Xiaodi Shi

1 Personal information

Email: xiaodi.shi@aces.su.se **Telephone:** +46 0738912864
Country of origin: China **Date of birth:** 07/02/1995
Research profiles:
ORCID: 0009-0008-4062-4009
Google Scholar: https://scholar.google.com/citations?user=UBMh9zUAAAAJ
ResearchGate: https://www.researchgate.net/profile/Xiaodi-Shi-2

2 Professional experience

1/5/2024-30/4/2026 **Marie Skłodowska-Curie Postdoctoral fellow, Stockholm University, Sweden**
Co-advisors: Profs. Anna Sobek, Jonathan P. Benskin, and Örjan Gustafsson

15/9/2022-30/4/2024 **Postdoctoral researcher, Stockholm University, Sweden**
Co-advisors: Profs. Anna Sobek, Jonathan P. Benskin, and Örjan Gustafsson

3 Educations

01/09/2017-01/07/2022 **Ph.D. in Environment and Health, Peking University, China**
Thesis title: *Field observation on nitrated organic components in ambient fine particulate matters in Beijing and their formation through atmospheric reactions*
Advisor: Prof. Xinghua Qiu GPA: 3.66/4.00

01/09/2013-01/07/2017 **B.Sc. in Environmental Sciences, Northwestern Polytechnical University, China**
Thesis title: *Measurement of polycyclic aromatic hydrocarbons (PAHs) in ambient fine particulate matter using thermal desorption coupled with gas chromatography-mass spectrometry*
Co-advisors: Profs. Xiao-feng Sun, Xinghua Qiu GPA: 87.18/100

4 Publications

Total: 17

1. **Shi, Xiaodi**; Qiu, Xinghua*; Li, Ailin; Jiang, Xing; Wei, Gaoyuan; Zheng, Yan; Chen, Qi; Chen, Shiyi; Hu, Min; Rudich, Yinon; Zhu, Tong. Polar nitrated aromatic compounds in urban fine particulate matter: A focus on formation via an aqueous-phase radical mechanism. *Environ. Sci. Technol.* **2023**, *57*, 5160-5168.
2. **Shi, Xiaodi**; Qiu, Xinghua*; Chen, Qi; Chen, Shiyi; Hu, Min; Rudich, Yinon; Zhu, Tong. Organic iodine compounds in fine particulate matter from a continental urban region: Insights into secondary formation in the atmosphere. *Environ. Sci. Technol.* **2021**, *55*, 1508-1514.
3. **Shi, Xiaodi**; Qiu, Xinghua*; Jiang, Xing; Rudich, Yinon; Zhu, Tong. Comprehensive detection of nitrated aromatic compounds in fine particulate matter using gas chromatography and tandem mass spectrometry coupled with an electron capture negative ionization source. *J. Hazard. Mater.* **2021**, *407*, 124794.
4. **Shi, Xiaodi**; Qiu, Xinghua*; Cheng, Zhen; Chen, Qi; Rudich, Yinon; Zhu, Tong. Isomeric identification of particle-phase organic nitrates through gas chromatography and time-of-flight mass spectrometry coupled with an electron capture negative ionization source. *Environ. Sci. Technol.* **2020**, *54*, 707-713.

5. Cheng, Zhen; Qiu, Xinghua*; Li, Ailin; Chai, Qianqian; **Shi, Xiaodi**; Ge, Yanli; Koenig, Theodore K.; Zheng, Yan; Chen, Shiyi; Hu, Min; Ye, Chunxiang; Cheung, Rico K.Y.; Modini, Robin L.; Chen, Qi; Shang, Jing; Zhu, Tong. Heterogeneous reactions significantly contribute to the atmospheric formation of nitrated aromatic compounds during the haze episode in urban Beijing. *Sci. Total Environ.* **2024**, 917, 170612.
6. Li, Ailin; Qiu, Xinghua*; Jiang, Xing; **Shi, Xiaodi**; Liu, Jinming; Cheng, Zhen; Chai, Qianqian; Zhu, Tong. Alteration of the health effects of bioaerosols by chemical modification in the atmosphere: A review. *Fundam. Res.* **2023.**
7. He, Shuyu; Liu, Ying*; Song, Mengdi; Li, Xin*; Lu, Sihua; Chen, Tianzeng; Mu, Yujing; Lou, Shengrong; **Shi, Xiaodi**; Qiu, Xinghua; Zhu, Tong; Zhang, Yuanhang. Insights into the peroxide-bicyclic intermediate pathway of aromatic photooxidation: Experimental yields and NO_x-dependency of ring-opening and ring-retaining products. *Environ. Sci. Technol.* **2023**, *57*, 20657-20668.
8. Liu, Jinming[#]; Lin, Yan[#]; Zhu, Yifang*; Chai, Qianqian; Jiang, Xing; **Shi, Xiaodi**; Lu, Xinchen; Zhu, Tong; Araujo, Jesus A.; Qiu, Xinghua*. Exposure markers of nitrated aromatic compounds and the association with nitrate stress. *Environ. Sci. Technol. Let.* **2023**, *10*, 728-734.
9. Li, Ailin; **Shi, Xiaodi**; Qiu, Xinghua*; Wei, Gaoyuan; Zheng, Yan; Chen, Qi; Chen, Shiyi; Hu, Min; Zhu, Tong. Organosulfur compounds in ambient fine particulate matter in an urban region: Findings of a nontargeted approach. *Sci. Total Environ.* **2023**, 887, 164114.
10. Cheng, Zhen; Qiu, Xinghua*; **Shi, Xiaodi**; Jiang, Xing; Zhu, Tong. Discovery of emerging organic pollutants in the atmosphere through an omics approach. *Front. Environ. Sci. Eng.* **2023**, *17*, 45.
11. Kuang, Yu; Shang, Jing*; Sheng, Mengshuang; **Shi, Xiaodi**; Zhu, Jiali; Qiu, Xinghua. Molecular composition of Beijing $PM_{2.5}$ brown carbon revealed by an untargeted approach based on gas chromatography and time-of-flight mass spectrometry. *Environ. Sci. Technol.* **2023**, *57*, 909-919.
12. Zhu, Jiali; Sheng, Mengshuang; Shang, Jing*; Kuang, Yu; **Shi, Xiaodi**; Qiu, Xinghua. Photocatalytic role of atmospheric soot particles under visible-light irradiation: Reactive oxygen species generation, self-oxidation process, and induced higher oxidative potential and cytotoxicity. *Environ. Sci. Technol.* **2022**, *56*, 7668-7678.
13. Zheng, Yan; Chen, Qi; Cheng, Xi; Mohr, Claudia; Cai, Jing; Huang, Wei; Shrivastava, Manish; Ye, Penglin; Fu, Pingqing; **Shi, Xiaodi**; Ge, Yanli; Liao, Keren; Miao, Ruqian; Qiu, Xinghua; Zhu, Tong; Koenig, Theodore; Chen, Shiyi; Zeng, Limin. Precursors and pathways leading to enhanced secondary organic aerosol formation during severe haze episodes. *Environ. Sci. Technol.* **2021**, *55*, 15680-15693.
14. Cheng, Zhen; Qiu, Xinghua*; **Shi, Xiaodi**; Zhu, Tong. Identification of organosiloxanes in ambient fine particulate matters using an untargeted strategy via gas chromatography and time-of-flight mass spectrometry. *Environ. Pollut.* **2021**, *271*, 116128.
15. Xu, Fanfan; **Shi, Xiaodi**; Qiu, Xinghua*; Jiang, Xing; Fang, Yanhua; Wang, Junxia; Hu, Di; Zhu, Tong. Investigation of the chemical components of ambient fine particulate matter ($PM_{2.5}$) associated with in vitro cellular responses to oxidative stress and inflammation. *Environ. Int.* **2020**, *136*, 105475.
16. Jiang, Xing; Xu, Fanfan; Qiu, Xinghua*; **Shi, Xiaodi**; Pardo, Michal; Shang, Yu; Wang, Junxia; Rudich, Yinon; Zhu, Tong. Hydrophobic organic components of ambient fine particulate matter ($PM_{2.5}$) associated with inflammatory cellular response. *Environ. Sci. Technol.* **2019**, *53*, 10479-10486.
17. Sun, Xiao-Feng*; Feng, Yang; **Shi, Xiaodi**; Wang, Yaxiong. Preparation and property of xylan/poly(methacrylic acid) semi-interpenetrating network hydrogel. *Int. J. Polym. Sci.* **2016**, *2016*, 1-8.

5 Conference presentations **Total: 8**

1. **Shi, Xiaodi**; Langberg, Håkon A.; Sobek, Anna; Benskin, Jonathan P. "Harnessing molecular ions by GC-APCI-IMS for simultaneous target, suspect, and nontarget screening of hydrophobic contaminants in sediments" **Platform presentation** at **the Society of Environmental Toxicology and Chemistry Europe 34th Annual Meeting** (2024).
2. **Shi, Xiaodi**; Castaldi, Anna M.; Langberg, Håkon A.; Sobek, Anna; Benskin, Jonathan P. "Identification of chlorinated paraffin biotransformation products in sediment cores of a polluted lake: Insights into oxidative degradation" **Poster presentation** at **the Society of Environmental Toxicology and Chemistry Europe 34th Annual Meeting** (2024).
3. **Shi, Xiaodi***; Sobek, Anna, Benskin, Jonathan P. "A high-content screening method for target, suspect, and non-target analysis of chemicals in sediments using gas chromatography-atmospheric pressure chemical ionization-ion mobility spectrometry" **Poster presentation** at **the Society of Environmental Toxicology and Chemistry Europe 33rd Annual Meeting** (2023).
4. **Shi, Xiaodi***; Qiu, Xinghua. "Class identification of nitrated organic compounds in ambient particulate matters by using electron capture negative ionization" **Spotlight presentation** at **the Society of Environmental Toxicology and Chemistry Europe 33rd Annual Meeting** (2023).
5. **Shi, Xiaodi**; Qiu, Xinghua*. "Organic iodine compounds in fine particulate matter from a continental urban region: Insights into secondary formation in the atmosphere" **Oral presentation** at **41st International Symposium on Halogenated Persistent Organic Pollutants** (2021).
6. **Shi, Xiaodi**; Qiu, Xinghua*. "A comprehensive detection of nitrated organics in ambient fine particulate matter." **Oral presentation** at **Virtual Environmental Analysis Symposium** (2020).
7. **Shi, Xiaodi**; Qiu, Xinghua*. "Isomeric identification of particle-phase organic nitrates through gas chromatography and time-of-flight mass spectrometry coupled with electron capture ionization." **Oral presentation** at **the 6th International Conference on Environment Simulation and Pollution Control** (2019).
8. **Shi, Xiaodi**; Qiu, Xinghua*. "Selective identification of organic nitrate in atmosphere aerosol by gas chromatography/electron capture negative ionization tandem high-resolution time-of-flight mass spectrometry." **Poster presentation** at **International Symposium on Environmental Geochemistry** (2019).

6 Research projects **Total: 5**

2024-2026 Nontarget analysis of Arctic sediments: An empirical indicator of persistent chemicals overlooked by regulation (Marie Skłodowska-Curie Postdoctoral fellow; 101150779)
Co-advisors: Profs. Anna Sobek, Jonathan P. Benskin, and Örjan Gustafsson

2024-2025 Nontarget analysis of Arctic sediments: An empirical indicator of persistent chemicals overlooked by regulation (Foundation of Ymer-80)
Leading Researcher

2020-2022 the second Tibetan Plateau Scientific Expedition and Research Program (STEP; 2019QZKK0605)
Graduate Student Researcher Advisor: Prof. Xinghua Qiu

2018-2022 Sources of nitro-polycyclic aromatic hydrocarbons and related pollutants in the fine particulate matter in Beijing (NSFC, 21876002)
Primary Graduate Student Researcher Advisor: Prof. Xinghua Qiu

2017-2018 Investigating the mechanisms and causes underlying the health effects of pollution particles sampled in metropolitan China (NSFC, 41561144007)
Graduate Student Researcher Advisors: Profs. Xinghua Qiu and Rudich Yinon

7 Awards and scholarships **Total: 6**

1. President Scholarship, Peking University (2021)
2. Merit Student of Peking University, Peking University (2021)
3. The First Prize of Peking University Scholarship, Peking University (2021)
4. Ministry of Industry and Information Technology Innovation Third Price Scholarship, Ministry of Industry and Information Technology, P. R. China (2017)
5. The First Prize Scholarship, Northwestern Polytechnical University (2017, 2016 and 2015)
6. National Scholarship, Ministry of Education, P. R. China (2016)

8 Co-supervisions **Total: 4**

2023-2024 Mireia Palau Diaz. M. Sc. in Analytical Chemistry at Stockholm University
Thesis title: *Sampling, Identification and Quantification of Microplastics in Atmospheric Deposition*

2023-2024 Iris Hättestrand in Analytical Chemistry at Stockholm University
Thesis title: *Machine learning for semi-quantification of chemicals detected with GC-APCI-HRMS in sediment samples*

2021-2022 Peiwen Zhong. B.Sc. in Chemistry (Environmental Chemistry) at Peking University
Thesis title: *Long-term trends of $PM_{2.5}$-bound PAHs and their derivatives in Beijing*

2020-2021 Zhen Jiang. B.Sc. in Chemistry (Environmental Chemistry) at Peking University
Thesis title: *Temporal variation and sources of polycyclic aromatic carboxylic acids in atmospheric fine particulate matter in Beijing*

9 Graduate teaching

2018-2022 Principle and application of environment and health instrument analysis
College of Environmental Sciences and Engineering, Peking University (2 hr/yr)

10 Other scientific activities

Nearly 20 revisions of publications in high-impact peer-reviewed journals such as *Environ. Sci. Technol.*, *Environ. Sci. Technol. Let.*, *Environ. Pollut.*, *Sci. Total Environ.*

Capital acquisitions of atmospheric pressure- and pyrolysis-gas chromatography systems for Department of Environmental Science, Stockholm University.