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Education

- **Massachusetts Institute of Technology (MIT)** Cambridge, MA
PhD Candidate, Atmospheric Science (expected late 2018) September 2013 - present
 - Proposed Thesis (Advisor: Prof. Ron Prinn): Insights into the Global Nitrous Oxide Budget using Isotopic Ratio Observations and a Bayesian Inverse Framework
 - Selected Coursework: Experimental Atmospheric Chemistry, Fluid Dynamics, Atmospheric Dynamics, Aerosol/Cloud Microphysics and Chemistry, Leading Creative Teams
- **Carleton College** Northfield, MN
*Bachelor of Arts, **summa cum laude**, Chemistry* September 2009 - June 2013
 - Distinction Honors in Chemistry; minor in Women's and Gender Studies (Honors); Phi Beta Kappa
 - Selected Coursework: Environmental Analysis, Lasers and Spectroscopy, Spectroscopic Characterization, Simulations of Complex Physical Systems, Analytical Chemistry Instrumentation

Research Experience

- **Massachusetts Institute of Technology (Cambridge, MA)**
Department of Earth, Atmospheric, and Planetary Sciences with Prof. Ron Prinn
Nitrous Oxide Isotopic Ratio Measurement and Modeling 2013 - Present
 - Operate and remotely manage Stheno-TILDAS laser spectroscopy instrument in Ireland
 - Determine sources and transport of nitrous oxide (N_2O) using chemical transport models
 - Collaborate with policy researchers at MIT Center for Global Change Science
 - Utilize NASA Center for Climate Simulation resources to support modeling efforts
- **Department of Earth, Atmospheric, and Planetary Sciences** with Prof. Dan Cziczo
Ice Cloud Formation on Mars by Deposition Ice Nucleation 2014 - 2015
 - Conducted single-particle cloud freezing experiments on Martian dust analogues (Arizona Test Dust and Mojave Martian Simulant) using an electrodynamic balance (EDB) instrument
 - Explored humidity/temperature conditions conducive to deposition ice nucleation on Mars
- **NASA Goddard Space Flight Center (GSFC) (Greenbelt, MD)**
Climate and Radiation Laboratory (Code 613) with Dr. Charles Ichoku
Aerosol Chemistry and Remote Sensing in West Africa Summer 2016
 - Completed intensive summer school in Python, FORTRAN, parallel processing, and high-performance computing as part of the ACES (Advanced Computing in Earth Sciences) program
 - Developed an initial plan for flight-based measurements of air quality in West Africa
 - Synthesized meteorological data (MERRA), ground-based measurements (AERONET), and satellite retrievals (CALIPSO, MODIS) in order to estimate measurements on co-located sample flight tracks
- **Carleton College (Northfield, MN)**
Department of Chemistry with Prof. Deborah Gross
Indoor Air Quality and Aerosol Chemistry 2011 - 2013
 - Identified potential interactions between household air pollutants using an Aerosol Time-of-Flight Mass Spectrometer (ATOFMS)
 - Synthesized chemically modified samples of beta-cyclodextrin for use in ESI-MS, UV-Vis spectrophotometry, and HPLC studies of equilibrium inclusion of air pollutants into cyclodextrin
 - Examined public health concerns associated with indoor air quality by simulating indoor pollution

Department of Chemistry

Development of Inorganic Synthesis and Spectroscopy Laboratory

with Prof. Marion Cass
2012 - 2013

- Developed new experimental procedure for synthesis of cobalt coordination complexes (including cobalt dinitrosarcophagine, Co[diNOsar]) for an undergraduate teaching laboratory
- Received distinction in senior thesis for development of a new teaching laboratory
- Reported new procedure in the *Journal of Chemical Education* (citation below)

Department of Chemistry

Structural Determination of Molybdenum Coordination Complexes

with Prof. Matt Whited
2012

- Synthesized one novel molybdenum coordination complex in an inert-atmosphere glove box
- Analyzed the crystalline structure of the complex using X-ray crystallography with collaborating group at the University of Minnesota
- Reported structure in *Acta Crystallographica E* (citation below)

Peer-Reviewed Publications

McClellan, M. J. and M. E. Cass. Improved Syntheses and Expanded Analyses of the Enantiomerically Enriched Chiral Cobalt Complexes Co(en)₃I₃ and Co(diNOsar)Br₃. *J. Chem. Educ.* **2015**, 92 (10), 1766-1770.

Whited, M. T.; Boerma, J. E.; **McClellan, M. J.**; Padilla, C. E.; Janzen, D. E., trans-Acetyldicarbonyl-(η^5 -cyclopenta dienyl)-(methyl-diphenylphosphine)-molybdenum(II). *Acta Cryst.* **2012**, E68, m1158.

Selected Presentations with Published Abstracts

McClellan, M. J.; Ono, S.; Saikawa, E.; Prinn, R. G. Analysis of High-Frequency Site-Specific Nitrogen and Oxygen Isotopic Composition of Atmospheric Nitrous Oxide at Mace Head, Ireland. Poster at American Geophysical Union Fall Meeting, San Francisco, CA, December 2015. **Outstanding Student Presentation Award (awarded to top 3-5% of all presentations in each section).**

McClellan, M. J.; Harris, E. J.; Olszewski, W.; Ono, S.; Prinn, R. G. Measurement and Modeling of Site-Specific Nitrogen and Oxygen Isotopic Composition of Atmospheric Nitrous Oxide at Mace Head, Ireland. Talk and Poster at American Chemical Society Fall Meeting, Boston, MA, August 2015. **Selected for Sci-Mix poster session; invitation to ~10% of abstracts in Physical Chemistry section.**

McClellan, M. J.; Gross, D. S. After the Spray: Investigating the Fate of Particles from Cyclodextrin-Containing Air Fresheners. Oral presentation at the Minnesota Academy of Sciences Research Symposium, Minneapolis, MN, April 2013. **Award for Outstanding Student Presentation.**

Leadership Experience

• Graduate Student Council (GSC), MIT

President (elected, 2015-2016); University Liaison (2016-present) 2014 - Present

- Advocated on behalf of 6800 graduate students in order to improve the overall student experience
- Created a budget of over \$600,000 including personal direct oversight of \$80,000
- Negotiated and drafted a contract to establish a student career fair with over \$1M revenue
- Developed new MIT-wide end-of-semester assessment for graduate students to provide feedback on experience with research and academic advising
- Shared best practices with members of National Association of Graduate-Professional Students
- Serve as inaugural University Liaison of the newly-formed GSC External Affairs Board
- Provide guidance to newly-elected Executive Committee as the Immediate Past President

• Carleton Student Association (CSA), Carleton College

President (elected, 2012-2013); Multicultural Communities Senator (elected, 2011-2012) 2011 - 2013

- Represented interests of 2000 students on key college-wide steering committees
- Directed \$500,000 in funding to student groups for enrichment of the campus community
- Solicited campus-wide feedback on major policy changes and produced CSA Presidential Reports to be delivered to the President of the College and Cabinet
- Represented the Gender and Sexuality Center (GSC), the Office of Intercultural and International Life (OUIL), and interests of low-income and first-generation students (TRIO) as elected Senator

Teaching Experience

- **Massachusetts Institute of Technology (Cambridge, MA)**

Department of Earth, Atmospheric, and Planetary Sciences

with Prof. Ron Prinn

12.335/12.835: Experimental Atmospheric Chemistry

2015 - Present

- Teach laboratory and field measurement campaign portions of the course
- Instruct students in the use of MATLAB to analyze data from chemical instruments and meteorology

- **Carleton College (Northfield, MN)**

Department of Chemistry

with Prof. Marion Cass

CHEM 351: Laboratory in Advanced Inorganic Chemistry

2012 - 2013

- Developed new laboratory procedure, published in the *Journal of Chemical Education* in 2015
- Instructed students in NMR and circular dichroism spectroscopic analysis
- Graded and provided feedback on student oral presentations and laboratory reports

Awards

John Mather Nobel Scholar, NASA GSFC (Outstanding Intern; \$3000 for Conference Travel)	2016-2019
Outstanding Student Paper Award, AGU (Top 3-5% of student presentations; \$150)	2015
Jule Charney Prize, MIT (Outstanding incoming student in MIT EAPS Department; \$12,000)	2013-2016
Rasmussen Foundation Endowed Fellowship (outstanding first-year student in MIT EAPS Department)	2013
Lawrence McKinley Gould Prize, Carleton College (excellence in scientific research and humanities)	2013
American Chemical Society Undergraduate Award for Analytical Chemistry, Carleton College	2012

Professional Affiliations

American Chemical Society (ACS)

American Geophysical Union (AGU)

American Meteorological Society (AMS)

National Association of Graduate-Professional Students (NAGPS)

National Organization of Gay and Lesbian Scientists and Technical Professionals (NOGLSTP)

American Association for Aerosol Research (AAAR)

Skills

Computer Languages (most to least familiarity): Python, MATLAB, bash, FORTRAN, R

Analytical Instrumentation: Mass Spectrometry (Quadrupole, Time-of-Flight, Ion Trap), Gas/Liquid Chromatography, Laser Absorption Spectroscopy, Electrospray and Laser Desorption Ionization, UV-Visible Spectrophotometry and Fluorescence, Nuclear Magnetic Resonance (NMR) Spectroscopy, Optical Polarimetry and Circular Dichroism Spectroscopy, Aerosol Particle Sizing Spectrometry

Computer Applications: Microsoft Office, L^AT_EX, MATLAB, Mathematica, Adobe Illustrator, GitHub

Additional Research Interests: Baseball analytics (with Prof. Peko (Anette) Hosoi at MIT), air pollution and public policy, student visa policy in the United States