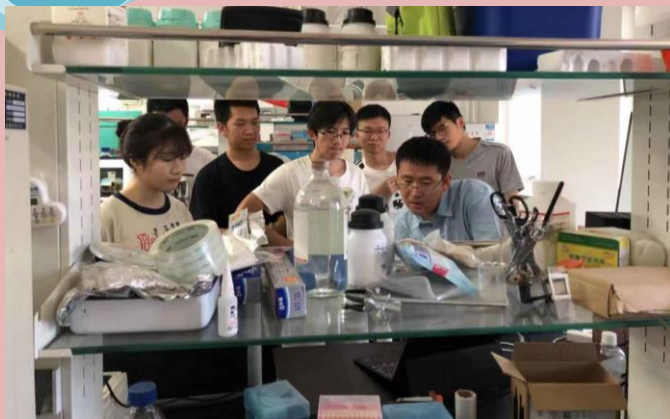


4. Graduate students were attending the Asian Aerosol Conference held in Kong Kong.



Lu Zhang from East China Normal University joined us for her PhD study at PKU. Welcome!

Teaching activity



Dr. Yao with PKU undergraduate students for his undergraduate class “Indoor air pollution”

Our next issue is expected to be in December 2019 & we look forward to exciting news from our group. For other information, please visit our laboratory web site: www.yaopkulab.com. All contents contained in this document are copyrighted and explained by PKU Bioaerosol Laboratory.