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EDUCATION

2011 Ph.D. Chemical Engineering, minor: Environmental Science and Engineering, California Institute of Technology

2007 M.S. Chemical Engineering, California Institute of Technology

2005 B.S. Chemical Engineering summa cum laude, University of Florida

EMPLOYMENT

Research Physical Scientist, U.S. Environmental Protection Agency, Durham, NC, 2011-present
ORISE Postdoctoral Fellow, U.S. Environmental Protection Agency, Durham, NC, 2010-2011
Graduate Research Assistant, California Institute of Technology, Pasadena, CA, 2005-2010

PUBLICATIONS

29 published papers with 900 citations (http://www.researcherid.com/rid/F-5392-2012)

[P]Postdoc advisee, [S]Student advisee/co-advisee, *Corresponding author

Referred Journal Articles

Ng*, N. L.; Brown*, S. S.; Archibald, A. T.; Atlas, E.; Cohen, R. C.; Crowley, J. N.; Day, D. A.; Donahue, N. M.; Fry, J. L.; Fuchs, H.; Griffin, R. J.; Guzman, M. I.; Hermann, H.; Hodzic, A.; Iinuma, Y.; Jimenez, J. L.; Kiendler-Scharr, A.; Lee, B. H.; Luecken, D. J.; Mao, J.; McLaren, R.; Mutzel, A.; Osthoff, H. D.; Ouyang, B.; Picquet-Varrault, B.; Platt, U.; **Pye, H. O. T.**; Rudich, Y.; Schwantes, R. H.; Shiraiwa, M.; Stutz, J.; Thornton, J. A.; Tilgner, A.; Williams, B. J.; Zaveri, R. A., Nitrate radicals and biogenic volatile organic compounds: oxidation, mechanisms and organic aerosol. *Atmos. Chem. Phys.* 2017, 17, 2103-2162.

Pye*, H. O. T.; Murphy, B. N.; Xu, L.; Ng, N. L.; Carlton, A. G.; Guo, H.; Weber, R.; Vasilakos, P.; Appel, K. W.; Budisulistiorini, S. H.; Surratt, J. D.; Nenes, A.; Hu, W.; Jimenez, J. L.; Isaacman-VanWertz, G.; Misztal, P. K.; Goldstein, A. H., On the implications of aerosol liquid water and phase separation for organic aerosol mass. *Atmos. Chem. Phys.* 2017, 17 (1), 343-369.

Woody,[S,P] M. C.; Baker, K. R.; Hayes, P. L.; Jimenez, J. L.; Koo, B.; **Pye,* H. O. T.**, Understanding sources of organic aerosol during CalNex-2010 using the CMAQ-VBS. *Atmos. Chem. Phys.* 2016, 16 (6), 4081-4100.

Marais, E. A.; Jacob, D. J.; Jimenez, J. L.; Campuzano-Jost, P.; Day, D. A.; Hu, W.; Krechmer, J.; Zhu, L.; Kim, P. S.; Miller, C. C.; Fisher, J. A.; Travis, K.; Yu, K.; Hanisco, T. F.; Wolfe, G. M.; Arkinson, H. L.; **Pye, H. O. T.**; Froyd, K. D.; Liao, J.; McNeill, V. F., Aqueous-phase mechanism for secondary organic aerosol formation from isoprene: application to the southeast United States and co-benefit of SO_2 emission controls. *Atmos. Chem. Phys.* 2016, 16 (3), 1603-1618.

Baker, K. R.; Woody, M. C.; Tonnesen, G. S.; Hutzell, W.; **Pye, H. O. T.**; Beaver, M. R.; Pouliot, G.; Pierce, T., Contribution of regional-scale fire events to ozone and $PM_{2.5}$ air quality estimated by photochemical modeling approaches. *Atmos. Environ.* 2016, 140, 539-554.

Pye,* H. O. T.; Luecken, D. J.; Xu, L.; Boyd, C. M.; Ng, N. L.; Baker, K. R.; Ayres, B. R.; Bash, J. O.; Baumann, K.; Carter, W. P. L.; Edgerton, E.; Fry, J. L.; Hutzell, W. T.; Schwede, D. B.; Shepson, P.

B., Modeling the current and future roles of particulate organic nitrates in the southeastern United States. *Environ. Sci. Technol.* 2015, 49 (24), 14195-14203.

Gantt,[P] B.; Hoque,[P] S.; Fahey, K. M.; Willis, R. D.; Delgado-Saborit, J. M.; Harrison, R. M.; Zhang, K. M.; Jefferson, D. A.; Kalberer, M.; Bunker, K. L.; Conny, J. M.; Bhave, P. V.; Weinstein, J. P.; **Pye,* H. O. T.**, Factors affecting the ambient physicochemical properties of cerium-containing particles generated by nanoparticle diesel fuel additive use. *Aerosol Sci. Tech.* 2015, 49 (6), 371-380.

Budisulistiorini,[S] S. H.; Li, X.; Bairai, S. T.; Renfro, J.; Liu, Y.; Liu, Y. J.; McKinney, K. A.; Martin, S. T.; McNeill, V. F.; **Pye, H. O. T.**; Nenes, A.; Neff, M. E.; Stone, E. A.; Mueller, S.; Knote, C.; Shaw, S. L.; Zhang, Z.; Gold, A.; Surratt,* J. D., Examining the effects of anthropogenic emissions on isoprene-derived secondary organic aerosol formation during the 2013 Southern Oxidant and Aerosol Study (SOAS) at the Look Rock, Tennessee ground site. *Atmos. Chem. Phys.* 2015, 15 (15), 8871-8888.

Baker, K. R.; Carlton, A. G.; Kleindienst, T. E.; Offenberg, J. H.; Beaver, M. R.; Gentner, D. R.; Goldstein, A. H.; Hayes, P. L.; Jimenez, J. L.; Gilman, J. B.; de Gouw, J. A.; Woody, M. C.; **Pye, H. O. T.**; Kelly, J. T.; Lewandowski, M.; Jaoui, M.; Stevens, P. S.; Brune, W. H.; Lin, Y. H.; Rubitschun, C. L.; Surratt, J. D., Gas and aerosol carbon in California: comparison of measurements and model predictions in Pasadena and Bakersfield. *Atmos. Chem. Phys.* 2015, 15 (9), 5243-5258.

Napelenok, S. L.; Simon, H.; Bhave, P. V.; **Pye, H. O. T.**; Pouliot, G. A.; Sheesley, R. J.; Schauer, J. J., Diagnostic air quality model evaluation of source-specific primary and secondary fine particulate carbon. *Environ. Sci. Technol.* 2014, 48 (1), 464-473.

Marais, E. A.; Jacob, D. J.; Guenther, A.; Chance, K.; Kurosu, T. P.; Murphy, J. G.; Reeves, C. E.; **Pye, H. O. T.**, Improved model of isoprene emissions in Africa using Ozone Monitoring Instrument (OMI) satellite observations of formaldehyde: implications for oxidants and particulate matter. *Atmos. Chem. Phys.* 2014, 14 (15), 7693-7703.

Karambelas, A.; **Pye, H. O. T.**; Budisulistiorini, S. H.; Surratt, J. D.; Pinder, R. W., Contribution of isoprene epoxydiol to urban organic aerosol: evidence from modeling and measurements. *Environ. Sci. Technol. Lett.* 2014, 1 (6), 278-283.

Jathar, S. H.; Gordon, T. D.; Hennigan, C. J.; **Pye, H. O. T.**; Pouliot, G.; Adams, P. J.; Donahue, N. M.; Robinson, A. L., Unspeciated organic emissions from combustion sources and their influence on the secondary organic aerosol budget in the United States. *Proc. Natl. Acad. Sci. U. S. A.* 2014, 111 (29), 10473-10478.

Henderson, B. H.; Akhtar, F.; **Pye, H. O. T.**; Napelenok, S. L.; Hutzell, W. T., A database and tool for boundary conditions for regional air quality modeling: description and evaluation. *Geosci. Model Dev.* 2014, 7 (1), 339-360.

Gantt,[P] B.; Hoque,[P] S.; Willis, R. D.; Fahey, K. M.; Delgado-Saborit, J. M.; Harrison, R. M.; Erdakos, G. B.; Bhave, P. V.; Zhang, K. M.; Kovalcik, K.; **Pye,* H. O. T.**, Near-road modeling and measurement of cerium-containing particles generated by nanoparticle diesel fuel additive use. *Environ. Sci. Technol.* 2014, 48 (18), 10607-10613.

Pye,* H. O. T.; Pinder, R. W.; Piletic, I. R.; Xie, Y.; Capps, S. L.; Lin, Y. H.; Surratt, J. D.; Zhang, Z. F.; Gold, A.; Luecken, D. J.; Hutzell, W. T.; Jaoui, M.; Offenberg, J. H.; Kleindienst, T. E.; Lewandowski, M.; Edney, E. O., Epoxide pathways improve model predictions of isoprene markers and reveal key role of acidity in aerosol formation. *Environ. Sci. Technol.* 2013, 47 (19), 11056-11064.

Lin, Y. H.; Zhang, H. F.; **Pye, H. O. T.**; Zhang, Z. F.; Marth, W. J.; Park, S.; Arashiro, M.; Cui, T. Q.; Budisulistiorini, H.; Sexton, K. G.; Vizuete, W.; Xie, Y.; Luecken, D. J.; Piletic, I. R.; Edney, E. O.; Bartolotti, L. J.; Gold, A.; Surratt, J. D., Epoxide as a precursor to secondary organic aerosol formation from isoprene photooxidation in the presence of nitrogen oxides. *Proc. Natl. Acad. Sci. U. S. A.* 2013, 110 (17), 6718-6723.

Jiang, H.; Liao, H.; **Pye, H. O. T.**; Wu, S.; Mickley, L. J.; Seinfeld, J. H.; Zhang, X. Y., Projected effect of 2000-2050 changes in climate and emissions on aerosol levels in China and associated transboundary

transport. *Atmos. Chem. Phys.* 2013, 13 (16), 7937-7960.

Appel, K. W.; Pouliot, G. A.; Simon, H.; Sarwar, G.; **Pye, H. O. T.**; Napelenok, S. L.; Akhtar, F.; Roselle, S. J., Evaluation of dust and trace metal estimates from the Community Multiscale Air Quality (CMAQ) model version 5.0. *Geosci. Model Dev.* 2013, 6 (4), 883-899.

Tai, A. P. K.; Mickley, L. J.; Jacob, D. J.; Leibensperger, E. M.; Zhang, L.; Fisher, J. A.; **Pye, H. O. T.**, Meteorological modes of variability for fine particulate matter ($PM_{2.5}$) air quality in the United States: implications for $PM_{2.5}$ sensitivity to climate change. *Atmos. Chem. Phys.* 2012, 12 (6), 3131-3145.

Pye,* H. O. T.; Pouliot, G. A., Modeling the role of alkanes, polycyclic aromatic hydrocarbons, and their oligomers in secondary organic aerosol formation. *Environ. Sci. Technol.* 2012, 46 (11), 6041-6047.

Henderson, B. H.; Pinder, R. W.; Crooks, J.; Cohen, R. C.; Carlton, A. G.; **Pye, H. O. T.**; Vizuete, W., Combining Bayesian methods and aircraft observations to constrain the $HO\cdot+NO_2$ reaction rate. *Atmos. Chem. Phys.* 2012, 12 (2), 653-667.

Heald, C. L.; Collett, J. L.; Lee, T.; Benedict, K. B.; Schwandner, F. M.; Li, Y.; Clarisse, L.; Hurtmans, D. R.; Van Damme, M.; Clerbaux, C.; Coheur, P. F.; Philip, S.; Martin, R. V.; **Pye, H. O. T.**, Atmospheric ammonia and particulate inorganic nitrogen over the United States. *Atmos. Chem. Phys.* 2012, 12 (21), 10295-10312.

Fisher, J. A.; Jacob, D. J.; Wang, Q. Q.; Bahreini, R.; Carouge, C. C.; Cubison, M. J.; Dibb, J. E.; Diehl, T.; Jimenez, J. L.; Leibensperger, E. M.; Lu, Z. F.; Meinders, M. B. J.; **Pye, H. O. T.**; Quinn, P. K.; Sharma, S.; Streets, D. G.; van Donkelaar, A.; Yantosca, R. M., Sources, distribution, and acidity of sulfate-ammonium aerosol in the Arctic in winter-spring. *Atmos. Environ.* 2011, 45 (39), 7301-7318.

Pye, H. O. T.; Seinfeld, J. H., A global perspective on aerosol from low-volatility organic compounds. *Atmos. Chem. Phys.* 2010, 10 (9), 4377-4401.

Pye, H. O. T.; Chan, A. W. H.; Barkley, M. P.; Seinfeld, J. H., Global modeling of organic aerosol: the importance of reactive nitrogen (NO_x and NO_3). *Atmos. Chem. Phys.* 2010, 10 (22), 11261-11276.

Pye, H. O. T.; Liao, H.; Wu, S.; Mickley, L. J.; Jacob, D. J.; Henze, D. K.; Seinfeld, J. H., Effect of changes in climate and emissions on future sulfate-nitrate-ammonium aerosol levels in the United States. *J. Geophys. Res.* 2009, 114.

Ng, N. L.; Kwan, A. J.; Surratt, J. D.; Chan, A. W. H.; Chhabra, P. S.; Sorooshian, A.; **Pye, H. O. T.**; Crounse, J. D.; Wennberg, P. O.; Flagan, R. C.; Seinfeld, J. H., Secondary organic aerosol (SOA) formation from reaction of isoprene with nitrate radicals (NO_3). *Atmos. Chem. Phys.* 2008, 8 (14), 4117-4140.

Johanson, K.; Rabinovich, Y.; Moudgil, B.; Breece, K.; **Taylor, H.**, Relationship between particle scale capillary forces and bulk unconfined yield strength. *Powder Technology* 2003, 138 (1), 13-17.

Manuscripts Accepted

Jathar, S.; Woody, M. C.; **Pye, H. O. T.**; Baker, K.; Robinson, A., Chemical transport model simulations of organic aerosol in Southern California: model evaluation and gasoline and diesel source contributions, *Atmos. Chem. Phys.* 2017, accepted.

Fahey*, K. A.; Carlton, A. G.; **Pye, H. O. T.**; Baek, J.; Hutzell, W.; Stanier, C.; Baker, K.; Appel, K. W.; Jaoui, M.; Offenberg, J., A framework for expanding aqueous chemistry in the Community Multiscale Air Quality (CMAQ) model version 5.1, *Geosci. Model Dev.* 2017, accepted.

Manuscripts Submitted

Appel*, K. W.; Napelenok, S. L.; Foley, K. M.; **Pye, H. O. T.**; Hogrefe, C.; Luecken, D. J.; Bash, J. O.; Roselle, S. J.; Pleim, J. E.; Foroutan, H.; Hutzell, W. T.; Pouliot, G. A.; Sarwar, G.; Fahey, K. M.; Gantt, B.; Gilliam, R. C.; Kang, D.; Mathur, R.; Schwede, D. B.; Spero, T. L.; Wong, D. C.; Young, J. O., Overview and evaluation of the Community Multiscale Air Quality (CMAQ) model version 5.1. *Geosci. Model Dev. Discuss.* 2016, doi:10.5194/gmd-2016-226, in review.

Budisulistiorini,[S] S. H.; Nenes, A.; Carlton, A. G.; Surratt, J. D.; McNeill*, V. F.; **Pye*, H. O. T**, Simulating aqueous-phase isoprene-epoxydiol (IEPOX) secondary organic aerosol production during the 2013 Southern Oxidant and Aerosol Study (SOAS), submitted.

Mao*, J.; Carlton, A. G.; Cohen, R.; Brune, W.; Jimenez, J.; **Pye, H. O. T.**; Ng, N. L.; McDonald, B.; Warneke, C.; de Gouw, J.; Mickley, L.; Leibeinsperger, E.; Mathur, R.; Horowitz, L., Southeast Atmosphere Studies: learning from model-observation syntheses, *Atmos. Chem. Phys. Discuss.* 2016, doi:10.5194/acp-2016-1063, in review.

Murphy, B. N.; Woody, M. C.; Jimenez, J. L.; Carlton, A. M. G.; Hayes, P. L.; Liu, S.; Ng, N. L.; Russell, L. M.; Setyan, A.; Xu, L.; Young, J.; Zaveri, R. A.; Zhang, Q.; Pye, H. O. T., Semivolatile POA and parameterized total combustion SOA in CMAQv5.2: impacts on source strength and partitioning, *Atmos. Chem. Phys. Discuss.* 2017, doi:10.5194/acp-2017-193, in review.

Other publications

Mao, J., A. Carlton, L. Horowitz, R. C. Cohen, **H. Pye**, S. Ng, M. Trainer, L. Mickley, E. M. Leibensperger, R. Mathur, Southeast Atmosphere Studies Workshop 2015, *IGACnews*, 55, 22-23, 2015.

HONORS

2015 EPA Scientific and Technological Achievement Award, Level III, for an assessment of health effects and air-quality modeling of nanoCerium-bearing diesel emissions

2014 Presidential Early Career Award for Scientists and Engineers (PECASE)

2014 Tier 3 Motor Vehicle Emissions and Fuel Standards Team EPA Gold Medal for Exceptional Service

2014 EPA Scientific and Technological Achievement Award, Level III, for insight into the mechanism by which isoprene produces particulate matter

2013 EPA Bronze Medal for Commendable Service, for exceptional leadership creating a cross-government field campaign investigating atmospheric organic aerosol air pollution, sources, formation, and transport in the southeastern United States

2013 EPA National Exposure Research Laboratory Early Career in Research Award

2013 EPA Atmospheric Modeling and Analysis Division Blue Ribbon Paper Award, for outstanding collaborative efforts to improve the characterization of organic aerosols

2011 CMAQ Model team award, for exceptional/outstanding ORD technical assistance to the regions or program offices, EPA

2006-2009 National Science Foundation Graduate Research Fellowship

SELECTED TALKS

Lessons learned about organic aerosol formation in the southeast United States using observations and modeling, NCSU University Global Partnership Network (UGPN) Workshop on Air Quality, Climate, and Health, Raleigh, NC, invited talk, April 2016.

SOA modeling for regulatory assessment: Motivation for mechanistic SOA, International Aerosol Modeling Algorithms (IAMA) Meeting, Davis, CA, invited talk, December 2015.

Towards mechanistic representations of SOA from BVOC+NO_3 reactions, Workshop on Nitrate Radicals and Biogenic Volatile Organic Compounds (VOCs), Georgia Institute of Technology, Atlanta, GA, invited keynote speaker, June 2015.

SOA from BVOCs in the southeastern United States, Southeast Atmosphere Studies Workshop: Intensive Observation Period Modeling to Improve Mechanistic Representation of Trends, NOAA-GFDL, Princeton,

NJ, invited talk, June 2015.

TEACHING EXPERIENCE

Advanced Air Quality, North Carolina State University, Guest lecturer, Spring 2016

Aerosol Physics and Chemistry, University of North Carolina, Guest lecturer, Fall 2011, Fall 2012, Fall 2013, Fall 2015, Fall 2016

APPOINTMENTS

Science Advisory Committee of the Air, Climate and Energy (ACE) Center at Harvard University and Massachusetts Institute of Technology, 2016-2020

Fixed-term appointee to the Graduate Faculty, Environmental Sciences and Engineering, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, 2014-2018

SERVICE

Reviewer for: *Atmospheric Environment, Atmospheric Chemistry and Physics, Journal of Geophysical Research-Atmospheres, Geoscientific Model Development, Environmental Science & Technology, Nature Geoscience, Geophysical Research Letters,* US National Science Foundation (NSF), Swiss National Science Foundation (SNSF), US Environmental Protection Agency (EPA)

Co-chair of special symposium on Regional and Global Air Quality and Climate Modeling, AAAR 2017 Fall Meeting

Chair of the 2017 International Aerosol Modeling Algorithms (IAMA) Meeting