

Mikinori Kuwata

Division of Earth Sciences/Earth Observatory of Singapore
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Singapore 639798

Education

- 2009 Ph.D.
Department of Earth and Planetary Science, Graduate School of Science
The University of Tokyo, Japan
Thesis title: Cloud condensation nuclei (CCN) activity of atmospheric particles
Advisor: Prof. Yutaka Kondo
- 2004 B.Sc.
Department of Chemistry, School of Science
The University of Tokyo, Japan
Thesis title: Photo-dissociation of aromatic compounds in intense laser-field
Advisor: Prof. Kaoru Yamanouchi

Professional Experience

- 2013-current Nanyang Assistant Professor
Division of Earth Sciences, School of Physical & Mathematical Sciences
Nanyang Technological University, Singapore
- 2013-current Principle Investigator
Earth Observatory of Singapore, Singapore
- 2009 -2013 Postdoctoral Fellow
School of Engineering and Applied Sciences
Harvard University, MA, USA
Experimental and theoretical study on secondary organic aerosol (SOA)
Advisor: Prof. Scot T. Martin

Awards/Fellowships

2013-current	National Research Foundation (NRF) fellowship, Singapore
2011-2013	The Japan Society for the Promotion of Science (JSPS) Postdoctoral fellowship for research abroad
2006-2008	The Japan Society for the Promotion of Science (JSPS) Research fellowship for young scientists

Publications

Published

- (1) Smith, M. L.; You, Y.; **Kuwata, M.**; Bertram, A. K.; Martin, S. T., Phase Transitions and Phase Miscibility of Mixed Particles of Ammonium Sulfate, Toluene-Derived Secondary Organic Material, and Water. *Journal of Physical Chemistry A* **2013**, *117*, 8895–8906, doi:10.1021/jp405095e.
- (2) Renbaum-Wolff, L.; Grayson, J.; Bateman, A.; **Kuwata, M.**; Sellier, M.; Murray, B. J.; Shilling, J. E.; Martin, S. T.; Bertram, A. K., Viscosity of α -pinene secondary organic material and implications for particle growth and reactivity *Proc. Natl. Acad. Sci. USA*. **2013**, *early edition*, doi:10.1073/pnas.1219548110
- (3) **Kuwata, M.**; Shao, W.; Lebouteiller, R.; Martin, S. T., Classifying organic materials by oxygen-to-carbon elemental ratio to predict the activation regime of cloud condensation nuclei (CCN). *Atmos. Chem. Phys.* **2013**, *13*, 5309–5324, doi:10.5194/acp-13-5309-2013.
- (4) **Kuwata, M.**; Zorn, S. R.; Martin, S. T., Using elemental ratios to predict the density of organic material composed of carbon, hydrogen, and oxygen. *Environ. Sci. Technol.* **2012**, *46*, 787-794, doi:10.1021/es202525q.
- (5) **Kuwata, M.**; Martin, S. T., The phase of atmospheric organic particles affects their reactivity. *Proc. Natl. Acad. Sci. USA*. **2012**, *109*, 17354–17359, doi:10.1073/pnas.1209071109.
- (6) **Kuwata, M.**; Martin, S. T., Particle size distributions following condensational growth in continuous flow aerosol reactors as derived from residence time distributions: theoretical development and application to secondary organic aerosol. *Aerosol. Sci. Technol.* **2012**, *46*, 937-949, doi:10.1080/02786826.2012.683204.
- (7) Chen, Q.; Li, Y. J.; McKinney, K. A.; **Kuwata, M.**; Martin, S. T., Particle mass yield from β -caryophyllene ozonolysis. *Atmos. Chem. Phys.* **2012**, *12*, 3165-3179, doi:10.5194/acp-12-3165-2012.
- (8) Smith, M. L.; **Kuwata, M.**; Martin, S. T., Secondary organic material produced by the dark ozonolysis of α -pinene minimally affects the deliquescence and efflorescence of ammonium sulfate. *Aerosol. Sci. Technol.* **2011**, *45*, 244-261, doi:10.1080/02786826.2010.532178.
- (9) **Kuwata, M.**; Chen, Q.; Martin, S. T., Cloud condensation nuclei (CCN) activity and oxygen-to-carbon elemental ratios following thermodenuder treatment of organic particles grown by α -pinene ozonolysis. *Phys. Chem. Chem. Phys.* **2011**, *13*, 14571–14583, doi:10.1039/c1cp20253g.

- (10) Gunthe, S. S.; Rose, D.; Su, H.; Garland, R. M.; Achtert, P.; Nowak, A.; Wiedensohler, A.; **Kuwata, M.**; Takegawa, N.; Kondo, Y.; Hu, M.; Shao, M.; Zhu, T.; Andreae, M. O.; Pöschl, U., Cloud condensation nuclei (CCN) from fresh and aged air pollution in the megacity region of Beijing. *Atmos. Chem. Phys.* **2011**, *11*, 11023-11039, doi:10.5194/acp-11-11023-2011.
- (11) Bertram, A. K.; Martin, S. T.; Hanna, S. J.; Smith, M. L.; Bodsworth, A.; Chen, Q.; **Kuwata, M.**; Liu, A.; You, Y.; Zorn, S. R., Predicting the relative humidities of liquid-liquid phase separation, efflorescence, and deliquescence of mixed particles of ammonium sulfate, organic material, and water using the organic-to-sulfate mass ratio of the particle and the oxygen-to-carbon elemental ratio of the organic component. *Atmos. Chem. Phys.* **2011**, *11*, 10995-11006, doi:10.5194/acp-11-10995-2011.
- (12) Wang, Z.; King, S. M.; Freney, E.; Rosenoern, T.; Smith, M. L.; Chen, Q.; **Kuwata, M.**; Lewis, E. R.; Pöschle, U.; Wang, W.; Buseck, P. R.; Martin, S. T., The dynamic shape factor of sodium chloride nanoparticles as regulated by drying rate. *Aerosol. Sci. Technol.* **2010**, *44*, 939-953, doi:10.1080/02786826.2010.503204.
- (13) Kondo, Y.; Takegawa, N.; Matsui, H.; Miyakawa, T.; Koike, M.; Miyazaki, Y.; Kanaya, Y.; Mochida, M.; **Kuwata, M.**; Morino, Y.; Shiraiwa, M., Formation and transport of aerosols in Tokyo in relation to their physical and chemical properties: a review. *J. Meteor. Soc. Japan.* **2010**, *88*, 597-624, doi:10.2151/jmsj.2010-401.
- (14) Takegawa, N.; Miyakawa, T.; **Kuwata, M.**; Kondo, Y.; Zhao, Y.; Han, S.; Kita, K.; Miyazaki, Y.; Deng, Z.; Xiao, R.; Hu, M.; van Pinxteren, D.; Herrmann, H.; Hofzumahaus, A.; Holland, F.; Wahner, A.; Blake, D. R.; Sugimoto, N.; Zhu, T., Variability of submicron aerosol observed at a rural site in Beijing in the summer of 2006. *J. Geophys. Res. Atmos.* **2009**, *114*, doi:10.1029/2008jd010857.
- (15) Sahu, L. K.; Kondo, Y.; Miyazaki, Y.; **Kuwata, M.**; Koike, M.; Takegawa, N.; Tanimoto, H.; Matsueda, H.; Yoon, S. C.; Kim, Y. J., Anthropogenic aerosols observed in Asian continental outflow at Jeju Island, Korea, in spring 2005. *J. Geophys. Res. Atmos.* **2009**, *114*, doi:10.1029/2008jd010306.
- (16) **Kuwata, M.**; Kondo, Y.; Takegawa, N., Critical condensed mass for activation of black carbon as cloud condensation nuclei in Tokyo. *J. Geophys. Res. Atmos.* **2009**, *114*, doi:10.1029/2009jd012086.
- (17) **Kuwata, M.**; Kondo, Y., Measurements of particle masses of inorganic salt particles for calibration of cloud condensation nuclei counters. *Atmos. Chem. Phys.* **2009**, *9*, 5921-5932, doi:10.5194/acp-9-5921-2009.
- (18) Kondo, Y.; Sahu, L.; **Kuwata, M.**; Miyazaki, Y.; Takegawa, N.; Moteki, N.; Imaru, J.; Han, S.; Nakayama, T.; Oanh, N. T. K.; Hu, M.; Kim, Y. J.; Kita, K., Stabilization of the mass absorption cross section of black carbon for filter-based absorption photometry by the use of a heated inlet. *Aerosol. Sci. Technol.* **2009**, *43*, 741-756, doi:10.1080/02786820902889879.
- (19) **Kuwata, M.**; Kondo, Y.; Miyazaki, Y.; Komazaki, Y.; Kim, J. H.; Yum, S. S.; Tanimoto, H.; Matsueda, H., Cloud condensation nuclei activity at Jeju Island, Korea in spring 2005. *Atmos. Chem. Phys.* **2008**, *8*, 2933-2948, doi:10.5194/acp-8-2933-2008.

- (20) **Kuwata, M.**; Kondo, Y., Dependence of size-resolved CCN spectra on the mixing state of nonvolatile cores observed in Tokyo. *J. Geophys. Res. Atmos.* **2008**, *113*, doi:10.1029/2007jd009761.
- (21) Itakura, R.; Tanaka, T.; **Kuwata, M.**; Suzuki, H.; Yamanouchi, K., Intense laser-induced decomposition of mass-selected 2-, 3-, and 4-methylaniline cations. *Chem. Phys. Lett.* **2008**, *462*, 27-30, doi:10.1016/j.cplett.2008.06.092.
- (22) **Kuwata, M.**; Kondo, Y.; Mochida, M.; Takegawa, N.; Kawamura, K., Dependence of CCN activity of less volatile particles on the amount of coating observed in Tokyo. *J. Geophys. Res. Atmos.* **2007**, *112*, doi:10.1029/2006jd007758.
- (23) Mochida, M.; **Kuwata, M.**; Miyakawa, T.; Takegawa, N.; Kawamura, K.; Kondo, Y., Relationship between hygroscopicity and cloud condensation nuclei activity for urban aerosols in Tokyo. *J. Geophys. Res. Atmos.* **2006**, *111*, doi:10.1029/2005jd006980.

Professional Activities

Journal Reviewer

Aerosol Science and Technology (American Association for Aerosol Research)
Atmospheric Chemistry and Physics (European Geosciences Union)
Atmospheric Environment (Elsevier)
Environmental Science and Technology (ACS publications)

Contact Information of References

Provided upon request