

Peking University Bioaerosol Laboratory Bulletin (PKU-BLB) Volume 6, Issue 1

**April
2018**

**Prof Yao edited a bioaerosol special issue with
Chinese Science Bulletin & the bioaerosol review in
Chinese was featured in its cover of the April 10 issue.**

The article “生物气溶胶昨天、今天和明天” was selected to be the cover with Chinese Science Bulletin



**Prof Yao organized a
symposium for urban air
pollution monitoring
and mechanism on
Feb 9, 2018**



**北京大学生物气溶
胶实验室**

Beijing, China

Scientific Publications

1. Our work about pathogen spread via exhale breath in J Aerosol Sci (Bioaerosol special issue)

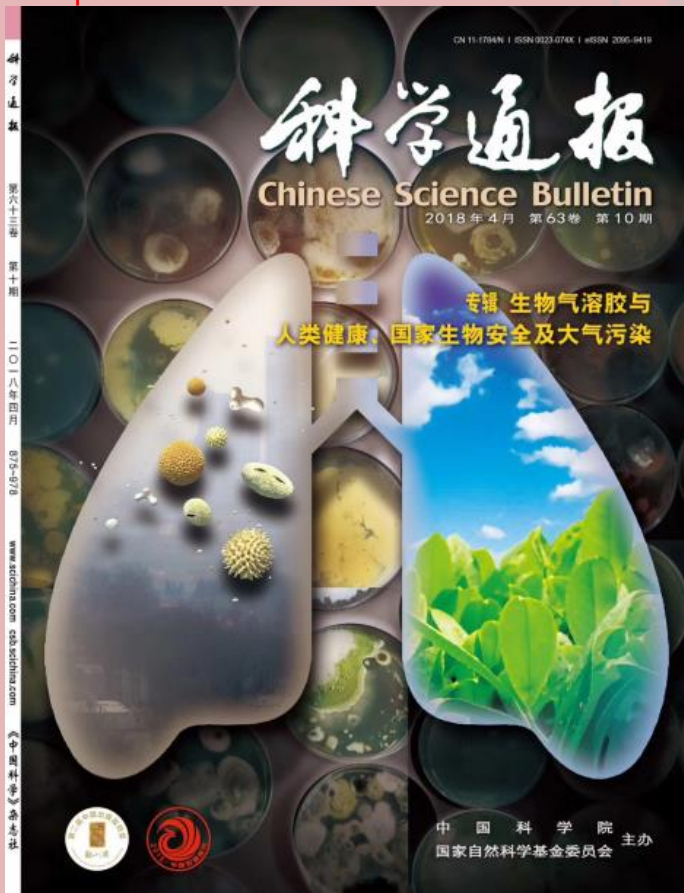


DOI: <https://doi.org/10.1016/j.jaerosci.2017.12.009>

2. Our work about a high volume bioaerosol sampler was published in J Aerosol Science



3. Our work “生物气溶胶的昨天、今天和明天” by Zheng et al 2018 was published in Chinese Science Bulletin as the cover of the April 10 issue



DOI: <https://doi.org/10.1360/N972018-00121>

4. Prof Yao wrote a preface for the bioaerosol special issue originated from the proceedings of the 600th Xiangshan Science Conference held in July 2018



5. Prof Guibin Jiang (Academician, Chinese Academy of Science, ES&T Associate Editor), wrote an editorial about the bioaerosol issue, highlighting rapid developments of the bioaerosol discipline in recent years.

科学通报 2018年 第63卷 第10期: 875

中国科学院 中国科学

第600次学术讨论会·生物气溶胶与健康、国家生物安全及大气污染



快速发展的生物气溶胶学科



江桂斌

中国科学院院士，发展中国家科学院院士，中国科学院环境科学研究所所长，中国科学院环境科学研究所所长，中国科学院环境科学研究所所长...

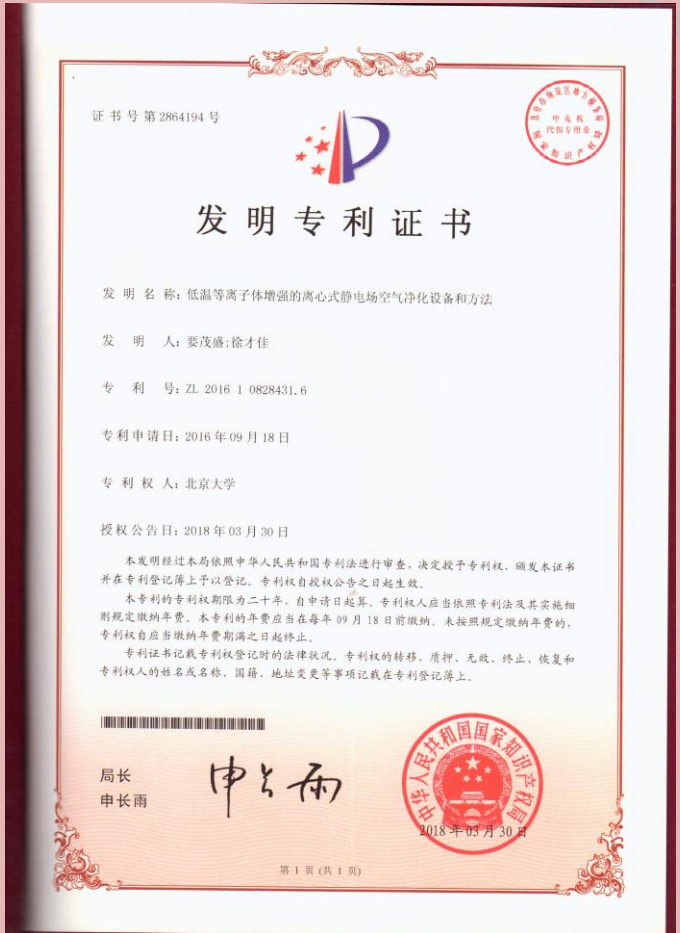
生物气溶胶是指悬浮于空气中的细菌、病毒、真菌及化学毒剂等，主要来源于地面植被、海洋、人类活动以及动物等的排泄物。生物气溶胶的呼吸器有可能会导致各种呼吸器感染和急性呼吸器综合症(SARS)、H1N1、哮喘、过敏性鼻炎、1918年爆发的H1N1流感使得全球5000万人死亡，100年后它所导致的下呼吸道感染仍然是人类第四大杀手。据世界卫生组织统计，每年近300万人因此丧生。而低浓度的气溶胶也是首要致死风险。此外，生物气溶胶形式的生物战，生物恐怖能造成大规模人员伤亡，军事领域疾病，对人类社会的和平与稳定也构成了严重威胁。生物气溶胶检测、监测及防治为一体的应用基础研究在大气环境、生态环境、气候变化、食品安全、生物反恐、传染病、公共卫生以及环境与健康等领域具有重大战略意义。然而，现有采样方法在生物气溶胶、纳米级病毒、化学毒剂等微颗粒方面面临技术难题；且传统培养、基因扩增方法耗时、费力。在检测时间和灵敏度上存在挑战。传统研究方法很大程度上限制了该领域的发展。而纳米化学、免疫、分子生物学等前沿交叉技术的发展为该领域提供了新的机遇。

为厘清生物气溶胶领域关键科学与技术问题，加强国内外不同学科间的合作，加快构建生物气溶胶检测与监测、预防与诊断的技术方法体系，逐步形成我国生物气溶胶领域研究的战略思路与技术支持体系。2017年6月29-30日，以“生物气溶胶与健康、国家生物安全及大气污染”为主题的第600次香山科学会议在北京成功举办。来自国内外包括北京大学、清华大学、国防科技大学、中国科学院大气物理研究所、耶鲁大学等著名科研机构及政府部门的47位专家学者受邀参加会议。学者们在会上围绕：(1)生物气溶胶的来源、传播、感染致病机制与影响因素，以及人类暴露疾病；(2)生物气溶胶检测、监测、防护、消毒等理论技术，及其在国家生物安全防控中的应用；(3)生物气溶胶对空气污染的影响及人体健康效应等中心议题进行了讨论。围绕生物气溶胶检测、监测及防护等重大科学技术问题，经过深入交流，认为生物气溶胶是引发大规模传染病爆发的根本原因。而耐药基因的空气中传播进一步加剧了传染病的危害。针对生物预防，学者们提出了集成大气背景监测、微流控、生物传感以及光学元件等技术方案。在未来有望实现生物气溶胶进行实时精准识别。生物气溶胶作为微生物的重要组成成分，中外学者一致呼吁在研究微生物的致病性及毒性时，需要同时考虑其与化学成份、物理因素等的相互作用，包括呼吸道微生态、过敏性物质与人的交互作用；而空气质量更需同时考虑低浓度颗粒物的毒性及其累积影响。本次香山会议上，中外学者认为目前仍缺乏高效环保、可持续发展的室内病原体净化系统。在医院手术室、呼吸道感染重症监护室(ICU)病房等场所仍存在交叉感染的风险，而在个人防护效率与透气性的兼顾上也存在挑战。中外学者在会上一致呼吁将生物气溶胶健康危害纳入国家战略，通过军民融合共同攻关科学难题。《科学通报》通过此次香山科学会议共组织了来自7个高校的科研论文，分别围绕生物气溶胶、大气污染、环境健康、空气致病微限生物、呼吸道传染病、生命早期污染暴露、雾霾等问题开展了讨论。本专题深入探讨了生物气溶胶健康未来的研究方向，也为促进该领域国内多学科的交流与合作研究提供了重要基础。

中国科学院生态环境研究中心

The editorial written by Prof Guibin Jiang.

- 6. Our invention about the use of plasma enhanced electrical-centrifuge based air purifying methods and instrument was issued a patent!



Other Selected Scientific Activities

- 1. Prof Yao was invited to attend the International Environmental AMR meeting held in Vancouver, B.C., Canada on 4-5, April

A letter of invitation from the UK Science & Innovation Network, CDC, and Wellcome Trust. The letter is addressed to Professor Maosheng Yao at Peking University. The subject is an invitation to the International Environmental AMR Forum. The forum will be held at the Vancouver Convention Centre, 1055 Canada Place, Vancouver, B.C. on 4-5 April 2018. Participants should plan for meetings from 8:30am - 5:30pm on each day. The letter is signed by the UK Science & Innovation Network, CDC, and Wellcome Trust.



- 2. Dr. Yao as a Guest Editor for Journal of Aerosol Science edited a total of 20 bioaerosol journal articles. The topics ranged

The special issue is located at

A screenshot of the 'Journal of Aerosol Science' website. It shows the journal's logo, the text 'SUPPORTS OPEN ACCESS', and a navigation menu with options like 'Articles in press', 'Latest issue', 'Special issues', 'All issues', and 'About the journal'.

A screenshot of the 'Bioaerosol and Infectious Diseases' special issue page. It shows the title 'Bioaerosol and Infectious Diseases', the editor 'Edited by Maosheng Yao', and the date 'Last update 24 January 2018'.

https://www.sciencedirect.com/journal/journal-of-aerosol-science/special-issue/10T8M887MTL

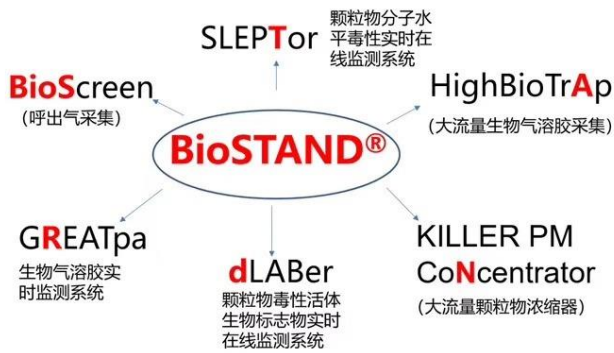
A screenshot of the 'Journal of Aerosol Science' article page. It shows the Elsevier logo, the journal title 'Journal of Aerosol Science', the volume 'Volume 115, January 2018, Pages 108-112', and the article title 'Bioaerosol: A bridge and opportunity for many scientific research fields'. The guest editor is identified as 'Maosheng Yao (Guest Editor) 及 四'.

Prof Yao wrote a preface for the bioaerosol special issue with J Aerosol Science.

3. Prof Yao organized a symposium for Air Bio-Security & PKU Bioaerosol Lab's BioSTAND was showcased during the symposium.



北京大学生物气溶胶实验室BioSTAND® 系统



Our next issue is expected to be in August 2018 & 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.



4. Prof Yao was invited to give a talk during the 2nd Environmental Nanotechnology and Microbiology Symposium held in Hefei, Anhui on April 18-20, 2018