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Michael J. Radke

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Education

Ph.D. **Johns Hopkins University, Baltimore, MD** 2023
Earth and Planetary Sciences, Owen Scholars Fellow
Advisor: Sarah M. Hörst, Ph.D.
Dissertation: *Mass Spectrometry of the Atmosphere of Venus*

M.A. **Johns Hopkins University, Baltimore, MD** 2018
Earth and Planetary Sciences, Owen Scholars Fellow

B.S. **Case Western Reserve University, Cleveland, OH** 2016
Geological Sciences, *cum laude*
Advisors: Nathan S. Jacobson, Ph.D. - NASA Glenn Research Center
Ralph P. Harvey, Ph.D. - Case Western Reserve University
Thesis: *Simulation of Molecular Flow in a Mass Spectrometer Sampling System*

Employment History and Research Experience

Johns Hopkins University 2023–Present
Postdoctoral Fellow

Johns Hopkins University 2016–2023
Graduate Research Assistant
Laboratory photochemistry experiments of planetary atmospheres
FTIR and UV-Vis spectroscopy of geologic and atmospheric materials
Mass spectrometry of planetary atmospheres, modeling and laboratory work

NASA Glenn Research Center 2015–2016
Undergraduate Intern
Laboratory studies of Venus surface-atmosphere chemistry
Modelling of Knudsen cell mass spectrometer sampling system

First-Author Publications

Radke, M.J., Jacobson, N.S., and E.S. Copland. "Monte Carlo Simulation of a Knudsen Effusion Mass Spectrometer Sampling System." *Rapid Communications in Mass Spectrometry*. 31(12), 1041–1046. 2017. https://doi.org/10.1002/rcm.7873

Other Refereed Publications

Accepted for Publication:

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Published:

He, C., **Radke, M.J.**, Moran, S.E., Hörst, S.M., Lewis, N.K., Moses, J.I., Marley, M.S., Kempton, E.M.R., Morley, C.V., Valenti, J.A., and V. Vuitton. "Optical Properties of Organic Hazes in Water-rich Exoplanet Atmospheres: Implications for Observations with JWST." *Nature Astronomy*. https://doi.org/10.1038/s41550-023-02140-4

He, C., Serigano, J., Hörst, S.M., **Radke, M.J.**, and J.A. Sebree. "Titan Atmospheric Chemistry Revealed by Low-temperature N_2-CH_4 Plasma Discharge Experiments." *ACS Earth and Space Chemistry*. https://doi.org/10.1021/acsearthspacechem.2c00164

Serigano, J., Hörst, S.M, He, C., Gautier, T., Yelle, R., Koskinen, T., Trainer, M.G., and **M.J. Radke**. "Compositional Measurements of Saturn's Upper Atmosphere and Rings from Cassini INMS: An Extended Analysis of Measurements from Cassini's Grand Finale Orbits." *Journal of Geophysical Research: Planets*. https://doi.org/10.1029/2022JE007238

Moran, S.E., Hörst, S.M, He, C., **Radke, M.J.**, Sebree, J., Izenberg, N., Vuitton, V., Flandinet, L., Orthous-Daunay, F., and C. Wolters. "Triton Haze Analogues: The Role of Carbon Monoxide in Haze Formation." *Journal of Geophysical Research: Planets*. 127(1). 2022. https://doi.org/10.1029/2021JE006984

He, C., Hörst, S.M, **Radke, M.J.**, and M.H. Yant. "Optical Constants of a Titan Haze Analogue from 0.4 to 3.5 μm Determined Using Vacuum Spectroscopy." *Planetary Science Journal*. 3(25). 2022. https://doi.org/10.3847/PSJ/ac4793

Invited Seminars and Colloquia

VEXAG Second Planet Second Tuesdays (virtual) May 2022
Viewing the Vexatious Veil of Venus: A Veritable Variety of Very Vile Vapors

University of California, Santa Cruz, OWL Planetary Lunch. (virtual) Nov 2021
Phosphine on Venus? Perspectives from the Pioneer Probe

Conference Presentations

Radke, M.J. , Hörst, S.M., and C. He. "Optical properties of Venus aerosol analogues" Venus Surface and Atmosphere Conference. Houston, TX (presented virtually). 2023.

Radke, M.J. , Hörst, S.M. "Unit-resolution mass spectrometry of the atmosphere of Venus." AGU Fall Meeting. Chicago, IL. 2022.

Radke, M.J. , Hörst, S.M. "Unit-resolution mass spectrometry of the atmosphere of Venus." VEXAG Meeting #20. Albuquerque, NM. 2022.

Radke, M.J. , Hörst, S.M., and C. He. "Infrared optical properties of aqueous inorganic acids." Exoplanets in our Backyard 2. Albuquerque, NM. 2022.

Radke, M.J., Hörst, S.M., Serigano, J., He, C., and Trainer, M.G. "Reanalysis of the Pioneer Venus Large Probe Mass Spectrometer Data." AGU Fall Meeting. New Orleans, LA. 2021.

Radke, M.J., Hörst, S.M., Serigano, J., He, C., and Trainer, M.G. "Reanalysis of the Pioneer Venus Large Probe Mass Spectrometer Data." VEXAG Meeting #19. Virtual. 2021.

Moran, S.E., Hörst, S.M., He, C., **Radke, M.J.**, Sebree, J., Izenberg, N., Vuitton, V., Flandinet, L., Orthous-Daunay, F-R., and C. Wolters. "Triton's Haze Properties and the Role of Carbon Monoxide in Haze Formation from the Laboratory." AGU Fall Meeting. New Orleans, LA. 2021.

Moran, S.E., Hörst, S.M., He, C., **Radke, M.J.**, Sebree, J., Izenberg, N., Vuitton, V., Flandinet, L., Orthous-Daunay, F-R., and C. Wolters. "Triton's Haze Properties as Characterized in the Lab." AGU Fall Meeting. San Francisco, CA. 2020.

Radke, M.J., Hörst, S.M., He, C., and M.H. Yant. "Optical properties of sulfuric acid." Exoplanets in Our Backyard. Houston, TX. 2020.

Radke, M.J., Hörst, S.M., He, C., and M.H. Yant. "Optical properties of sulfuric acid." VEXAG Meeting #17. Boulder, CO. 2019.

Radke, M.J., Hörst, S.M., He, C., and M.H. Yant. "Optical properties of Venus aerosol analogues." EPSC-DPS Joint Meeting. Geneva, Switzerland. 2019.

Radke, M.J., Hörst, S.M., He, C., and M.H. Yant. "Optical properties of Venus aerosol analogues." International Venus Conference. Niseko, Japan. 2019.

Radke, M.J., Hörst, S.M., He, C., and M.H. Yant. "Laboratory investigations of Venus aerosol analogs." DPS Meeting #50, Knoxville, TN. 2018.

Radke, M.J., Jacobson, N.S., and R.P. Harvey. "Monte Carlo Simulation of Molecular Flow in a Knudsen Effusion Mass Spectrometer." CWRU Research ShowCASE. Cleveland, OH. 2016.

Teaching Experience

Johns Hopkins University

Guest Lecture – AS.270.129 – A Modern History of Climate Science	Fall 2023
Guest Lecture – AS.270.129 – The Grandeur of You & The Universe	Spring 2022
Teaching Assistant – AS.271.114 – Guided Tour: The Planets	Spring 2021
Teaching Assistant – AS.360.339 – Planets, Life, and the Universe	Fall 2020
Teaching Assistant – AS.271.114 – Guided Tour: The Planets	Spring 2020
Teaching Assistant – AS.271.107 – Introduction to Sustainability	Spring 2019
Teaching Assistant – AS.270.125 – People and the Earth	Fall 2018

Honors and Awards

Venus Surface and Atmosphere Conference Poster Award Feb 2023

Future Investigators in NASA Earth and Space Science and Technology 2021-2023
National Aeronautics and Space Administration
$90k total, two years

Owen Scholars Fellowship 2016-2019
JHU Krieger School of Arts and Sciences
$18k total, three years

Camp Davis Field Geologist Award 2016
University of Michigan Department of Earth and Environmental Sciences

Philip O. Banks Award for Outstanding Academic Achievement 2016
CWRU Department of Earth, Environmental, and Planetary Science

Key Coursework

Johns Hopkins University

AS.270.630 – Physics and Chemistry of Aerosols

AS.030.402 – Experimental Methods in Physical Chemistry

University of Michigan

EARTH 440/441 – Geology Field Course

Case Western Reserve University

CHEM 310 – Foundations of Analytical Chemistry

CHEM 304 – Quantitative Analysis Lab

CHEM 305 – Physical Chemistry Lab

Professional Affiliations

American Geophysical Union

American Astronomical Society

Division for Planetary Sciences of the American Astronomical Society

Outreach

Case Western Reserve University Geological Society 2014
Co-founder

Press

Room (web) Sep 2020