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A. Education

Atmospheric Chemistry, The University of North Carolina at Chapel Hill, 1997, Ph.D.

Atmospheric Chemistry, The University of North Carolina at Chapel Hill, 1995, M.S.

Polymer Chemistry, Korea Advanced Institute of Sci. & Technol. (KAIST), Seoul, Korea, 1989, M.S.

Chemistry, Ewha Womens' University, Seoul, Korea, 1985, B.S.

B. Appointments

2007-present Associate Professor, Environmental Engineering Sciences, University of Florida

2003-2007 Research Assistant Professor, Environmental Sciences and Engineering, The University of North Carolina at Chapel Hill

2000-2002 Research Associate, Environmental Sciences and Engineering, The University of North Carolina at Chapel Hill

1999-2000 Project Scientist, Analysis of drugs & environmental compounds, Triangle Lab, RTP, NC.

1989-1992 R&D Scientist, Petroleum & Polymer Research Center, LG Ltd., Science Town, Korea

1985-1986 Project Chemist, Daewon paper mill inc., Seoul, Korea

C. Synopsis of key research accomplishments

Overview. My research is the study and simulation of air pollution atmospheric chemistry. My research has widespread impact on the atmospheric chemistry field and has contributed to improving predictive air quality models.

Research Summary. My teaching and research focuses on characterizing the natural and anthropogenic chemical species involved in atmospheric processes, modeling their kinetics and thermodynamics, and improving the understanding of impacts of air pollutants on health and climate forcing. Over the course of 25 years, I have demonstrated expertise in the design and operation of a range of reactors including indoor chambers, outdoor photochemical smog chambers, flow reactors to simulate atmospheric processes of air pollutants. The Atmospheric Photochemical Outdoor Reactor (UF-APHOR) chamber is the state-of-the-art facility. This chamber facility, among four worldwide, is used to simulate atmospheric photochemical aging of air pollutants under ambient sunlight.

I study the kinetic mechanisms behind aerosol growth caused by human activities. Specifically, I identified the heterogeneous chemistry of organic compounds on the surface of acidic sulfate aerosol and established new scientific views on aerosol formation that are well accepted in the atmospheric chemistry field. Additionally, I identified aerosol kinetic and thermodynamic properties by characterizing their chemical composition. Using chamber studies, I gathered data on the photooxidation of hydrocarbons under polluted urban environments and created mathematical models that predict aerosol growth dynamics, aerosol phase transitions, aerosol hygroscopic properties, and airborne toxins. I model aqueous reactions of atmospheric organic species in the presence of sea salt aerosol under coastal environments and heterogeneous reactions of air pollutants on the surface aeriated mineral dust. These various studies benefits research in other fields including the study of how particulate matter impacts climate change and human health. With respect to improving human health, I developed an exposure technique that has enabled mechanistic studies of particulate matter in human cell lines. My research provided better estimates of aerosol budget on the regional and global scale to estimate both direct and indirect effects of aerosol on climate.

In detail, my expertise includes:

- Kinetic mechanisms of photooxidation of atmospheric hydrocarbons (gasoline, diesel, terpenes, isoprene etc.) in the presence of NO_x
- SO₂ effect on organic aerosol formation

- Modeling secondary organic aerosol (SOA) formation via multiphase reactions of hydrocarbons
- Organic aerosol growth in the presence of sea salt aerosol
- Heterogeneous chemistry on the surface of mineral dust particles
- Aerosol characterization
- Development of in situ, online methods measurement: aerosol acidity method and particulate oxidant detection
- Impact of atmospheric aerosol on climate forcing: Aerosol optical properties and hygroscopicity
- Indoor air
- Thermodynamic model to predict partitioning of organic compounds between different phases
- Photochemical kinetics of semivolatile organic compounds in particulate matter
- Adverse health effect of fine particulate matter: Development of *in vitro* online exposure technique to directly deliver particles to lung cells grown on an air-liquid interface (ALI) and development of non-cell chemical assays to uncover the mechanistic role of particulate matter on cellular chemistry.

D. Course Teaching.

1. Elements of Air Pollution, ENV 4101 (3 credits)
2. Foundations of Air Pollution, ENV 5105 (3 credits)
3. Advanced Atmospheric Chemistry, EES6225 (3 credits)
4. Aerosol Physics and Chemistry, ENV 6932 (3 credits)
5. Atmospheric Chemistry Modeling, ENVR 6932 (3 credits)
- 6 Air sampling and monitoring, ENVR 6932 (3 credits)
7. Air quality seminar, ENVR 6932 (1 credit)

E. Publications

Google Scholar Citation (12/8/2021):

(<http://scholar.google.com/citations?user=RUjvSQ8AAAAJ&hl=en>)

Cumulative citations: 8674

h-index: 34

i10-index: 56

Web of Science (3/8/2018):

Cumulative citations - 4412

h-index: 25

Summary of journal publications

No.	Journal name	SCI Impact factor	# of publication	Comment
1	Science	41.063	1	nearly 1000 times
2	Environ. Sci. Technol.	7.149	18	More than 3000 times
3	Environ. Sci. Technol. Letter	6.934	1	
4	Atmos. Chem. Phys.	5.668	13	More than 2000 times
5	Macromolecules	5.914	1	
6	Scientific Report	4.122	1	
7	Phys. Chem. Chem. Phys.	3.567	1	
8	Science of the Total Environment	5.589	2	
9	Atmos. Environ	4.012	12	More than 700 times
10	Journal of Physical Chemistry	2.781	1	
11	Chem. Res. Toxicol.	3.278	1	
12	ChemPhysChem	3.075	1	Review paper

13	ACS Earth and Space Chemistry	3.475	4	
14	RSC Advances	3.049	1	
15	J. Polymer Sci.: Polymer Chem.	3.245	1	
16	J. Geophysical Res.	3.44	1	
17	Toxicology in vitro	2.903	1	
18	Environmental Chemistry	2.923	2	Selected as highlight in 2013
19	Aerosol. Sci. Tech.	1.51	3	
20	Inhalation Toxicology	2.26	3	
21	J. Atmos. Chem.	1.681	2	
22	ACS Earth and Space Chemistry	2.243	1	
23	International Journal of Environment and Pollution	0.577	1	
24	HEI		1	HEI publication
25	AWMA		1	Refereed proceeding
26	Book Chapter		2	
	<u>Sum</u>		77	Total: citations 8208 (05/04/2021)

1. Sem, Karen; Jang, Myoseon; Pierce, Richard; Blum, Patricia; Yu, Zechen “Characterization of Atmospheric Processes of Brevetoxins in Sea Spray Aerosol from Red Tide Events” Environmental Science and Technology, in review, **2021**
2. Zechen Yu, Myoseon Jang, Soontae Kim, Kyuwon Son, Azad Madhu, Sanghee Han, and Jinsoo Park, Secondary Organic Aerosol Formation via Multiphase Reaction of Hydrocarbons in Urban Atmosphere Using the CAMx Model Integrated with the UNIPAR model, in review, **2021**
3. Han, S. and Jang, M. “Prediction of Secondary Organic Aerosol from the Multiphase Reaction of Gasoline Vapor by Using Volatility–Reactivity Base Lumping” Atmospheric Chemistry and Physics, DOI: [10.5194/acp-2021-649](https://doi.org/10.5194/acp-2021-649), **2021**
4. Yu, Z.; Jang, M.; Madhu, A. “Prediction of Phase State of Secondary Organic Aerosol Internally Mixed with Aqueous Inorganic Salts” J. Physical Chemistry, 125, 10198–10206, **2021**
5. Yu, Z.; Jang, M.; Zhang, T., and Madhu, A. “Simulation of monoterpene SOA formation by multiphase reactions using explicit mechanisms” *ACS Earth and Space Chemistry*, 5, 1455–1467, **2021**
6. Madhu, A; Yu, Z.; Jang, M. “Low-cost detection method for in situ detection of aerosol acidity using colorimetry integrated with camera” *Aerosol Science and Technology*, 55, 795–804, **2021**
7. Jang, M.; Berthold, D. E.; Yu, Z.; Silva-Sanchez, C.; Laughinghouse IV, H. D.; Denslow, N., and Han, S. “Atmospheric Progression of Microcystin-LR from Cyanobacterial Aerosol”, *Environmental Science and Technology Letter*, 7(10), 740–745, **2020**
8. Han, S. and Jang, M. “Simulating impacts of gas-wall partitioning on SOA formation using the explicit gas mechanism integrated with aerosol phase reactions in the presence of electrolytes”, *Sci. Total Environment*, 748.141360, **2020**
9. Zechen Yu, Myoseon Jang, Soontae Kim, Changan Bae, Ross Beardsley, Bonyoung Koo, Jinsoo Park, Lim Seok Chang, Hee Choon Lee, Yun-Kyu Lim, and Jeong Hoon Cho, “Simulating the Impact of Long-Range Transported Asian Mineral Dust on the Formation of Sulfate and Nitrate during the KORUS-AQ Campaign”, *ACS Earth and Space Chemistry*, <https://dx.doi.org/10.1021/acsearthspacechem.0c00074>, 4(7), 1039–1049, **2020**.
10. Jang, M.; Sun, S.; Winslow, R. J.; Han S.; and Yu, Z. “In Situ Aerosol Acidity Measurements Using a UV-Visible Micro-Spectrometer and its Application to the Ambient Air” *Aerosol Science and Technology*, 54(4), 446–461, **2020**
11. Yu, Z. and Jang, M. “Atmospheric Processes of Aromatic Hydrocarbons in the Presence of Mineral Dust Particles under the Urban Environment”, *ACS Earth and Space Chemistry*, 2019, 3(11), 2404–2414, **2019**.

12. Han, S.; Jang, M.; and Jiang, H. "Modeling of Gas-Wall Partitioning of Organic Compounds Using a Quantitative Structure-Activity Relationship" *Atmospheric Chemistry and Physics Discussion*, doi 10.5194/acp-2019-550, **2019**.
13. Zhou, C., Jang, M. and Yu, Zechen "Simulation of SOA Formation from the Photooxidation of Monoalkylbenzenes in the Presence of Aqueous Aerosols Containing Electrolytes under Various NO_x Levels" *Atmospheric Chemistry and Physics*, 19, 5719-5735, **2019**.
14. Jang, M.; Yu, Z., Modeling Heterogeneous Oxidation of NO_x, SO₂ and Hydrocarbons in the Presence of Mineral Dust Particles under Various Atmospheric Environments. In *Multiphase Environmental Chemistry in the Atmosphere*, American Chemical Society: **2018**; Vol. 1299, pp 301-326.
15. Yu, Z. and Jang, M. "Simulation of Heterogeneous Photooxidation of SO₂ and NO_x in the Presence of Gobi Desert Dust Particles Under Ambient Sunlight" *Atmospheric Chemistry and Physics*, <https://doi.org/10.5194/acp-2018-68>, 18, 14609-14622, **2018**
16. Jiang, H. and Jang, M. "Dynamic Oxidative Potential of Atmospheric Organic Aerosol Under Ambient Sunlight" *Environ. Sci. Technol.*, 52 (13), pp 7496–7504, **2018**.
17. Park, M.; Joo, H. S.; Lee, K.; Jang, M.; Kim, S.; Kim, I.; Borlaza, L. J.; Lim, H.; Shin, H.; Chung, K. H.; Choi, Y. H.; Park, S.; Bae, M. S.; Lee, J.; Song, H.; Park, K. "Differential toxicities of fine particulate matters from various sources", *Scientific Reports*, SREP-18-06546B, Article number: 17007, **2018**
18. Yu, Z., Jang, M. and Park, J., "Simulation of Heterogeneous Photooxidation of SO₂ Using Atmospheric Mineral Aerosol Reaction (AMAR) Model" *Atmospheric Chemistry and Physics*, 17, 10001-10017, **2017**
19. Jiang, H., Jang, M., Yu, Zechen, "DTT Activity by Particulate Oxidizers of SOA Produced from Photooxidation of Hydrocarbons under Varied NO_x Levels" *Atmospheric Chemistry and Physics*, 17, 9965-9977, **2017**
20. Park, J., Jang, M. and Yu, Z. "Heterogeneous Photooxidation of SO₂ in the Presence of Two Different Mineral Dust Particles: Gobi and Arizona Dust, *Environ. Sci. Technol.*, doi: 10.1021/acs.est.7b00588 51 (17), pp 9605–9613, **2017**
21. Yu, Z., Jang, M. Jiang, H., Sabo-Attwood, T., and Robinson, S. E., "Dose Model of Organic Aerosol onto Air-Liquid Interface Cell *in vitro* Using Electrostatic Precipitator", *Toxicology in vitro*, 42, 319-328, **2017**.
22. Park, J. and Jang, M. "Heterogeneous Photooxidation of SO₂ in the Presence of Airborne Mineral Dust Particles" *RSC Advances*., DOI: 10.1039/C6RA09601H, 6, 58617-58627, **2016**
23. Jiang, H., Jang, M., Sabo-Attwood, T., and Robinson, S. E. "Oxidative Potential of Secondary Organic Aerosols Produced from Photooxidation of Different Hydrocarbons Using Outdoor Chamber under Ambient Sunlight" *Atmos. Environ.*, 10.1016/j.atmosenv.2016.02.016, 131, 382-389, **2016**
24. Beardsley, L. R., and Jang, M. "Simulating the SOA formation of isoprene from partitioning and aerosol phase reactions in the presence of inorganics" doi:10.5194/acp-16-5993-2016, *Atmospheric Chemistry and Physics*, **2016**, 16, 5993-6009
25. Marta G. Vivanco, Florian Couvidat, Christian Seigneur, Myoseon Jang, Manuel Santiago¹ and Bertrand Bessagnet "Evaluation of some SOA formation schemes for the oxidation of anthropogenic gases against experiments in two outdoor chambers" 59(1), 43-55, **2016**
26. Li, J., Jang, M., Beardsley, R. L. "Dialkylsulfate Formation in Sulfuric Acid Seeded Secondary Organic Aerosol Produced Using an Outdoor Chamber Under Natural Sunlight" *Environmental Chemistry*, 13, 590-601, **2016**.
27. Zhong, M. and Jang, M., "Dynamics of light absorption by biomass burning organic aerosol aged using the ambient sunlight" *Atmospheric Chemistry and Physics*. 14, 1517-1525, **2014**.
28. Im, Y.; Jang, M.; Beardsley, R. "Simulation of the Aromatic SOA Formation Using the Lumping Model Integrated with Explicit Gas-Phase Kinetic Mechanisms and Aerosol Phase reactions" *Atmospheric Chemistry and Physics*, 14, 4013-4027, **2014**
29. Li, J. and Jang, M., "Kinetic Study of Esterification of Sulfuric Acid with Organic Compounds in Aerosol Bulk Phase", *Atmospheric Chemistry and Physics Discussion*, 13, doi:10.5194/acpd-13-23217-2013, 23217-23250, **2013**

30. Beardsley, R.; Jang, M.; Barber, O.; Im, Y.; Delcomyn, C. A.; Witherspoon, N., "Role of sea salt aerosols in the formation of aromatic secondary organic aerosol: yields and hygroscopic properties" *Environ. Chem.* 10, 167–177, 2013.
31. Chen, T. and Jang, M. Chamber Simulation of Photooxidation of Dimethyl Sulfide and Isoprene in the Presence of NO_x, *Atmospheric Chem. Phys.*, 12, 10257–10269, **2012**.
32. Zhong, M., Jang, M., Oliferenko, A.; Pillaj, G.G.; Katritzky, A. R. "A Predictive Model for UV-Visible Absorption Spectra of SOA under the various NO_x conditions" *Phys. Chem. Chem. Phys.* 14, 9058–9066, **2012**.
33. Li, J. and Jang, M., "Aerosol Acidity Measurement Using Colorimetry Coupled with a Reflectance UV-Visible Spectrometer", *Aerosol Sci. Technol.*, 46, 833-842, **2012**.
34. Chen, T. and Jang, M. "Secondary Organic Aerosol Formation from Photooxidation of a Mixture of Dimethyl Sulfide and Isoprene" *Atmos. Environ.*, 46, 271-278, **2012**
35. Myoseon Jang, Ori Baber, David Barber, Kevin Powers and Andrew Ghio, Study Report: "A Novel Exposure Method to Evaluate the Health Effects of Combustion Particulate Matter", HEI Publications, 2012-09-12, **2012**
36. Baber, O., Jang, M., Barber, D., Kevin Powers, Amorphous silica coatings on magnetic nanoparticles enhance stability and reduce *in vitro* toxicity to BEAS-2B cells, *Inhalation Toxicol.*, 23, 532-543, Aug. 23 (9), **2011**.
37. Zhong, M. and Jang, M., Light Absorption Coefficient Measurement of SOA Using a UV/Visible Spectrometer Connected with Integrating-Sphere. *Atmos. Environ.*, 45, 4263-4271, **2011**
38. Im, Y., Jang, M., Delcomyn, C.A.; Henley, M.V.; Hearn, John "The Effects of Active Chlorine on Photooxidation of 2-Methyl-2-Buten", *Science of the Total Environment* 409, 2652-2661, **2011**.
39. Jang, J.; Jang, M.; Mui, W.; Delcomyn, C.A.; Henley, M.V.; Hearn, John, Formation of Active Chlorine Oxidants in Saline-Oxone Aerosol, *Aerosol Sci. Technol.*, 44, 1018 - 1026, **2010**.
40. Cao, G. and Jang, M. "SOA Model for Toluene Oxidation in the Presence of Inorganic Species." *Environ. Sci. Technol.*, 44, 727-733, **2010**.
41. Ghio, A. J., Dailey, L. A., Richards, J. H., Jang, M. "Acid and organic aerosol coatings on magnetic nanoparticles increase iron concentrations in human airway epithelial cells". *Inhalation Toxicology*, 21, 659-667, **2009**.
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44. Jang, M.; Cao, G.; Jared P. "Colorimetric Particle Acidity Analysis of Secondary Organic Aerosol Coating on Submicron Acidic Aerosols", *Aerosol Science and Technology*, 42, 409-420, **2008**.
45. Cao, G. and Jang, M. "Particle Acidity Effects on Secondary Organic Aerosol Formation by OH-oxidation of Aromatics in a NO_x free Conditions, 35, 7603-7613, *Atmos. Environ.* **2007**.
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53. Lee, S.; Kamens, R. M.; Jang, M. "Gas and Particle Partitioning Behavior of Aldehyde in the Presence of Diesel Soot and Wood Smoke Aerosols" *J. Atmos. Chem.*, 51, 223-234, **2005**.
54. Jang, M.; Czoschke, N. M.; Northcross, A. "Review: Atmospheric organic aerosol production by heterogeneous acid-catalyzed reaction" *ChemPhysChem*, 5, 1646-1661, **2004**.
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- Organic Compounds on Atmospheric Matter: Humidity Effects” *Environ. Sci. Technol.*, 32, 1237-1243, **1998**.
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Ph.D. thesis

Jang, M. Thermodynamic Approaches Using Group Contribution Methods to Model Partitioning of Semi-volatile Organic Compounds on Atmospheric Particulate Matter: Temperature, Humidity, and Composition of aerosols, The University of North Carolina at Chapel Hill, Chapel Hill, NC, **1997**

F. Patent

1. Inventor: Myoseon Jang and Zechen Yu, Assignee: University of Florida Research Foundation, Inc., UF#18074 entitled “Online Detection of Harmful Chemical Species in Particulate Matter Using the Hydrogel-coated Air Filter Integrated with Colorimetric Assays” 2020
2. Inventor: Myoseon Jang and Zechen Yu, Assignee: University of Florida Research Foundation, Inc., “METHOD AND APPARATUS FOR DETECTING COMPOSITION OF AIRBORNE PARTICLES” filed on November 20, 2019, Serial No. 62/938,245.
3. Inventor: Myoseon Jang, Assignee: University of Florida Research Foundation, Inc., US Patent NO. 8,557,184, “Device and methods for measuring the acidity of airborne matter using UV-visible spectrometry”, issued on October 15, **2013**.
4. Inventor: Myoseon Jang and Chungsoo Kim, “PRODUCE FOR PREPARATION OF AROMATIC POLYESTER”, Assignee: LG Group, Registration No. 1019930003711 (1993.05.08).
5. Inventor: Myoseon Jang and Chungsoo Kim, “POLYESTER AND PROCESS FOR PREPARING THE SAME”, Assignee: LG Group, Registration No. 1000631840000 (1993.07.01)

G. Software development (Aerosol module)

- **CAMx-UNIAPR (2021)**: Interface of UNIPAR with CAMx to simulate the SOA budget in regional scales.
- **Unified Partitioning Aerosol Phase Reaction (UNIPAR) model software program (2005-**

current): UNIPAR is a software program that is coded using FORTRAN and used to predict secondary organic aerosol (SOA) production via up-to-date multiphase reactions of near explicit atmospheric oxygenated compounds.

- **Multiphase thermodynamic model development to predict partitioning of organics (1995-2008)**: I have a long history of developing thermodynamic model softwares to predict multiphase partitioning of different semi-volatile organic compounds under varying environmental conditions (i.e. temperature and humidity). My specialty in thermodynamic models includes absorptive equilibrium partitioning of organics in multiphase using group contributions and adsorptive partitioning using a linear solvation energy relationship (LSER) incorporated with physicochemical parameters. This thermodynamic model is applied to estimate the distribution of pollutants between various phases.
- **Atmospheric Mineral Aerosol Reaction (AMAR) model software program (2015-current)**: AMAR predicts the formation of sulfate and nitrate via heterogeneous chemistry of atmospheric tracers in the presence of airborne mineral dust particulate matter (sponsored by the Korean Meteorological Administration).

H. Attendance for Conferences and science meetings

Invited Speaker

Invited speaker, “Emerging issue in SOA formation” KSE meeting, Gainesville, Florida, November 6, **2021**

Invited speaker, “Formation of Toxic Oxidizers in Secondary Organic Aerosol Under Varying Environmental Conditions” The 4th International Symposium for Persistent, Bioaccumulating and Toxic Substances, Harbin Institute of Technology, Shenzhen (HITSZ) in Shenzhen, China, June 22, **2019**

Invited speaker, “Organic Aerosol Growth via Aqueous Reactions in the Presence of Different Inorganic Aerosols (Ammonium Sulfate, Sea Salt Aerosol, and Airborne Mineral Dust): Chamber Studies and Modeling, San Diego, California, August 28, **2019**.

Invited speaker, “UNIPAR model to predict SOA formation via multiphase reactions of atmospheric organic species: Chamber studies and modeling” The First Workshop for the Development of Korean Air Quality Forecasting System, Seoul, KOREA, November 6, **2018**.

Invited speaker, “Prediction of heterogeneous oxidation of SO₂ and NO_x using the atmospheric mineral aerosol reaction (AMAR) model: Chamber studies and modeling” The First Workshop for the Development of Korean Air Quality Forecasting System, Busan, KOREA, November 6, **2018**

Invited speaker, “Heterogeneous Oxidation of SO₂ and NO_x in the Presence of Mineral Dust Particles: Chamber Studies and Modelling” Dust, Bari, Italy, May 29-31, **2018**

Invited speaker, “Impact of Atmospheric Mineral Dust Aerosol on Heterogeneous Oxidation of SO₂ and NO_x: Chamber Studies and Modeling, IEEC2017, November 15-17, **2017**

Invited speaker, Myoseon Jang and Zechen Yu “Mineral dust model” ACS, Washington D.C. August 25-28, **2017**

Invited speaker, “Atmospheric Mineral Aerosol Reaction (AMAR) Kinetic Module for Predicting Secondary Inorganics” International Asian Dust Workshop, September 21, **2016**

Invited speaker, “Health Effect of the Secondary Organic Aerosol Produced via the Photochemical Reaction of Hydrocarbons Using a Large Outdoor Smog Chamber”, GIST, September 19, **2016**

Invited speaker, “Organosulfate Formation in the Secondary Organic Aerosol Produced from Photooxidation of Various VOCs In the Presence of NO_x and Sulfuric Acid Aerosol Using Natural Sunlight” ACS, Boston, August 16-20, **2015**

Invited speaker, “Impacts of Mineral Dust Particles on Atmospheric Oxidation of Air Pollutants: Chamber Studies” UKC, July 30-August 1, **2015**

Invited speaker, “Atmospheric photochemical reactions of air pollutants in the presence of airborne mineral dust particles: Chamber Studies, IEEC2015, October 28-30, **2015**

Invited Speaker. “Secondary Organic Aerosol Formation *via* Multiphase Reactions: Overview of Chamber Study and Aerosol Modeling at UF”, GIST, Korea **2014**

Invited Speaker. “Secondary Organic Aerosol Formation in the Presence of Sea Salt Aerosol: Chamber Studies and Modeling”, Myoseon Jang, Beardsley Ross, and Yunseok Im, UKC, **2014**

Invited Speaker, "A Review of Secondary Organic Aerosol(SOA) Formation : Current and Emerging Issues in Air Quality Model" Air quality forecasting workshop, Seoul, May, **2014**

Invited speaker, "Atmospheric Organic aerosol", National Mongolian University, March 20, 2015, Ulaanbaatar, Mongolia

Invited speaker, National Institute of Environmental Research, Korea, May **2012**

Invited Speaker, Korea Advanced Institute of Sciences and Technology, Korea, May **2012**

Invited Speaker, Ewha Women's University, Korea, May **2012**

Invited Speaker, Ajoo University, Korea, May **2012**

Invited speaker, Peking University, May 2012.

Invited speaker, "Chamber Studies and Modeling of SOA Formation by Partitioning and Heterogeneous Reactions in the Presence of Inorganic Species", Lundgren Symposium, April, **2012**

Invited Speaker, "Chamber Studies and Modeling of SOA Formation by Partitioning and Heterogeneous Reactions in the Presence of Inorganic Species", University of South Florida, **2011**

Invited speaker, "SOA model including both partitioning and aerosol phase heterogeneous reactions: Application to toluene oxidation in the presence of inorganic species." IAMA conference, UC Davis, December/**2009**

Invited Speaker, "SOA Model by Partitioning and Heterogeneous Reactions in the Presence of Inorganic Species" International Aerosol Modeling Algorithm (IAMA) conference, UC David, **2007**

Invited Speaker, International Science Meeting of the ESF (European Science Foundation) research networks VOCBAS and INTROP, "Biogenic Volatile Organic Compounds Sources and fates in a changing world", Montpellier, France, October/**2007**

Invited Speaker, "Humic-like substances (HULIS) and their role in the atmosphere", HULIS Workshop, Budapest, Hungary, November, **2006**.

Invited Speaker, Special Symposium for Nanoparticle Dosimetry, Toxicology and Cellular Interactions. AAAR, September/**2006**, St. Paul, MN.

Invited speaker, "Secondary Organic Aerosol Production by Heterogeneous Acid-Catalyzed Reactions" Gordon Research Conferences (Biogenic Hydrocarbon & The Atmosphere), **2004**, Italy.

Posters and Presented at International Conferences

Sanghee Han and Myoseon Jang, "Modeling of impacts of aqueous phase reactions on monoterpene SOA in daytime and nighttime" AAAR (Virtual), October 18-22, **2021**

Karen Sem, Myoseon Jang, and Zechen Yu, "Characterizing the Atmospheric Processes of Brevetoxins in Sea Spray Aerosols Generated from Florida Red Tide" AAAR (Virtual), October 18-22, **2021**

Azad Madhu, Myoseon Jang, and David Deacon "Simulation of SOA formation from the photooxidation of long-chain alkanes via multiphase reactions" AAAR (Virtual), October 18-22, **2021**

Zechen Yu, Myoseon Jang, Soontae Kim, Jiwon Choi, Azad Madhu, Sanghee Han, and Jinsoo Park "Secondary Organic Aerosol Formation in Regional Scales by Using Multiphase Reaction of Hydrocarbons" AAAR (Virtual), October 18-22, **2021**

Sanghee Han and Myoseon Jang, "Integration of CB6 with the UNIPAR model to simulate chamber-generated SOA via multiphase reactions of lumping species constructed from explicit gas mechanisms" AAAR (Virtual), October 5-9, **2020**

Sanghee Han, Myoseon Jang, and Chufan Zhou, "Simulating wall-free aromatic secondary organic aerosol formation via multiphase reactions in the presence of electrolytic inorganic aerosol" AAAR (Virtual), October 5-9, **2020**

Azad Madhu, Myoseon Jang, and Zechen Yu, "Low Cost Detection Method for in situ Detection of Aerosol Acidity Using Colorimetry Integrated with Camera" AAAR (Virtual), October 5-9, **2020**

Zechen Yu, Myoseon Jang, Tianyu Zhang, Azad Madhu, and Sanghee Han, "Simulation of monoterpene SOA formation via multiphase reactions of lumping species generated from explicit gas mechanisms" AAAR (Virtual), October 5-9, **2020**

Zechen Yu and Myoseon Jang, "Simulation of the impact of particle phase state on SOA formation from

- the photooxidation of isoprene and β -pinene cocktail in the Presence of Electrolytic salts” AAAR (Virtual), October 5-9, **2020**
- Poster, Zechen Yu and Myoseon Jang, “Simulation of Heterogeneous Chemistry of SO₂ and NO_x in the Presence of Airborne Dust Particles at Regional Scales”, AAAR, Portland, Oregon, October 15-18, **2019**
- Poster, Sanghee Han and Myoseon Jang, “Simulation of SOA Formation Using Gas-Wall Process Free Model parameters in the Presence of Inorganic Salts Containing Electrolytes under Various NO_x Levels”, AAAR, Portland, Oregon, October 15-18, **2019**
- Poster, Shiqi Sun, Myoseon Jang, Sanghee Han, Chufan Zhou, and Ryan Winslow, “Calibration of C-RUV Aerosol Acidity Measurement Using Two Inorganic Thermodynamic Models and Its Application to Field Data”, AAAR, Portland, Oregon, October 15-18, **2019**
- Poster, Myoseon Jang, Zechen Yu, Chufan Zhou, Sanghee Han and Tianyu Zhang, “Simulation of SOA Formation from the Photooxidation of Gasoline in the Presence of NO_x and Electrolytic Inorganic Aerosol”, AAAR, Portland, Oregon, October 15-18, **2019**
- Presentation, Zechen Yu and Myoseon Jang, “Simulation of Heterogeneous oxidation of SO₂ and NO_x in the presence of Gobi desert dust particles under urban environments”, AAAR, St. Louis, September, 3-7, **2018**
- Poster, Sanghee Han, Myoseon Jang, and Huanhuan Jiang, “Prediction of the ChamberWall Process of Gaseous Semivolatile Organic Compounds Using a Linear Solvation Energy Relationship”, AAAR, St. Louis, September, 3-7, **2018**
- Poster, Chufan Zhou, Myoseon Jang and Zechen Yu, “Simulation of SOA formation of monoalkyl-substituted benzenes in the Presence of SO₂ under different NO_x levels using the UNIPAR model”, AAAR, St. Louis, September, 3-7, **2018**
- Poster, Shiqi Sun and Myoseon Jang, “Aerosol Acidity Measurement Using Colorimetry Coupled with a UV-Visible Micro-spectrometer and its Application to Measurements of Organosulfates in Ambient Air”, AAAR, St. Louis, September, 3-7, **2018**
- Presentation, Huanhuan Jiang and Myoseon Jang, “The Oxidative Potential of Gasoline-derived Organic Aerosols and Wood Smoke Particles” AAAR, Raleigh, NC, October 16-19, **2017**
- Poster, Ryan Winslow and Myoseon Jang, “Measurement of Aerosol Acidity Using Colorimetry Integrated with a Portable Miniature UV-Visible Spectrometer” AAAR, Raleigh, NC, October 16-19, **2017**
- Poster, Zechen Yu, Myoseon Jang, and Jiyeon Park “Atmospheric Mineral Aerosol Reaction (AMAR) Model for Simulation of Heterogeneous Photooxidation of SO₂” AAAR, Raleigh, NC, October 16-19, **2017**
- Minhan Park, HungSoo Joo, Kwangyul Lee, Tsatsral Batmunkh, Lucille Joanna Borlaza, Heung-Bin Lim, Han-Jae Shin, Myoseon Jang, Ji Yi Lee, Min-Suk Bae, Kyu-Hyuck Chung, Daeun Kim, Kihong Park, “Toxicological and Chemical Properties of Fine Particles Produced from Various Sources” AAAR, Raleigh, NC, October 16-19, **2017**
- Poster, Myoseon Jang and Huanhuan Jiang, “Oxidative stress of organic aerosol” ACS, Washington D.C. August 25-28, **2017**
- Presentation, Zechen Yu, Myoseon Jang, Tara Sabo-Attwood and Sarah Robinson “Prediction of Delivery of SOA to Air-Liquid Interface Cells *in Vitro* Using Electrostatic Precipitator” AAAR, Portland, Oregon, October 18-21, **2016**
- Poster, Jiyeon Park and Myoseon Jang, “How do atmospheric mineral dust particles promote the formation of sulfate” AAAR, Portland, Oregon, October 18-21, **2016**
- Poster, Huanhuan Jiang, Zechen, Yu, and Myoseon Jang “NO_x Effect on the Chemical Composition and DTT response of Water-soluble Secondary Organic Aerosols” AAAR, Portland, Oregon, October 18-21, **2016**
- Poster, Beardsley Ross and Myoseon Jang “Modeling the Secondary Organic Aerosol Formation of Biogenic Hydrocarbons in the Presence of an Inorganic Salted Aqueous Phase” AAAR, Portland, Oregon, October 18-21, **2016**
- Poster, Jiyeon Park and Myoseon Jang, “Chamber simulation of photochemistry of mineral dust particles in the presence of SO₂”, AAAR, Minneapolis, MN, USA, October 12-16, **2015**
- Presentation, Beardsley Ross and Myoseon Jang, “Explicit simulation of the secondary organic aerosol formation of isoprene from partitioning and aerosol phase reactions”, AAAR, Minneapolis, MN,

USA, October 12-16, **2015**

Poster, Huanhuan Jiang and Myoseon Jang, "Toxicity Characterization of the photooxidation products of atmospherically relevant volatile organic compounds", AAAR, Minneapolis, MN, USA, October 12-16, **2015**

Participation, International Symposia on Dzud and Traditional Herding Knowledge, 12–13 March **2015**, Ulaanbaatar, Mongolia.

Presentation, Beardsley Ross and Myoseon Jang, "Modeling secondary organic aerosol formation via partitioning and aerosol phase reactions under two phase states: liquid-liquid phase separated and homogeneously mixed", AAAR, AAAR, Orlando, **2014**

Presentation, Myoseon Jang and Jiaying Li "Organosulfates Formation in SOA Produced from Photooxidation of Various VOCs In the Presence of NO_x and Sulfuric Acid Aerosol Using Natural Sunlight", AAAR, Orlando, **2014**

Presentation. "Organic Aerosol Formation in the Presence of Sea Salt Aerosol: Chamber Studies and Modeling", Myoseon Jang, Beardsley Ross, and Yunseok Im, International Aerosol Conference, Pusan, Korea, September, **2014**

Poster. "Investigating the impact of aerosol phase state on biogenic SOA formation in the presence of inorganic acids" Ross Beardsley and Myoseon Jang, International Aerosol Conference, Pusan, Korea, September, **2014**

Presentation. "Aerosol Acidity Measures Using Colorimetry Coupled with a Reflectance UV-Visible Spectrometer and its Application to Quantification of Organosulfates in Aerosol", Myoseon Jang, Jiaying Li, and Ross Beardsley, The 10th International Symposium on Advanced Environmental Monitoring and Modeling, San Francisco, August, **2014**.

Co-Author, "Evaluation of different SOA schemes using experiments in two outdoor chambers" Marta G. Vivanco, Florian Couvidat, Manuel Santiago, Christian Seigneur, Myoseon Jang, Barron Henderson and Bertrand Bessagnet, EGU General Assembly 2014, 27 April - 2 May, 2014 in Vienna, Austria

Presentation. "Quantification of organosulfate formation in the SOA with preexisting acidic sulfate" Jiaying Lee and Myoseon Jang, AAAR, Portland. Oregon, **2013**

Presentation. "Dynamic light absorption by biomass burning organic aerosol photochemically aged using the ambient sunlight" Min Zhong and Myoseon Jang, AAAR, Portland. Oregon, **2013**

Poster. "Simulation of isoprene SOA formation using UNIPAR: A lumping Model Integrated with explicit gas phase kinetic mechanisms and aerosol phase reactions" Ross Beardsley, Yunseok Im, and Myoseon Jang, AAAR, Portland. Oregon, **2013**

Presentation. "Quantification of Organosulfate Formation in the SOA with Preexisting Acidic Sulfate Aerosol" Jiaying Li and Myoseon Jang, AAAR, Minneapolis, MN, **2012**

Poster, "Chamber Simulation of Photooxidation of Dimethyl Sulfide and Isoprene in the Presence of NO_x", Tianyi Chen and Myoseon Jang, AAAR, Minneapolis, MN, **2012**

Poster, "Modeling of Secondary Organic Aerosol from Aromatic Compounds in the Presence of SO₂", Yunseok Im and Myoseon Jang, AAAR, Minneapolis, MN, **2012**

Poster, "Aromatic Secondary Organic Aerosol Formation in the Presence of Sea Salt Aerosols", Ross Beardsley and Myoseon Jang, AAAR, Minneapolis, MN, **2012**

Poster "UV-Visible Absorption of Wood Smoke Particles with Photochemical Oxidation", Min Zhong, and Myoseon Jang, AAAR, Minneapolis, MN, **2012**

Poster. "A Novel *in Vitro* Magnetic Precipitator Exposure Device to Evaluate Inhalation Toxicity of Airborne Particulate Matter", Myoseon Jang and Ori Baber, HEI conference, Chicago, April, **2012**

Poster (invited). "Development of an *In Vitro* Magnetic Precipitator Exposure Device to Assess the Inhalation Toxicity of Airborne Particulate Matter", Health Effect Institute, Boston, MA, May 1-May 3, **2011**

Poster. "Partitioning-Heterogeneous Reaction Consortium SOA model to Predict Aromatic SOA Formation in the Presence of NO_x and SO₂" Yunseok Im and Myoseon Jang, CMAS, NC, **2011**

Presentation. "Aerosol Acidity Measurement Using Colorimetry Coupled with a Reflectance UV-Visible Spectrometer." Jiaying Li and Myoseon Jang, AAAR, FL, **2011**

Presentation. "The SOA Formation Model Combined with Semiempirical Quantum Chemistry to Predict UV-Vis Absorption of SOA." Min Zhong and Myoseon Jang, AAAR, FL, **2011**

- Poster. "Chamber Study of the Effect of Methanesulfonic Acid on Atmospheric Secondary Organic Aerosol Formation" Tianyi Chen and Myoseon Jang, AAAR, FL, **2011**
- Poster. "Magnetic Precipitator Exposure Device to Assess the in Vitro Inhalation Toxicity of Airborne Particulate Matter" Ori Baber and Myoseon Jang, AAAR, FL, **2011**
- Poster. "Secondary Organic Aerosol Formation Modeling" Yunseok Im and Myoseon Jang, AAAR, FL, **2011**
- Poster. "Magnetic Nanoparticles: Biologically and Environmentally Suitable for in Vitro Air Pollution Exposure Studies" Ori Baber and Jang, AAAR, Portland, OR, **2010**
- Poster. "Titration of Internally Mixed SOA-Sulfuric Acid Aerosol with Ammonia" Myoseon Jang and Jiaying Li, Ori Baber, AAAR, Portland, OR, **2010**
- Poster. "Photooxidation of 2-Methyl-2-Butene in the Presence of Saline-Oxone Aerosol" Yunseon Im and Myoseon Jang, AAAR, Portland, OR, **2010**
- Poster. "Chamber Study of Dimethyl Sulfide's Impact on the Secondary Organic Aerosol Formation of Isoprene" Tianyi Chen and Myoseon Jang, AAAR, Portland, OR, **2010**
- Presentation. "Organosulfate Formation in the Submicron Organic Aerosol Internally Mixed with Sulfuric Acid" Jianying Li and Myoseon Jang, AAAR, Portland, OR, **2010**
- Presentation. "Light Absorption by Secondary Organic Aerosol from Photooxidation of Alpha-pinene, d-Limonene, and Toluene" Min Zhong and Myoseon Jang, AAAR, Portland, OR, **2010**
- Presentation. "Chamber Study of Secondary Organic Aerosol Formation from Photooxidation of Isoprene and DMS" Tianyi Chen and Myoseon Jang, AAAR, Minneapolis, MN, **2009**
- Poster, "Hygroscopic Property and Formation of Active Chlorine Oxidants in Saline-Oxone Decontaminant Aerosol" Jaeyoun Jang and Myoseon Jang, AAAR, Minneapolis, MN, **2009**
- Poster, "Modeling SOA Formation from Toluene Oxidation in the Presence of Inorganic Aerosols" Gang Cao and Myoseon Jang, AAAR, Minneapolis, MN, **2009**
- Poster, "Diurnal Pattern of Aerosol Acidity and Secondary Organic Aerosol Formation in Ambient Aerosol" Myoseon Jang, Tianyi Chen, and Jaeyoun Jang, AAAR, Minneapolis, MN, **2009**
- Poster, "NMR studies of Secondary Organic Aerosol Coating on Acidic Sulfate Aerosol" Myoseon Jang, Tianyi Chen, and Jaeyoun Jang, AAAR, Minneapolis, MN, **2009**
- Poster, Gang Cao**, Myoseon Jang, "Secondary Organic Aerosol Formation from Photooxidation of Toluene in the Presence of Inorganic Seed Aerosols". 101th Annual A&WMA conference, Portland, OR, June 24-27, **2008**.
- Poster, Myoseon Jang, "Bulk-Phase Aerosol Analysis of Atmospheric Organic Species Exposed to Acidic Sulfates" AAAR 2008 Annual Conference, Orlando, FL, September 20-23, **2008**.
- Presentation, Gang Cao, Myoseon Jang, "Influence of Heterogeneous Chemistry on the Gas and Particle Distribution of Toluene Oxidation Products", AAAR 2008 Annual Conference, Orlando, FL, September 20-23, **2008**.
- Poster, Gang Cao, Myoseon Jang, "Secondary Organic Aerosol Formation from Toluene Photooxidation under Various NO_x Conditions and Particle Acidities", AAAR 2008 Annual Conference, Orlando, FL, September 20-23, **2008**.
- Poster, Gang Cao, Myoseon Jang, "Development of a Predictive Model of SOA Formation from Toluene Photooxidation in the Presence of Inorganic Aerosols", AAAR 2008, Orlando, FL, **2008**.
- Poster, Gang Cao, Myoseon Jang, "Secondary Organic Aerosol Formation from Photooxidation of Toluene in the Presence of Inorganic Seed Aerosols". 101th Annual A&WMA conference, Portland, OR, June 24-27, **2008**.
- Speaker, "Measuring Particle Acidity in the Atmospheric Aerosol Using a Colorimetric Analysis", AAAR, September/**2007**, St. Paul, MN.
- Presentation, Special Modeling of SOA Formation by Partitioning and Heterogeneous Reactions in the Presence of Inorganic Species, AAAR, September/**2006**, St. Paul, MN.

Poster, Modeling heterogeneous acid catalyzed SOA mass production of terpenen ozonolysis reactions in the presence of inorganic acid. Amanda Northcross & Myoseon Jang. AAAR, Sep./**2006**, St. Paul, MN.

Poster, Aromatic SOA formation in the presence of inorganic acid. Gang Cao and Myoseon Jang. AAAR, September/**2006**, St. Paul, MN.

Presentation and posters: “SOA Formation Model by Partitioning and Heterogeneous Reactions In the Presence of Inorganic Species”; “Deposition of Magnetic Nanoparticles Suspended in the Gas Phase on Lung Cells *in vitro*”; “Measuring Oligomeric Fraction of SOA using TGA”; “Heterogeneous Particle Phase Products form Alpha-Pinene Ozone Oxidation, AAAR, fall/**2005**, Austin, Texas.

Section co-Chair and Presentation, “Preexisting Aerosol Effects on Heterogeneous Acid-Catalyzed Secondary Organic Aerosol Yields” AAAR, spring/**2005**, Atlanta, GA

Presentation and posters, “A Predictive Model for Organic Aerosol Growth by Heterogeneous Acid-Catalyzed Reactions of Organic Carbonyls”, “Effect of Aerosol Acidity on SOA Formation: Humidity and Aerosol Composition”, and “Heterogeneous SOA production by ozonolysis of diverse terpenes in presence of acidic and non-acidic aerosols” AAAR/**2004**/fall at Atlanta, GA

Presentation, “Heterogeneous Polymerization in Atmospheric Aerosols” Particles **2004**, Orlando, FL

Speaker “Organic Aerosol Growth by Acid-Catalyzed Heterogeneous Reactions of Diverse Organic Carbonyls in the Flow Reactor System” AAAR, fall/**2003**, L.A

Poster “Smog Chambers Experiments Of Urban Mixtures Enhance Inflammatory Responses In Lung Cells” AAAR-PM meeting, March/**2003**, Pittsburgh, PA

Poster, “Evaluation for Acid-Catalyzed Heterogeneous Reactions and Particle Growth Using Model Carbonyl Systems and Real Combustion Aerosols” AAAR/**2002**/fall at Charlotte

Poster, AGU/**2001**/fall at San Francisco

Presentation in the Quadrangle Environmental Conference, Jan./**1998**.

Presentation, Measurement of Toxic & Related Air Pollutants, **1997**.

Lectures

Lecture, “Emerging issues on atmospheric organic aerosol formation” Samsung Advanced Institute of Technology, South Korea, June 27, **2019**

Lecture, “Emerging issues on atmospheric organic aerosol formation” National Institute of Environmental Research, South Korea, June 26, **2019**

Lecture, “Emerging Issues in the Formation of Secondary Organic Aerosol: Mechanisms, Modeling, and Health Effects” Samsung Advanced Institute of Technology, Institute of Air R&D, LG Electronics, South Korea, June 27, **2019**

Lecture, “Emerging Issues on the Formation of Secondary Organic Aerosol” Harbin Institute of Technology, Shenzhen, China, June 22, **2019**.

Lecture, “Health effect of SOA” Gwangju Institute of Sciences and Technology, Korea, September-September 19, **2016**

Lecture, “Elements of Air Pollution” School of Public Health, Mongolian National University of Medical Sciences, Ulaanbaatar, Mongolia, March-May, **2015**

Lecture, Secondary Organic Aerosol, Gwangju Institute of Sciences and Technology, Korea, September-November, **2014**

Workshop

Speaker at Workshop, “SOA toxicity”, Medical school at Seoul National University, October 30, 2015

Speaker, Korea Meteorological Administration, Jeju Island, Korea, May 26, 2015

Speaker, Korea Meteorological Administration, Jeju Island, Korea, October 26, 2015

I. HONORS

- Early Career Scientist by Gordon Research Conference: “Biogenic Hydrocarbons & The Atmosphere”, Lucca (Barga), Italy, **2004**
- Nomination for the Eni award (Environmental section), **2010**.

- Brain Pool Scholar, **2014**
- Fulbright Scholar to Mongolia, **2014-2015**
- Excellent mentorship for graduate students, **2016**

J. INTERNATIONAL ACTIVITIES.

My research on heterogeneous acid-catalyzed reactions of atmospheric organic compounds (Science, 2002) has considerably influenced atmospheric aerosol research in North America, Europe and Asia. Because of this innovative discovery, I have garnered international recognition and have been invited to international meetings to share new findings on aerosol formation mechanisms. For example, in 2004, I was invited as an “Early Career Scientist” to the Gordon Research Conference (“Biogenic Hydrocarbons & The Atmosphere”, Lucca, Italy). In 2006, I participated in the HULIS workshop (Budapest, Hungary), which was held by the European Science Foundation (ESF). During this meeting, I shared laboratory observations related to SOA growth by sulfuric acid. In 2007, I was invited to the ESF research networks (VOCBAS, *ACCENT* and INTROP: “Biogenic Volatile Organic Compounds, sources and fates in a changing world”, Montpellier, France) in order to review the emerging issues related to the formation of organic aerosol due to volatile organic compounds.

The discovery of the acid-catalyzed formation of macromolecular structures in aerosol has received much attention in Asia (China, South Korea, Japan, India, etc.), where SO₂ concentrations are noticeably higher due to an over-dependence on coal and to rapid industrialization. I visited Peking University in 2012 to review the trends in atmospheric chemistry and atmospheric photochemical smog chambers.

The UF-APHOR chamber is one of the world’s four large outdoor smog reactors and harnesses natural sunlight to produce high-impact data for aerosol model development and model evaluation. I used my chamber data and techniques to collaborate with researchers who operate the European outdoor chamber, EUPHORE. I hosted Dr. Garcia Vivanco [Atmospheric Pollution Division, CIEMAT (Research Center for Energy and Technology), Madrid, Spain, May 1st- July 30th, 2013] at UF. Also, I evaluated the feasibility of SOA model produced from my laboratory for both UF-APHOR and EUPHORE data from Spain.

Due to my specialty in the design and operation of smog chambers, I have been selected to consult the construction of the outdoor chamber in South Korea, which began in 2017. To train the next generation of South Korean researchers in atmospheric chemistry, I recruited postdoctoral researcher, Dr. Jiyeon Park (2015-2017) and hosted visiting scholar, Seunghee Kang (2016-2017). Furthermore, the UF-APHOR chamber has been used to continue studying the SOA health effect. In the Consortium project (2014-2017), a grant that was sponsored by the South Korea governmental agency, the chamber data was used to compare the health effects of particulate matter from combustion smoke.

I visited the Gobi Desert to collect Asian mineral dust particles during the spring of 2015. This research was sponsored by both the Fulbright Scholarship (Ulaanbaatar, Mongolia, 2014-2015) and South Korea’s National Institute of Meteorological Sciences (NIMS). During my time in the Gobi Desert, I was assisted by Dr. Tsatsral Batmunkh, an air quality specialist at the Institute of Meteorology, Hydrology, and Environment (IMHE) (Ulaanbaatar, Mongolia). The collected Gobi mineral dust has been used for chamber studies in order to model how mineral dust contributes to air pollution. In the next two years, I plan to use the resulting chamber data and predictive models to create a large-scale model that will subsequently be used to predict the impact of mineral dust on air quality on regional and global scales. During my staying at Ulaanbaatar (March 11-13, 2015), I participated in the international symposia on Dzud (Mongolian word for harsh cold winter), where I met with climate scientists who study the impact of climate changes on herding communities in Mongolia. With these climate scientists, I visited Mongolian herders to record how climate change-driven Dzuds influenced the herders and animals. I also visited the meteorological data collection site operated by Japanese researchers in Northern Mongolia to learn about the recent trends in climate change in Central Asia. From my activities in Mongolia, I learned how climate change impacts the Mongolian environment and how these effects shape societal issues such as population migration and urban poverty.

K. MEMBERSHIP AND ACTIVITIES IN THE PROFESSION

Editorial Board of AAQR: 2017-present
Member of CMAS (Community and Modeling Analysis System) 2011-present
Member of AAAR (American Association for Aerosol Research) 2001 – present
Member of American Chemical Society 2000 – present
Member of AGU (American Geophysics Union) 2002 – present

L. Complete and on-going research projects

- “Continued development of innovative techniques for measuring aerosolized brevetoxins and identification of atmospheric processes influencing aerosolized brevetoxins” PI, Agency: FWC (\$154,068), 2021/08/21-2022/7/31
- “Simulation of Secondary Organic Aerosol Formation under Urban Environments using a Large Outdoor Photochemical Smog Chamber” PI, Agency: KIST (\$531,699), 2020/10/21-2025/3/31
- “Modeling Secondary organic aerosol formation via multiphase reactions of volatile compound products under urban environments” PI, Agency: NIER (\$497,238), 2021/04/21-2023/12/23
- “Atmospheric Process of Microcystins in Airborne Cyanobacterial Aerosol” Role: PI, Agency: NSF (\$330,000), 2021/08/01-2024/07/31
- “Prediction of Organic-Vapor Wall Deposition using a Qualitative Structure Activity Relationship and its Application to the SOA model” Role: PI, Agency: NSF (\$582,147), 2019/08/01-2022/07/31
- “Field deployable measurement of aerosolized brevetoxins from *Karenia brevis* using colorimetric immunoassay (AWD08921)” PI, Agency: FWC (\$200,000), 2020/08/20-2021/6/21
- “The Formation of Secondary Organic Aerosol under Urban Atmospheric Environments using a Large Outdoor Photochemical Smog Chamber” Role: sub-Contract, Agency: KIST (\$500,000), 2017/09/08-2020/5/31.
- “Atmospheric aging of mineral dust particles in the presence of air pollutants and its effect on secondary aerosol formation (phase III)” Role: sub-Contract, Agency: National Institute of Metrological Science (\$70,032), 2018/03/28-2018/11/30.
- “Atmospheric aging of mineral dust particles in the presence of air pollutants and its effect on secondary aerosol formation (phase III)” Role: sub-Contract, Agency: National Institute of Metrological Science (\$70,032), 2017/04/28-2017/11/30.
- “Atmospheric aging of mineral dust particles in the presence of air pollutants and its effect on secondary aerosol formation (phase II)” Role: sub-Contract, Agency: National Institute of Metrological Science (\$66,736), 2016/04-2016/11.
- “Atmospheric aging of mineral dust particles in the presence of air pollutants and its effect on secondary aerosol formation” Role: sub-Contract, Agency: National Institute of Metrological Science (\$75,406), 2015/05-2015/11.
- “Exposure of Human Airway Epithelial Cells in vitro to Secondary Organic Aerosol Produced Using a Large Outdoor Smog Chamber, ” Role: section-PI, Agency: Minister for Science, ICT, and Future Planning, South Korea (520M Won = \$500K), Project Period: 5/01/2014-4/30/2017.
- “Characterization of secondary organic aerosol exposed to acidic sulfate aerosols using aerosol bulk-phase analytical techniques: Chamber and field studies”, Role: PI, Agency: NSF (ATM 0852747, \$527K), Project Period: 7/01/2009-9/30/2013.
- “A novel exposure method to evaluate the health effects of PM” Role: PI, Agency: HEI Force (\$75K), Project Period: 10/01/2010-02/15/2012;
- “Characterization of Contaminated Aerosolized Environments and Impact towards Materials” Role: PI, Agency: Navy Force (\$85K), Project Period: 02/15/2011-12/30/2011
- “Characterization of and Decontamination by Reactive Saline Aerosols”, Role: PI, Agency: Air Force (135K), Project Period: 8/01/2008-2/01/2011; \$134,999

- “Secondary organic aerosol formation by partitioning and heterogeneous reactions: Parameterization, characterization, and predictive model” Role: PI, Agency: NSF (ATM 0703941, \$155K), Project Period: 8/15/2007-12/31/2010
- “Targeting technology of Suspended Gas-phase Magnetic Nanoparticles on Biological systems”, Role: PI; Agency: NSF (NSF#NER0508247); Project Period: 7/15/05 to 07/14/07; \$101,190; summary: The focus of this short term project is exploring a delivery method using magnetic nanoparticle suspended in the gas phase.
- “Atmospheric Organic Aerosol Production by Heterogeneous Acid-catalyzed Particle Phase Reactions”, Role: PI; Agency: NSF (NSF#ATM 0314128); Project Period: 8/01/03 to 07/31/07; \$572,306; summary: The focus of this project is identifying the mechanism and modeling of aerosol growth by heterogeneous acid-catalyzed reactions of organics.
- "One Atmosphere Research Program for Urban Gaseous/Particulate Matter and Human Health Effects Studies", Agency: U.S. EPA (US EPA CR829762); Period : 07/01/02 to 03/31/05; \$400,000; Summary: The focus of this project us to examine the health effects of complex urban pollutant mixtures.
- “Secondary Aerosol Formation from Gas and Particle Phase Reactions of Aromatic Hydrocarbons”, Roal: co-PI, Agency: U.S. Environmental Protection Agency (STAR grant); Period: 09/03/03/ to 08/31/06; \$1,500,000.