

## Eleanor C. Browne

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### Education

2012 Ph.D., Department of Chemistry, University of California, Berkeley  
2006 B.S., *Summa cum Laude*, The College of William and Mary

### Research, Professional Experience, and Employment

2015-Current University of Colorado, Boulder  
Assistant Professor, Department of Chemistry  
Fellow, Cooperative Institute for Research in Environmental Science  
2012-2015 Massachusetts Institute of Technology  
Department of Civil and Environmental Engineering  
NOAA Climate and Global Change Postdoctoral Fellow  
2006-2012 University of California, Berkeley, Department of Chemistry  
Graduate Research Assistant

### Honors and Awards

2019 American Society for Mass Spectrometry Research Award  
2013 ACCESS XII invited participant  
Atmospheric Chemistry Colloquium for Emerging Senior Scientists  
Brookhaven National Laboratory, Upton, NY  
2012-2014 NOAA Climate and Global Change Postdoctoral Fellowship  
2010-2012 NASA Earth Systems Science Fellowship  
2009 NASA Group Achievement Award for efforts during the Arctic Research of the  
Composition of the Troposphere from Aircraft and Satellite Experiment (ARCTAS)  
February 2008-July 2008  
2005 Inducted into Phi Beta Kappa

### Service and Leadership

Reviewer for: *Atmospheric Environment, Atmospheric Chemistry and Physics, Atmospheric  
Measurement Techniques, Environmental Science: Processes & Impacts, Environmental  
Science & Technology, ACS Earth and Space Chemistry, Journal of Physical Chemistry A,  
NOAA Atmospheric Chemistry, Carbon Cycle, & Climate (AC4), National Science  
Foundation, Department of Energy Atmospheric Systems Research, Canada Foundation  
for Innovation, and the Netherlands Organisation for Scientific Research*  
2016 Symposium Co-organizer, Fall ACS National Meeting "Physical Chemistry of Atmospheric  
Processes"  
2015-current Co-editor of *Atmospheric Chemistry and Physics*  
2014 Co-organizer of MIT atmospheric chemistry student/postdoc research seminar  
2013 New England Atmospheric Chemistry Symposium Program Committee Member

### **Field Research Experience**

2021, 2022 Characterizing New Particle Formation and Growth, Lamont, OK  
2016 HISCALE – Holistic Interactions of Shallow Clouds, Aerosols, and Land-Ecosystems, Lamont, OK  
2013 TCAP – Two Column Aerosol Project, Truro, MA  
2010 CalNex – California Research at the Nexus of Air Quality and Climate Change, Bakersfield, CA.  
2008 ARCTAS – Arctic Research of the Composition of the Troposphere from Aircraft and Satellite, Palmdale, CA, Fairbanks, AK, Cold Lake, Canada.  
2007, 2009 BEARPEX – Biosphere Effects of Aerosols and Photochemistry Experiment, Blodgett Forest, CA.

### **Mentoring**

#### **Current**

Ph.D. Students Mitchell Alton – Expected graduation Spring 2022  
Bri Dobson – Expected graduation Spring 2026  
Daniel Katz – Expected graduation Spring 2025  
Hanalai Lewine – Expected graduation Spring 2027  
Nathan Reed (joint with Prof. Margaret Tolbert) – Expected graduation Spring 2023

Undergraduate Samuel Beaudry (CU Boulder) – Fall 2021 - current  
McKenzie Larson (CU Boulder) – Fall 2019 – current  
Jared Schlenker (CU Boulder) – Fall 2021 – current

Visiting Scholar Andris Skromulis (Rezekne Academy of Technologies, Latvia) – September 2021 – September 2022

#### **Alumni**

Ph.D. Students Dr. Aroob Abdelhamid – Ph.D. awarded December 2020  
Dr. Jennifer Berry – Ph.D. awarded May 2020

Undergraduate Armaan Dhillon (CU Boulder) – Fall 2017 – Spring 2019  
Davin Duke (Pikes Peak Community College) – Summer 2018  
Nagam Gill (CU Boulder) – Fall 2017 – Fall 2018  
Tyler Kukuchka (CU Boulder) – Summer 2018  
Natalie LeMessurier (McGill University) – Summer 2019  
Katherine Thompson (Pikes Peak Community College) – Summer 2019

High School Joseph Brodsky (East High School, Denver) – Summer 2017

### **Teaching** (\*indicates new courses developed)

\*CHEM 2100, Chemical Energetics and Dynamics (undergraduate), Spring 2018, Spring 2019, Spring 2020, Spring 2021, Spring 2022

CHEM 4171, Instrumental Analysis (undergraduate), Fall 2017, Fall 2020

\*CHEM 5131, Computer Programming & Data Analysis (graduate), Fall 2015, Fall 2016, Fall 2019, Fall 2021

## **Professional Training**

- 2019 Certification in Mental Health First Aid by National Council for Behavioral Health (CU Boulder)
- 2018 Introductory Leadership Workshop (CU Boulder)
- 2013 Path of Professorship Workshop (MIT)
- 2011 Summer Institute for Preparing Future Faculty (UC Berkeley)

## **Publications** (advisees underlined; \*indicates Browne as corresponding author)

### *Submitted*

- 30\* Reed, N. W.; Wing, B. A.; Tolbert, M. A.; **Browne, E. C.**; Trace H<sub>2</sub>S promotes organic aerosol production and organosulfur compound formation in CO<sub>2</sub>-CH<sub>4</sub>-N<sub>2</sub> haze chemistry, submitted to *Geophys. Res. Lett.*, November 2021.
- 29\* Alton, M. W.; **Browne, E. C.**; Atmospheric degradation of cyclic volatile methyl siloxanes: Radical chemistry and oxidation products, submitted to *ACS Environmental Au*, October 2021.

### *Published*

- 28\* Reed, N. W.; **Browne, E. C.**; Tolbert, M. A.; Impact of Hydrogen Sulfide on Photochemical Haze Formation in Methane/Nitrogen Atmospheres, *ACS Earth and Space Chem.*, 4(6), 897-904, doi: 10.1021/acsearthspacechem.0c00086, 2020.
- 27\* Alton, M. W.; **Browne, E. C.**; Atmospheric Chemistry of Volatile Methyl Siloxanes: Kinetics and Products of Oxidation by OH Radicals and Cl Atoms, *Environ. Sci. Tech.*, 54(10), 5992-5999, doi: 10.1021/acs.est.0c01368, 2020.
- 26\* Ugelow, M. S.; Berry, J. L.; **Browne, E. C.**; Tolbert, M. A.; The Impact of Molecular Oxygen on Anion Composition in a Hazy Archean Earth Atmosphere, *Astrobiology*, 20(5), 658-669, doi:10.1089/ast.2019.2145, 2020.
- 25\* Berry, J. L.; Ugelow, M. S.; Tolbert, M. A.; **Browne, E. C.**; The Influence of Gas-phase Chemistry on Organic Haze Formation, *Astrophys. J. Lett.*, 885(1), L6 (7pp), doi:10.3847/2041-8213/ab4b5b, 2019.
- 24\* **Browne, E. C.**; Zhang, X.; Franklin, J. P.; Ridley, K. B.; Kirchstetter, T. W.; Wilson, K. R.; Cappa, C. D.; Kroll, J. H. Effect of heterogeneous oxidative aging on light absorption by biomass-burning organic aerosol, *Aerosol Sci. Technol.*, 53(6), 663-674, doi:10.1080/02786826.2019.1599321, 2019.  
**\*\*Editorial Board Selection as a 2019 Notable Paper\*\***
- 23\* Berry, J. L.; Ugelow, M. S.; Tolbert, M. A.; **Browne, E. C.** Chemical Composition of Gas-Phase Positive Ions During Laboratory Simulations of Titan's Haze Formation, *ACS Earth and Space Chem.*, 3(2) 202-211, doi:10.1021/acsearthspacechem.8b00139, 2019.  
**\*\*Selected for inclusion in J Phys Chem A/ACS Earth and Space Chem Virtual Issue on Astrochemistry, ACS Earth and Space Chem, 3(11), 2372-2372, doi:10.1021/acsearthspacechem.9b00259, 2019.\*\***
- 22\* Berry, J. L.; Day, D. A.; Elseberg, T.; Palm, B. B.; Hu, W.; Abdelhamid, A.; Schroder, J. C.; Karst, U.; Jimenez, J. L.; **Browne, E. C.** Laser Ablation-Aerosol Mass Spectrometry-Chemical Ionization Mass Spectrometry for Ambient Surface Imaging, *Anal. Chem.*, 90(6), 4046-4053, doi:10.1021/acs.analchem.7b05255, 2018.

- 21 Lim, C. Y.; **Browne, E. C.**; Sugrue, R. A.; Kroll, J. H. Rapid heterogeneous oxidation of organic coatings on submicron aerosols, *Geophys. Res. Lett.*, 44, 2949-2957, doi:10.1002/2017GL072585, 2017.
- 20 Brune, W. H.; Baier, B. C.; Thomas, J.; Ren, X.; Cohen, R. C.; Pusede, S. E.; **Browne, E.**; Goldstein, A. H.; Gentner, D. R.; Keutsch, F. N.; Thornton, J.; Harrold, S.; Lopez-Hilfiker, F.; Wennberg, P. O. Ozone Production Chemistry in the Presence of Urban Plumes, *Faraday Discuss.*, 189, 169-189, doi:10.1039/C5FD00204D, 2016.
- 19 Pusede S. E.; VandenBoer T. C.; Murphy J. G.; Markovic M. Z.; Young C. J.; Veres P. R.; Roberts J. M.; Washenfelder R. A.; Brown S. S.; Ren X.; Tsai C.; Stutz J.; Brune W. H.; **Browne E. C.**; Wooldridge P. J.; Graham A. R.; Weber R.; Goldstein A. H.; Dusanter S.; Griffith S. M.; Stevens P. S.; Lefer B. L.; Cohen R. C.. An Atmospheric Constraint on the NO<sub>2</sub> Dependence of Daytime Near-Surface Nitrous Acid (HONO), *Environ. Sci. Tech.*, 49(21), 12774-81, doi:10.1021/acs.est.5b02511, 2015.
- 18 **Browne, E. C.**; Franklin, J. P.; Canagaratna, M. R.; Massoli, P.; Kirchstetter, T. W.; Worsnop, D. R.; Wilson, K. R.; Kroll, J. H. Changes to the chemical composition of soot from heterogeneous oxidation reactions, *J. Phys. Chem. A*, 119(7), 1154-1163, doi:10.1021/jp511507d, 2015.
- 17 Canagaratna, M. R.; Massoli, P.; **Browne, E. C.**; Franklin, J. P.; Wilson, K. R.; Onasch, T. B.; Kirchstetter, T. W.; Fortner, E. C.; Kolb, C. E.; Jayne, J. T.; Kroll, J. H.; Worsnop, D. R. Chemical compositions of black carbon particle cores and coatings via soot particle aerosol mass spectrometry with photoionization and electron ionization, *J. Phys. Chem. A*, 119(19), 4589–4599, doi: 10.1021/jp510711u, 2015.
- 16 VandenBoer, T. C.; Markovic, M. Z.; Sanders, J. E.; Ren, X.; Pusede, S. E.; **Browne, E. C.**; Cohen, R. C.; Zhang, L.; Thomas, J.; Brune, W. H.; Murphy, J. G. Evidence for a nitrous acid (HONO) reservoir at the ground surface in Bakersfield, CA, during CalNex 2010, *J. Geophys. Res, Atmos.*, 119(14), 9093-9106, doi:10.1002/2013JD020971, 2014.
- 15 Min, K.-E.; Pusede, S. E.; **Browne, E. C.**; LaFranchi, B. W.; Wooldridge, P. J.; Cohen, R. C. Eddy covariance fluxes and vertical concentration gradient measurements of NO and NO<sub>2</sub> over a ponderosa pine ecosystem: observational evidence for within-canopy removal of NO<sub>x</sub>, *Atmos. Chem. Phys.*, 14, 5495-5512, doi:10.5194/acp-14-5495-2014, 2014.
- 14 Pusede, S. E.; Gentner, D. R.; Wooldridge, P. J.; **Browne, E. C.**; *et al.*, On the temperature dependence of organic reactivity, nitrogen oxides, ozone production, and the impact of emission controls in San Joaquin Valley California, *Atmos. Chem. Phys.*, 14, 3373-3395, doi:10.5194/acp-14-3373-2014, 2014.
- 13 **Browne, E. C.**; Wooldridge, P. J.; Min, K.-E.; Cohen, R. C. On the role of monoterpene chemistry in the remote continental boundary layer, *Atmos. Chem. Phys.*, 14, 1225-1238, doi:10.5194/acp-14-1225-2014, 2014.
- 12 Worton, D. R.; Surratt, J. D.; LaFranchi, B. W.; Chan, A. W. H.; Zhao, Y.; Weber, R. J.; Park, J.-H.; Gilman, J. B.; de Gouw, J.; Park, C.; Schade, G.; Beaver, M.; St. Clair, J. M.; Crouse, J.; Wennberg, P.; Wolfe, G. M.; Harrold, S.; Thornton, J. A.; Farmer, D. K.; Docherty, K. S.; Cubison, M. J.; Jimenez, J. L.; Frossard, A. A.; Russell, L. M.; Kristensen, K.; Glasius, M.; Mao, J.; Ren, X.; Brune, W.; **Browne, E. C.**; Pusede, S. E.; Cohen, R. C.; Seinfeld, J. H.; Goldstein, A. H. Observational insights into high- and low-NO<sub>x</sub> aerosol formation from isoprene, *Environ. Sci. Tech.*, 47(20), 11403–11413, doi:10.1021/es4011064, 2013.

- 11 **Browne, E. C.**; Min, K.-E.; Wooldridge, P. J.; Apel, E.; Blake, D. R.; Brune, W. H.; Cantrell, C. A.; Cubison, M. J.; Diskin, G. S.; Jimenez, J. L.; Weinheimer, A. J.; Wennberg, P. O.; Wisthaler, A.; Cohen, R. C.; Observations of total RONO<sub>2</sub> over the boreal forest: NO<sub>x</sub> sinks and HNO<sub>3</sub> sources, *Atmos. Chem. Phys.*, 13, 4543-4562, doi:10.5194/acp-13-4543-2013, 2013.
- 10 Rollins, A. W.; **Browne, E. C.**; Min, K.-E.; Pusede, S. E.; Wooldridge, P. J.; Gentner, D. R.; Goldstein, A. H.; Liu, S.; Day, D. A.; Russell, L. M.; Cohen, R. C. Evidence for NO<sub>x</sub> control over nighttime SOA formation, *Science*, 337, doi:10.1126/science.1221520, 1210-1212, 2012.
- 9 **Browne, E. C.**; Cohen, R.C. Effects of biogenic nitrate chemistry on the NO<sub>x</sub> lifetime in remote continental regions, *Atmos. Chem. Phys.*, 12, 11917-11932, doi:10.5194/acp-12-11917-2012, 2012.
- 8 Min, K.-E.; Pusede, S. E.; **Browne, E. C.**; *et al.* Observations of atmosphere-biosphere exchange of total and speciated peroxy nitrates: nitrogen fluxes and biogenic sources of peroxy nitrates, *Atmos. Chem. Phys.*, 12, 9763-9773, doi:10.5194/acp-12-9763-2012, 2012.
- 7 Ren, X.; Sanders, J. E.; Rajendran, A.; Weber, R. J.; Goldstein, A. H.; Pusede, S. E.; **Browne, E. C.**; Min, K.-E.; Cohen, R. C. A relaxed eddy accumulation system for measuring vertical fluxes of nitrous acid, *Atmos. Meas. Tech.*, 4, 2093-2103, doi:10.5194/amt-4-2093-2011, 2011.
- 6 Russell, A. R.; Perring, A. E.; Valin, L. C.; Hudman, R. C.; **Browne, E. C.**; Min, K.-E.; Wooldridge, P. J.; Cohen, R. C. A high spatial resolution retrieval of NO<sub>2</sub> column densities from OMI: Method and Evaluation, *Atmos. Chem. Phys.*, 11, 8543-8554, doi:10.5194/acp-11-8543-2011, 2011.
- 5 **Browne, E. C.**; Perring, A. E.; Wooldridge, P. J.; Apel, E.; Hall, S. R.; Huey, L. G.; Mao, J.; Spencer, K. M.; St. Clair, J. M.; Weinheimer, A. J.; Wisthaler, A.; Cohen, R. C. Global and regional effects of the photochemistry of CH<sub>3</sub>O<sub>2</sub>NO<sub>2</sub>: Evidence from ARCTAS, *Atmos. Chem. Phys.*, 11, 4209-4219, doi:10.5194/acp-11-4209-2011, 2011.
- 4 Wolfe, G. M.; Thornton, J. A.; Bouvier-Brown, N. C.; Goldstein, A. H.; Park, J.-H.; McKay, M.; Matross, D. M.; Mao, J.; Brune, W. H.; LaFranchi, B. W.; **Browne, E. C.**; *et al.* The Chemistry of Atmosphere-Forest Exchange (CAFE) Model, Part II: Application to BEARPEX-2007 observations, *Atmos. Chem. Phys.*, 11, 1269-1294, doi:10.5194/acp-11-1269-2011, 2011.
- 3 Alvarado, M. J.; Logan, J. A.; Mao, J.; Apel, E.; Riemer, D.; Blake, D.; Cohen, R. C.; Min, K.-E.; Perring, A. E.; **Browne, E. C.**; *et al.* NO<sub>x</sub> and PAN in boreal fire smoke plumes observed during ARCTAS-B and their impact on Arctic ozone: an integrated analysis of aircraft and satellite observations, *Atmos. Chem. Phys.*, 10, 9739-9760, doi:10.5194/acp-10-9739-2010, 2010.
- 2 Ren, X.; Gao, H.; Zhou, X.; Crouse, J. D.; Wennberg, P. O.; **Browne, E. C.**; LaFranchi, B. W.; Cohen, R. C.; McKay, M.; Goldstein, A. H.; Mao, J. Measurement of atmospheric nitrous acid at Blodgett Forest during BEARPEX2007, *Atmos. Chem. Phys.*, 10, 6283-6294, doi:10.5194/acp-10-6283-2010, 2010.
- 1 LaFranchi, B. W.; Wolfe, G. M.; Thornton, J. A.; Harrold, S. A.; **Browne, E. C.**; *et al.* Closing the peroxy acetyl nitrate budget: Observations of acyl peroxy nitrates (PAN, PPN, and MPAN) during BEARPEX 2007, *Atmos. Chem. Phys.*, 9, 7623-7641, doi:10.5194/acp-9-7623-2009, 2009.

#### **Reports** (not peer reviewed)

- 1 Smith, J., Stark, H., **Browne, E.**, Hanson D.: HI-SCALE Nanoparticle Composition and Precursors Field Campaign Report, DOE/SC-ARM-17-023, June 2017.