

Curriculum Vitae

Name: Ru-Jin Huang, Prof. Dr. (Chinese Academy of Sciences, Institute of Earth Environment)

Date of Birth: 18 Dec 1979

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Academic Qualifications

2006.06-2009.05, PhD, Atmospheric Analytical Chemistry, University of Mainz, Germany, Mentor: Prof. Dr. Thorsten Hoffmann

2002.09-2005.07, Master, Analytical Chemistry, Xiamen University, China, Mentor: Prof. Dr. Xiaoru Wang/Prof. Zhixia Zhuang

1998.09-2002.07, Bachelor, Analytical Chemistry, Xiamen University, China, Mentor: Prof. Zhixia Zhuang

Professional Experience

2015.01-to date, Professor, Key Laboratory of Aerosol Chemistry and Physics, Institute of Earth Environment, Chinese Academy of Sciences

2013.01-2016.12, PSI Fellow/visiting Scientist, Laboratory of Atmospheric Chemistry, Paul Scherrer Institute, Switzerland, Dr. Andre Prevot/Prof. Dr. Urs Baltensperger group

2012, Three months Visiting Scientist, Department of Atmospheric Sciences, Center for Atmospheric Chemistry and Environment, Texas A&M University, USA, Prof. Dr. Renyi Zhang group

2011.01-2012.12, Government of Ireland Research Fellow, Centre for Climate & Air Pollution Studies, National University of Ireland, Galway, Prof. Dr. Colin O'Dowd group

2010.01-2010.12, Postdoctoral, Institute for Atmospheric and Environmental Science, University of Frankfurt, Prof. Dr. Andreas Engel group

2009.06-2009.12, Postdoctoral, Institute for Inorganic and Analytical Chemistry, University of Mainz, Prof. Dr. Thorsten Hoffmann group

2005-2006, Research Assistant, Key lab of Analytical Sciences of the Ministry of Education, China, Prof. Dr. Xiaoru Wang group

Research Experience

- Chemical characterization and source apportionment of the TSP
- Formation and aging of secondary organic aerosol
- Brown carbon and black carbon
- New particle formation
- Marine and urban atmosphere
- Air pollution and health
- Analytical chemistry and mass spectrometry

Honor, Awards and Professional Service

2020 China Youth Science and Technology Award (Distinguished)

2019 National Science Fund for Distinguished Young Scholars

2019 National Leading Scientists for the Ten-Thousand Talents Program

2019 "Excellence" in the final review of the CAS Hundred Talents Program

2019 Awardee of the "from 0 to 1" innovation program (10-year excellence) of the Chinese Academy of Sciences
 2018 Young Scientist Award of the Chinese Academy of Sciences
 2018 Schmauss Award (GAeF)
 2017 Asian Young Aerosol Scientist Award
 2016 China Young Scientist Award of Particuology
 2016 Awardee of the one-hundred talents program of Shannxi province
 2015 Awardee of the One-Thousand Young Talents Program of China
 2015 China Young Aerosol Scientist Award
 2010 rated 1st in the IRC EMPOWER Fellowship Award in Earth/Environment (2009-2010 call, success rate <8%)
 2009 Chinese Government Award for Outstanding Student Abroad
 2006-2009 3-year scholarship awarded by the German Research Foundation (DFG)
 Peer reviewer of journal papers for *Mch nol Aimch nol ig gohc nā hm ngimb lc b gams h Jbsnē m ngimb lc nol g hnN bhc o m hpdihg hn fMch N bhi fas Ai bsnē f L m l b m l m i o l h f i A i b s nē f L m l b n g i m b l m i o l h f i l i n ā f M c h n g i m b l c h p d i h g h n n g i m b l c L m l b h p d i h g h n f C h n l h n ā h f h p d i h g h n f j i f f o r ā h l h f g n M c h i r b N i n f h p d i h g h n n*

Peer reviewer of proposals from the Research Grants Council (RGC) of Hong Kong, the National Natural Science Foundation of China (NSFC), Poland National Science Center, European Research Council (ERC).

Projects (PI and Co-PI, 30 M CNY)

1. "Organic aerosol" National Science Fund for Distinguished Young Scholars, National Scientific Foundation of China (NSFC), 4.0 M CNY, 2020.01-2025.12 (PI).
2. "Formation of secondary organic aerosol in the air pollution complex in northern China", from 0 to 1 innovation program (10-year excellence) of the Chinese Academy of Sciences, 6.0 M CNY, 2019.09-2028.12 (PI).

15. "The key formation mechanisms of SOA and effects on haze pollution", Priority Program of the Chinese Academy of Sciences, 2.0 M CNY, 2014-2015 (Co-PI).
16. The Ubbo Emmius Programme for joint PhD student (The Netherlands), 2014 (Co-PI).
17. "Aircraft exhaust: Primary emissions and secondary aerosol production potential", European Commission-PSI COFUND, 01.2013-12.2014 (PI).
18. "Particle precursor gases in the coastal atmosphere", IRC Foundation, Ireland, 01.2011-12.2012 (PI).
19. "Atmospheric inorganic and organic halogen compounds from surface seawater", the EU-FP7 "ASSEMBLE" short-term visiting grant, 2012.
20. "Reaction cycling of particulate iodine in the marine boundary layer-a chamber study", the EU COST-735 "short term scientific missions", 02.2011-04.2011.
21. "Activated halogen compounds release from seaweed", the EU-FP7 "ASSEMBLE" short-term visiting grant, 2010.

Publication (H-index 48, cites 9800)

High profile

1. Huang, R. J., Zhang, Y. L., Bozzetti, C., Ho, K. F., Cao, J. J., Han, Y. M., Dällenbach, K. R., Slowik, J. G., Platt, S. M., Canonaco, F., Zotter, P., Wolf, R., Pieber, S. M., Bruns, E. A., Crippa, M., Ciarelli, G., Piazzalunga, A., Schwikowski, M., Abbaszade, G., Schnelle-Kreis, J., Zimmermann, R., An, Z. S., Szidat, S., Baltensperger, U., El Haddad, I., Prévôt, A. S. H.: High secondary aerosol contribution to particulate pollution during haze events in China, *Nature*, **514**, 218-222, 2014. (cites 2100)
2. Lin, C., Huang, R. J.*, Ceburnis, D., Buckley, P., Preissler, J., Wenger, J., Rinaldi, M., Facchini, M. C., O'Dowd, C.*, Ovadnevaite, J.: Extreme air pollution from residential solid fuel burning, *Atmospheric Chemistry and Physics*, **18**, 512-517, DOI:10.1038/s41893-018-0125-x, 2018.
3. Platt, S. M., El Haddad, I., Pieber, S. M., Huang, R. J., Zardini, A. A., Clairotte, M., Suarez-Bertoa, R., Barmet, P., Pfaffenberger, L., Wolf, R., Slowik, J. G., Fuller, S. J., Kalberer, M., Chirico, R., Dommen, J., Astorga, C., Zimmermann, R., Marchand, N., Hellebust, S., Temime-Roussel, B., Baltensperger, U., Prévôt, A. S. H.: Two-stroke scooters are a dominant source of air pollution in many cities, *Atmospheric Chemistry and Physics*, **14**, 3749, DOI: 10.1038/ncomms4749, 2014.
4. An, Z. S., Huang, R. J., Zhang, R. Y., Tie, X. X., Li, G. H., Cao, J. J., Zhou, W. J., Shi, Z. G., Han, Y. M., Gu, Z. L., Ji, Y. M.: Severe haze in Northern China: A synergy of anthropogenic emissions and atmospheric processes, *Atmospheric Chemistry and Physics*, **19**, 8657-8666, 2019.

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5. Ni, H. Y., Huang, R. J.*, Pieber, S., Corbin, J., Stefanelli, G., Pospisilova, V., Klein, F., Gysel-Beer, M., Yang, L., Baltensperger, U., El Haddad, I., Slowik, J., Cao, J. J., Prevot, A., Dusek, U.: Brown carbon in primary and aged coal combustion emission, *Atmospheric Chemistry and Physics*, **21**, 5701-5710, 2021.
6. Ni, H. Y., Huang, R. J.*, Yao, P., Cosijn, M. M., Kairys, N., Zhong, H. B., Dusek, U.*: Organic aerosol formation and aging processes in Beijing constrained by size-resolved measurements of radiocarbon and stable isotopic ¹³C, *Atmospheric Chemistry and Physics*, **21**, 10689, DOI: 10.1016/j.envint.2021.106890, 2021.
7. Lin, C. S., Huang, R. J.*, Duan, J., Xu W.: Primary and secondary organic nitrate in northwest China: A case study, *Environmental Science and Technology*, **55**, 10069, DOI: 10.1021/acs.estlett.1c00692, 2021.
8. Wang, K., Huang, R. J.*, Brüggemann, M., Zhang, Y., Yang, L., Ni, H., Guo, J., Wang, M., Han, J., Bilde, M., Glasius, M., Hoffmann, T.*: Urban organic aerosol composition in Eastern China differs from North to South: Molecular insight from a liquid chromatography-Orbitrap mass spectrometry study, *Atmospheric Chemistry and Physics*, **21**, 9089-9104, 2021.
9. Yuan, W., Huang, R. J.*, Yang, L., Wang, T., Duan, J., Guo, J., Ni, H., Chen, Y., Chen, Q., Li, Y., Dusek, U., O'Dowd, C., Hoffmann, T.: Measurement report: PM_{2.5}-bound nitrated aromatic compounds in Xi'an, Northwest China: Seasonal variations and contributions to optical properties of brown carbon, *Atmospheric Chemistry and Physics*, **21**, 3685-3697, 2021.
10. Xu, W., Fossum, K. N., Ovadnevaite, J., Lin, C., Huang, R. J.*, O'Dowd, C.*, Ceburnis, D.: The impact of aerosol size-dependent hygroscopicity and mixing state on the cloud condensation nuclei potential over the north-east Atlantic, *Atmospheric Chemistry and Physics*, **21**, 8655-8675, 2021.

11. Yuan, W., Huang, R. J.*, Yang, L., Ni, H. Y., Wang, T., Cao, W. J., Duan, J., Guo, J., Huang, H. B., Hoffmann, T.: Concentrations, optical properties and sources of humic-like substances (HULIS) in fine particulate matter in Xi'an, Northwest China, *Atmospheric Environment*, **151**, 789, 147902, 2021
12. Duan, J., Huang, R. J.*, Gu, Y. F., Lin, C. S., Zhong, H. B., Wang, Y., Yuan, W., Ni, H. Y., Yang, L., Chen, Y., Worsnop, D. R., O'Dowd, C.: The formation and evolution of secondary organic aerosol during summer in Xi'an: Aqueous phase processing in fog-rain days, *Atmospheric Environment*, **151**, 756, 144077, 2021
13. Duan, J., Huang, R. J.*, Chang, Y. H., Zhong, H. B., Gu, Y. F., Lin, C. S., Hoffmann, T., O'Dowd, C.: Measurement report of the change of PM_{2.5} composition during the COVID-19 lockdown in urban Xi'an: enhanced secondary formation and oxidation, *Atmospheric Environment*, **151**, 791, 148126, 2021
14. Zhong, H. B., Huang, R. J.*, Chang, Y. H., Duan, J., Lin, C. S., Chen, Y.: Enhanced formation of secondary organic aerosol from photochemical oxidation during the COVID-19 lockdown in a background site in Northwest China, *Atmospheric Environment*, **151**, 778, 144947, 2021.
15. Huang, R. J.*, Yuan, W., Wang, T., Cao, W., Wang, Y., Lin, C., Yang, L., Guo, J., Ni, H., Wu, F.: Chemical signature and fractionation of trace elements in fine particles from anthropogenic and natural sources. *Atmospheric Environment*, **151**, 791, 148126, 2021.
16. Yao, P., Ni, H. Y., Paul, D., Masalaite, A., Huang, R. J.*, Meijer, H. A. J., Dusek, U.*: An automated method for thermal-optical separation of aerosol organic/elemental carbon for ¹³C analysis at the sub- μ gC level: A comprehensive assessment, *Atmospheric Environment*, **151**, 804, 150031, 2021.
17. Zhang, Y., Wang, K., Tong, H. J., Huang, R. J., Hoffmann, T.: The maximum carbonyl ratio (MCR) as a new index for the structural classification of secondary organic aerosol components, *Atmospheric Environment*, **151**, 791, 148126, 2021. <https://doi.org/10.1002/rcm.9113>, 2021.
18. Zhu, C. S., Qu, Y., Huang, H., Chen, J., Dai, W. T., Huang, R. J., Cao, J. J.: Black carbon and secondary brown carbon, the dominant light absorption and direct radiative forcing contributors of the atmospheric aerosols over the Tibetan Plateau, *Geophys. Res. Lett.*, **48**, e2021GL092524. <https://doi.org/10.1029/2021GL092524>, 2021.
19. Wu, Y. F., Xia, Y. J., Zhou, C., Tian, P., Tao, J., Huang, R. J., Liu, D. T., Wang, X., Xia, X. G., Han, Z. W., Zhang, R. J.: Effect of source variation on the size and mixing state of black carbon aerosol in urban Beijing from 2013 to 2019: Implication on light absorption, *Atmospheric Environment*, **151**, 270, 116089, 2021.
20. Wu, Y. F., Li, J. W., Jiang, C., Xia, Y. J., Tao, J., Tian, P., Zhou, C., Wang, C. Y., Xia, X. G., Huang, R. J., Zhang, R. J.: Spectral absorption properties of organic carbon aerosol during a polluted winter in Beijing, China, *Atmospheric Environment*, **151**, 755, 142600, 2021.
21. Wang, L. W., Slowik J. G., Yandong Tong, Y., Gu, Y. F., Rai, P., Qi, L., Stefenelli, G., Baltensperger, U., Huang, R. J., Cao, J. J., Prévôt, A. S. H.: Characteristics of wintertime VOCs in urban Beijing: Composition and source apportionment, *Atmospheric Environment*, **151**, 9, 100100, 2021.
22. Canonaco, F., Tobler, A., Chen, G., Sosedova, Y., Slowik, J. G., Bozzetti, C., Daellenbach, K. R., ElHaddad, I., Crippa, M., Huang, R. J., Furger, M., Baltensperger, U., Prévôt, A. S. H.: A new method for long-term source apportionment with time-dependent factor profiles and uncertainty assessment using SoFi Pro: application to one year of organic aerosol data, *Atmospheric Environment*, **151**, 14, 923-943, 2021.
23. Rai, P., Slowik, J. G., Furger, M., El Haddad, I., Visser, S., Tong, Y., Singh, A., Wehrle, G., Kumar, V., Tobler, A. K., Bhattu, D., Wang, L., Ganguly, D., Rastogi, N., Huang, R. J., Necki, J., Cao, J., Tripathi, S. N., Baltensperger, U., Prévôt, A. S. H.: Highly time-resolved measurements of element concentrations in PM₁₀ and PM_{2.5}: Comparison of Delhi, Beijing, London, and Krakow, *Atmospheric Environment*, **151**, 21, 717-730, 2021.
24. Rai, P., Furger, M., Slowik, J. G., Zhong, H., Tong, Y., Wang, L., Duan, J., Gu, Y. F., Qi, L., Huang, R. J., Cao, J. J., Prévôt, A. S. H.: Characteristics and sources of hourly elements in PM₁₀ and PM_{2.5} during wintertime in Beijing, *Atmospheric Environment*, **151**, 278, 116865, 2021.
25. Peng, C., Razafindrambina, P. N., Malek, K. A., Chen, L., Wang, W., Huang, R. J., Zhang, Y., Ding, X., Ge, M., Wang, X., Asa-Awuku, A. A., Tang, M.: Interactions of organosulfates with water vapor under sub- and supersaturated conditions, *Atmospheric Environment*, **151**, 21, 7135-7148, 2021.
26. Liao, K. R., Chen, Q., Liu, Y., Li, Y. J., Lambe, A. T., Zhu, T., Huang, R. J., Zheng, Y., Cheng, X., Miao, R. Q., Huang, G. C., Khuzestani, R. B., Jia, T. J.: Secondary organic aerosol formation of fleet vehicle emissions in China: Potential seasonality of spatial distributions, *Atmospheric Environment*, **151**, 55, 7276-7286, 2021.
27. Tong, Y., Pospisilova, V., Qi, L., Duan, J., Gu, Y., Kumar, V., Rai, P., Stefenelli, G., Wang, L., Wang, Y., Zhong, H., Baltensperger, U., Cao, J., Huang, R.

aqueous chemistry contributions to secondary organic aerosol during wintertime haze events in Beijing, *Atmospheric Chemistry and Physics*, 21, 9859-9886, 2021.

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28. Huang, R. J.*, Yang, L., Shen, J. C., Yuan, W., Gong, Y. Q., Guo, J., Cao, W. J., Duan, J., Ni, H. Y., Zhu, C. S., Dai, W. T., Li, Y. J., Chen, Y., Chen, Q., Wu, Y. F., Zhang, R. J., Dusek, U., O'Dowd, C., Hoffmann, T.: Water-insoluble organics dominate brown carbon in wintertime urban aerosol of China: Chemical characteristics and optical properties, *Atmospheric Chemistry and Physics*, 20, 7836-7847, 2020.
29. Huang, R. J.*, He, Y., Duan, J., Li, Y. J., Chen, Q., Zheng, Y., Chen, Y., Hu, W. W., Lin, C. S., Ni, H. Y., Dai, W. T., Cao, J. J., Wu, Y. F., Zhang, R. J., Xu, W., Ovadnevaite, J., Ceburnis, D., Hoffmann, T., O'Dowd, C. D.: Contrasting sources and processes of particulate species in haze days with low and high relative humidity in winter time Beijing, *Atmospheric Chemistry and Physics*, 20, 9101-9114, 2020.
30. Huang, R. J.*, Duan, J., Li, Y. J.*, Chen, Q.*, Chen, Y., Tang, M., Yang, L., Ni, H. Y., Lin, C. S., Xu, W., Liu, Y., Chen, C. Y., Yan, Z., Ovadnevaite, J., Ceburnis, D., Dusek, U., Cao, J. J., Hoffmann, T., O'Dowd, C. D.: Effects of NH₃ and alkaline metals on the formation of particulate sulfate and nitrate in wintertime Beijing, *Atmospheric Chemistry and Physics*, 20, 717, 137190, 2020.
31. Duan, J., Huang, R. J.*, Li, Y. J., Chen, Q.*, Zheng, Y., Chen, Y., Lin, C., Ni, H., Wang, M., Ovadnevaite, J., Ceburnis, D., Chen, C., Worsnop, D. R., Hoffmann, T., O'Dowd, C., Cao, J. J.: Summertime and wintertime atmospheric processes of secondary aerosol in Beijing, *Atmospheric Chemistry and Physics*, 20, 3793-3807, 2020.
32. Yuan, W., Huang, R. J.*, Yang, L., Guo, J., Chen, Z., Duan, J., Wang, T., Ni, H., Han, Y., Li, Y. J., Chen, Q., Chen, Y., Hoffmann, T., O'Dowd, C.: Characterization of the light absorbing properties, chromophores composition and sources of brown carbon aerosol in Xi'an, Northwest China, *Atmospheric Chemistry and Physics*, 20, 5129-5144, 2020.
33. Gu, Y. F., Huang, R. J.*, Li, Y. J., Duan, J., Chen, Q.*, Hu, W. W., Zheng, Y., Lin, C. S., Ni, H. Y., Dai, W. T., Cao, J. J., Liu, Q., Chen, Y., Chen, C. Y., Ovadnevaite, J., Ceburnis, D., O'Dowd, C.: Chemical nature and sources of fine particles in urban Beijing: Seasonality and formation mechanisms, *Atmospheric Chemistry and Physics*, 20, 140, 105732, 2020.
34. Zhong, H. B., Huang, R. J.*, Duan, J., Lin, C. S., Gu, Y. F., Wang, Y., Li, Y. J., Zheng, Y., Chen, Q., Chen, Y., Dai, W. T., Ni, H. Y., Chang, Y. H., Worsnop, D. R., Xu, W., Ovadnevaite, J., Ceburnis, D., O'Dowd, C.: Seasonal variations in the sources of organic aerosol in Xi'an, Northwest China: The importance of biomass burning and secondary formation, *Atmospheric Chemistry and Physics*, 20, 737, 139666, 2020.
35. Wang, T., Huang, R. J.*, Li, Y. J., Chen, Q., Chen, Y., Yang, L., Guo, J., Ni, H. Y., Hoffmann, T., Wang, X. M., Mai, B. X.: One-year characterization of organic aerosol markers in urban Beijing: Seasonal variation and spatiotemporal comparison, *Atmospheric Chemistry and Physics*, 20, 743, 140689, 2020.
36. Lin, C. S., Huang, R. J.*, Xu, W., Duan, J., Zheng, Y., Chen, Q., Hu, W. W., Li, Y. J., Ni, H. Y., Wu, Y. F., Zhang, R. J., Cao, J. J., O'Dowd, C.: Comprehensive source apportionment of submicron aerosol in Shijiazhuang, China: secondary aerosol formation and holiday effects, *Atmospheric Chemistry and Physics*, 20, 4, 947-957, 2020.
37. Lin, C. S., Ceburnis, D., Xu, W., Heffernan, E., Hellebust, S., Gallagher, J., Huang, R. J.*, O'Dowd, C., Ovadnevaite, J.: The impact of traffic on air quality in Ireland: insights from simultaneous kerbside and sub-urban monitoring of submicron aerosols, *Atmospheric Chemistry and Physics*, 20, 10513-10529, 2020.
38. Wang, K., Huang, R. J.*, Brüggemann, M., Zhang, Y., Yang, L., Ni, H., Guo, J., Wang, M., Han, J., Bilde, M., Glasius, M., Hoffmann, T.: Urban organic aerosol composition in Eastern China differs from North to South: Molecular insight from a liquid chromatography-Orbitrap mass spectrometry study, *Atmospheric Chemistry and Physics*, 20, 2020.
39. Xu, W., Ovadnevaite, J., Fossom, K. N., Lin, C., Huang, R. J.*, O'Dowd, C., Ceburnis, D.: Aerosol hygroscopicity and its link to chemical composition in coastal atmosphere of Mace Head: marine and continental air masses, *Atmospheric Chemistry and Physics*, 20, 3777-3791, 2020.
40. Chang, Y. H., Huang, R. J.*, Ge, X. L., Huang, X. P., Hu, J. L., Duan, Y. S., Zou, Z., Liu, X. J., Lehmann, M. F.: Puzzling haze events in China during the Coronavirus (COVID-19) shutdown, *Atmospheric Chemistry and Physics*, 20, 47, e2020GL088533, 2020.
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42. Ni, H., Huang, R. J.*, Cosijn, M. M., Yang, L., Guo, J., Cao, J., Dusek, U.: Measurement report: Dual-carbon isotopic characterization of carbonaceous aerosol in Beijing and Xi'an: distinctions in primary versus secondary sources, *Atmospheric Chemistry and Physics*, 20, 16041-16053, 2020.

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45. Peng, C., Yang, F. M., Tian, M., Shi, G. M., Li, L., Huang, R. J., Yao, X. J., Luo, B., Zhai, C. Z., Chen, Y.: Brown carbon aerosol in two megacities in the Sichuan Basin of southwestern China: Light absorption properties and implications, *Atmospheric Environment*, 2020, 137483, 2020.
46. Peng C., Tian, M., Wang, X. L., Yang, F. M., Shi, G. M., Huang, R. J., Yao, X. J., Wang, Q. Y., Zhai, C. Z., Zhang, S. M., Qian, R. Z., Cao, J. J., Chen, Y.: Light absorption of brown carbon in PM_{2.5} in the three gorges reservoir region, southwestern China: Implications of biomass burning and secondary formation, *Atmospheric Environment*, 2020, 117409, 2020.
47. Qian, R. Z., Zhang, S. M., Peng, C., Zhang, L. Y., Yang, F. M., Tian, M., Huang, R. J., Wang, Q. Y., Chen, Q. C., Yao, X. J., Chen, Y.: Characteristics and potential exposure risks of environmentally persistent free radicals in PM_{2.5} in the three gorges reservoir area, Southwestern China, *Atmospheric Environment*, 2020, 126425, 2020.
48. Xia, Y. J., Wu, Y. F., Huang, R. J., Xia, X. G., Tang, J., Wang, M., Zhang, R. J.: Variation in black carbon concentration and aerosol optical properties in Beijing: Role of emission control and meteorological transport variability, *Atmospheric Environment*, 2020, 126849, 2020.
49. Zheng, Y., Cheng, X., Liao, K., Li, Y., Li, Y. J., Huang, R. J., Hu, W., Liu, Y., Zhu, T., Chen, S., Zeng, L., Worsnop, D. R., Chen, Q.: Characterization of anthropogenic organic aerosols by TOF-ACSM with the new capture vaporizer, *Atmospheric Environment*, 2020, 2457–2472, 2020.
50. Xu, H. M., He, K. L., Feng, R., Shen, Z. X., Cao, J. J., Liu, S. X., Ho, K. F., Huang, R. J., Guinot, B., Wang, Q. Y., Zhou, J. M., Shen, M. X., Xiao, S., Zhou, B. H., Sonke, J. E.: Metallic elements and Pb isotopes in PM_{2.5} in three Chinese typical megacities: spatial distribution and source apportionment, *Atmospheric Environment*, 2020, 1718-1730, 2020.
51. Peng, C., Wang, Y., Wu, Z., Chen, L., Huang, R. J., Wang, W., Wang, Z., Hu, W., Zhang, G., Ge, M., Hu, M., Wang, X., Tang, M.: Tropospheric aerosol hygroscopicity in China, *Atmospheric Environment*, 2020, 13877-13903, 2020.
52. Zhu, C. S., Li, L. J., Huang, H., Dai, W. T., Lei, Y. L., Qu, Y.,

76. Tong, H. J., Zhang, Y., Filippi, A., Wang, T., Li, C. P., Liu, F. B., Leppla, D., Kourtchev, I., Wang, K., Keskinen, H. M., Levula, J. T., Arangio, A. M., Shen, F. X., Ditas, F., Martin, S. T., Artaxo, P., Godoi, R. H. M., Yamamoto, C. I., de Souza, R. A. F., Huang, R. J., Berkemeier, T., Wang, Y. S., Su, H., Cheng, Y. F., Pope, F. D., Fu, P. Q., Yao, M. S., Pohlker, C., Petaja, T., Kulmala, M., Andreae, M. O., Shiraiwa, M., Poschl, U., Hoffmann, T., Kalberer, M.: Radical formation by fine particulate matter associated with highly oxygenated molecules, *Atmospheric Chemistry and Physics*, **19**, 12506-12518, 2019.
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78. Huang, R. J.*, Cheng, R., Jing, M., Yang, L., Li, Y. J., Chen, Q., Chen, Y., Yan, J., Lin, C., Wu, Y., Zhang, R., El Haddad, I., Prevot, A. S. H., O'Dowd, C. D., Cao, J.: Source-Specific Health Risk Analysis on Particulate Trace Elements: Coal Combustion and Traffic Emission As Major Contributors in Wintertime Beijing, *Environmental Science and Technology*, **52**, 10967-10974, 2018.
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