

## Curriculum Vitae

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

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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 PM<sub>2.5</sub> in the Beijing-Tianjin-Hebei region
- 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 1<sup>st</sup> 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

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, ***b***, 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, ***b P***, 1, 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, ***b***, 5, 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, ***M P***, 116, 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, ***B P Qb e***, 55, 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 <sup>13</sup>C, ***B F***, 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, ***B P Qb e Ib***, <https://doi.org/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, ***eb M***, 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<sub>2.5</sub>-bound nitrated aromatic compounds in Xi'an, Northwest China: Seasonal variations and contributions to optical properties of brown carbon, ***eb M***, 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. ***eb M***, 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, *P Q B*, 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, *P Q B*, 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<sub>2.5</sub> composition during the COVID-19 lockdown in urban Xi'an: enhanced secondary formation and oxidation, *P Q B*, 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, *P Q B*, 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. *GB P*, 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 <sup>13</sup>C analysis at the sub- $\mu$ gC level: A comprehensive assessment, *P Q B*, 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, *a J P b*, <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, *B M*, 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, *P Q B*, 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, *B*, 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, *J b Qb e*, 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 PM<sub>10</sub> and PM<sub>2.5</sub>: Comparison of Delhi, Beijing, London, and Krakow, *eb M*, 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 PM<sub>10</sub> and PM<sub>2.5</sub> during wintertime in Beijing, *B M*, 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, *eb M*, 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, *B P Qb e*, 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.

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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, *B P Qb e*, 54, 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, *eb Me*, 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 NH<sub>3</sub> and alkaline metals on the formation of particulate sulfate and nitrate in wintertime Beijing, *P Q B* 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, *eb Me*, 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, *eb Me*, 20, 5129-5144, 2020.
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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, *P Q B*, 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, *P Q B* 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, *PB eP b eb*, 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, *eb Me*, 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, *eb Me*, 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, *eb Me*, 20, 3777-3791, 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, *eb Me* 20, 16041-16053, 2020.

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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<sub>2.5</sub> in the three gorges reservoir region, southwestern China: Implications of biomass burning and secondary formation, **B** , 229, 117409, 2020.
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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, **eb eb b**, 254, 126849, 2020.
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