

Edward W. Schwieterman

CURRICULUM VITAE

Mailing Address

Department of Earth and Planetary Sciences
University of California, Riverside
Riverside, CA 92521

Contact Information

Email: eschwiet@ucr.edu
Website: eddieschwieterman.com

Current Position: Assistant Professor of Astrobiology
(2020 - Present) University of California, Riverside (UCR)
Department of Earth and Planetary Sciences

Education:

- 2010-09 – 2016-08** University of Washington (UW)
Ph.D., Astronomy & Astrobiology
Thesis Advisor: Dr. Victoria Meadows
- 2010-09 – 2011-08** University of Washington (UW)
M.Sc., Astronomy
- 2006-08 – 2010-05** Florida Institute of Technology (FIT)
B.Sc., Astronomy & Astrophysics, *Magna Cum Laude*, May 2010
B.Sc., Physics, *Magna Cum Laude*, May 2010

Other Professional Experience

- 2019-2020. Postdoctoral Fellow, Georgia Institute of Technology (GT)
- 2015-present. Affiliate Research Scientist, Blue Marble Space Institute of Science (BMSIS)
- 2016-2019. NASA Postdoctoral Fellow, University of California, Riverside
- 2010-2016. Graduate Research & Teaching Assistant, University of Washington

Selected High Impact & Recent First-Author Publications—See below for full pub list ([Google Scholar](#) h-index=29; N_{cite}=3231; *includes a (co-)advised student (co-)author)

- *Schwieterman, E. W., Olson, S. L., Pidhorodetska, D., et al. 2022. Evaluating the Plausible Range of N₂O Biosignatures on Exo-Earths: An Integrated Biogeochemical, Photochemical, and Spectral Modeling Approach. *The Astrophysical Journal*, 937(2), 109. [cited: 2]
- *Schwieterman, E.W. et al. 2018. Exoplanet Biosignatures: A Review of Remotely Detectable Signs of Life. *Astrobiology*, 18(6), 663-708. [cited: 414]
- *Schwieterman, E. W., Reinhard, C. T., Olson, S. L., Harman, C.E., Lyons, T.W. 2019b. A limited habitable zone for complex life. *The Astrophysical Journal*, 878, 19. [cited: 46]
- *Schwieterman, E.W., Reinhard, C.T., Olson, S., et al. 2019a. Rethinking CO antibiosignatures in the search for life beyond the solar system. *The Astrophysical Journal*, 874, 9. [cited: 30]
- Schwieterman, E.W., Meadows, V.S., et al. 2016. Identifying Planetary Biosignature Impostors: Spectral Features of CO and O₄ Resulting from Abiotic O₂/O₃ Production. *ApJL*, 819: L13 [cited: 114]
- Schwieterman, E.W., et al. 2015. Detecting and Constraining N₂ Abundances in Planetary Atmospheres Using Collisional Pairs. *The Astrophysical Journal* 810, 57. [cited: 83]
- Schwieterman, E.W., Cockell, C.S., Meadows, V.S., 2015. Nonphotosynthetic Pigments as Potential Biosignatures. *Astrobiology* 15, 341–361. [cited: 72]

Extramural Grant Activity [*PI; +Institutional PI or lead/sole UCR Co-PI]

- 2023-2028⁺. NASA ICAR Program. *Strange New Worlds: Characterizing Nearby M-dwarf Habitable Zone Planets* | Co-Investigator | Total: \$4.96M | To UCR: \$270K.
- 2023-2028⁺. NASA ICAR Program. *The Virtual Planetary Laboratory: Advancing the Search for Life on Exoplanets* | Inst. Co-Investigator | Total: \$7.67M | To UCR: \$164K.
- 2023-2025⁺. NASA Exoplanet Research Program. *Estimating pi with PIE: Constraining the Population Proportion of M-Dwarf Planetary Atmospheres with Planetary Infrared Excess* | Co-Investigator | Total: \$561K | To UCR: \$51K.
- 2023-2025⁺. NASA Exoplanet Research Program. *Assessing Atmospheric Impacts of X-ray and UV Irradiation on Earth-like Planets in Directly Imageable Habitable Zones* | Inst. Co-Investigator/Deputy PI | Total: \$735K | To UCR: \$217K.
- 2022-2024*. Kavli Foundation / Scialog Search for Life in the Universe. *Methylated Organometallic Gases as Potential Biosignatures* | Principal Investigator | Total: \$55K.
- 2022-2025*. NASA FINESST. *High CO₂ Climates and Observables in the Outer Habitable Zone* | Principal Investigator | Total: \$150K | Future Investigator: [D. Pidhorodetska](#)
- 2022-2024*. NASA Exoplanets Research Program. *Experimental Constraints for Improving Terrestrial Exoplanet Models* (ExCITE-PM) | Principal Investigator | Science PI: Sukrit Ranjan | Total: \$677K.
- 2021-2024. NASA Habitable Worlds. *Venus as an Exoplanet Laboratory: Testing the Boundaries of Habitability* | Collaborator | Principal Investigator: Stephen Kane.
- 2021-2023*. UC MEXUS-CONACYT. *Early Earth as an exoplanet: The impact of stellar flares on atmospheric chemistry and remote signatures* | Principal Investigator | Total \$6.2K.
- 2020-2025. NASA ICAR. *Alternative Earths: How to Build a Detectable Biosphere* | Co-Investigator and Task Lead | Total: \$4.6M.
- 2020-2023⁺. NASA ICAR. *The M Dwarf Opportunity* | Inst. Co-I | Total: \$1.6M | To UCR: \$150K.
- 2019-2023⁺. NASA Exobiology. *Atmospheric Seasonality as a Biosignature* | Institutional Co-Investigator, Co-Lead | Total: \$450K | To UCR: \$208K.
- 2018-2020⁺. NASA Exobiology. *Back to Basics: Assessing Earth's Atmospheric Biosignatures from Space and Across Time* | Co-Investigator | Total: \$467K. | To UCR: \$22K.
- 2018-2023. NASA NExSS The Virtual Planetary Laboratory (Co-I; ~\$11M)
- 2016-2019. NASA Postdoctoral Program Fellowship (~\$210K)
- 2016-2017*. NASA Astrobiology Institute Director's Discretionary Fund (PI; \$46K)
2015. Kenilworth Foundation Grant for the UW Pre-Major in Astronomy Program (\$16.5K)
2015. UW Student Technology Fee (STF) Grant, Planetarium Upgrade (Co-I; \$47K)
2015. UW STF Grant, Manastash Ridge Observatory Imaging Camera (Co-I; \$37K)
- 2011-2015. UW GPSS grants for graduate student improvements (\$1.5K total)
2013. American Philosophical Society Lewis and Clark Fund for Research (PI; \$4K)

Honors, Awards, and Fellowships

- 2020-2023. Scialog Signatures of Life in the Universe Fellow
Research Corporation for Science Advancement/Heising-Simons Foundation
- 2016-2019. NASA Postdoctoral Program Fellowship

Departmental and University Service (UCR)

Chair, Scholarship Committee, Earth and Planetary Sciences, 2022-Present
 Member, Scholarship Committee, Earth and Planetary Sciences, 2020-Present
 Member, Earth and Planetary Sciences Ad-hoc Curriculum Revision, 2021-2023
 Member, Departmental Strategic Planning Committee, 2021
 Member, Admission Rubric Revisions Ad Hoc Committee, 2020

Professional Service and Synergistic Activities

2016 - 2023. Referee for peer-reviewed journals including *Nature Astronomy*, *Nature Communications*, *Royal Society Open Science*, *Astrobiology*, *The Astronomical Journal (AJ)*, *The Astrophysical Journal (ApJ)*, *Monthly Notices of the Royal Astronomical Society (MNRAS)*, the *International Journal of Astrobiology (IJA)*, the *Journal of Astronomical Telescopes, Instruments, and Systems (JATIS)*, *Acta Astronautica*, and *Scientific Reports*. Typically, ~6-8 per year.
 2023, 2022, 2021, 2020, 2019, 2018. Panelist for multiple NASA programs, including Exoplanet Research Program (XRP), Habitable Worlds, Exobiology, and the NPP Program. Typically, ~2-3 per year.
 2022. Session convener and chair, Astrobiology Science Conference 2022 (Atlanta, GA)
 2021. Session chair, American Astronomical Society Meeting #237 (Virtual)
 2021. Exobiology Biosignature Standards of Evidence Organizing Committee (Virtual)
 2020. Local Organizing Committee Member, Exoplanets in Southern California (Riverside, CA)
 2019. Session convener and chair, Astrobiology Science Conference 2019 (Bellevue, WA)
 2018. Session convener and chair, Goldschmidt geochemistry conference (Boston, MA)
 2017. Session convener, Astrobiology Science Conference, Mesa, AZ
 2016-2018. NExSS Workshop on Exoplanet Biosignatures, Review Paper Lead 2017
 Reviewer, Lewis & Clark Fund for Field Research in Astrobiology
 2015-2016. Student Technology Fee Committee (UW; \$5 million/year fund)
 2015. Executive Secretary, NASA Solar System Workings Panel
 2010-2015. Senator, Graduate and Professional Student Senate (GPSS), University of Washington
GPSS Committees: Executive (2014-2015), Finance & Budget (2012-2014; Chair: 2012- 2013), Elections (2014, 2015), STF Oversight (2015), Judiciary (2010-2011)

Selected Scientific Talks and Panels

2023. Schwieterman, E. "Prospects for Biosignatures." Sagan Summer Workshop 2023: Characterizing Exoplanet Atmospheres: The Next Twenty Years. Pasadena, CA. July 28, 2023. [Invited]
 2023. Schwieterman, E. "Exoplanet Biosignatures: The Search for Life on Other Worlds—CH₄, N₂O, and halomethanes." Sellers Exoplanet Environments Collaboration Exoplanets Seminar Series. Goddard Space Flight Center. June 15, 2023. [Invited]
 2023. Schwieterman, E. "Beyond the Pale Blue Dot: The Search for Life on Exoplanets." AGENASTRO Third International Astrobiology Congress. Virtual Presentation April 16, 2023. [Invited, Remote]
 2022. Schwieterman, E. "Evaluating Maximum Plausible N₂O Biosignatures on ExoEarths orbiting FGKM Stars," American Astronomical Society #241. Pasadena, CA. June 14, 2022. id. 234.02.
 2022. Schwieterman, E. "Uncertainties in the Detection of Venus Phosphine and its Potential Connection to Life," The Venus Dialogues: Getting to Know Our Neighbor - Progress and Prospects in a New Generation of Venus Research. AbSciCon. Atlanta, Georgia. May 20, 2022. [Invited]
 2022. Schwieterman, E. "Remote Detection of Habitable Conditions and Life on Exoplanets," PCE3 Showcase. Astrobiology Science Conference. Atlanta, Georgia. May 19, 2022.
 2022. Schwieterman, E. "Biosignature Assessment Framework: Detecting Exoplanetary Oxygen," Biosignature Assessment Framework Townhall. Astrobiology Science Conference. Atlanta, Georgia. May 17, 2022. [Invited]
 2022. Schwieterman, E. "Evaluating Maximum Plausible N₂O Biosignatures on ExoEarths," Astrobiology

- Science Conference. Atlanta, Georgia. May 17, 2022.
2022. Schwieterman, E. “Exploring Novel (and traditional) Biosignatures & Technosignatures,” BMSIS Symposium. Blue Marble Space Institute of Science. Atlanta, GA. May 15, 2022.
2022. Schwieterman, E. “Exoplanetary Oxygen as a Biosignature Standards of Evidence Worked Example,” The Biosignature Standards of Evidence Workshop Outcomes and Assessment Framework hosted by NASA’s Network for Life Detection (NFoLD). Virtual. March 29, 2022. [Invited]
2021. Schwieterman, E. “Challenges for Advanced Life in the Habitable Zone and Implications for Technosignatures,” Technosignatures Seminar hosted by NASA Goddard Space Flight Center / Sellers Exoplanet Environments Collaboration. Virtual. September 8, 2021. [Invited]
2021. Schwieterman, E. Panel on “Exoplanets and Unifying Space,” Robert H. Goddard Symposium hosted by the American Astronautical Society. Panelist. Virtual. May 6, 2021. [Invited]
2021. Schwieterman, E. “Evaluating Methane as an Exoplanet Biosignature,” Habitable Worlds Conference contributed short talk. Virtual. Feb. 25, 2021.
2021. Schwieterman, E. “Panel on Biosignature Science” Habitable Worlds Conference, panelist. Virtual. Feb. 24, 2021. [Invited]
2021. Schwieterman, E. “Challenges for Advanced Life in the Habitable Zone” University of Rochester. Physics and Astronomy colloquium. Feb. 8, 2021. [Invited].
2021. Schwieterman, E. Evaluating Methane as a Biosignature on Habitable Anoxic Planets Orbiting FGKM Stars. American Astronomical Society Meeting #237. id. 505.06.
2020. Schwieterman, E. “Planetary Astrobiology: Modeling Habitable Planets and Remote Biosignatures.” UCR EPS Department Seminar. Nov. 9, 2020.
2020. Schwieterman, E. “Primer on Stellar Evolution.” Pre-biotic Chemistry and Early Earth Environments (PCE) NASA RCN Workshop. Oct. 2, 2020. [Invited].
2020. Schwieterman, E. Chemical consequences of high CO₂ on temperate terrestrial planets in the habitable zone. American Astronomical Society Meeting #235. id. 126.08.
2019. “Alternative Earths Through Time and Space” University of Bern, Switzerland.
Center for Space and Habitability colloquium. Bern, Switzerland. Nov. 20, 2019. [Invited]
2019. Schwieterman, E. “Exoplanet Biosignatures”. Frontiers in Biosignatures Plenary Session. Astrobiology Science Conference. June 24, 2019. Bellevue, WA [Invited].
2019. Schwieterman, E. “Detecting and Confirming Biosignatures with HabEx.” American Astronomical Society Meeting #234. HabEx Splinter Session. June 10, 2019. [Invited]
2019. “A Limited Habitable Zone for Complex Life” Florida Institute of Technology. Physics & Space Science colloquium. Melbourne, FL. March 22, 2019. [Invited]
2019. “Exoplanet Biosignatures Overview.” Biosignatures in the 2030s Splinter Session. American Astronomical Society 233rd meeting in Seattle, WA [Invited]
2018. “Earth as a Laboratory for Exoplanet Biosignatures” California State Polytechnic University, Pomona. Physics seminar. Pomona, CA. October 25, 2018. [Invited]
2018. “Characterizing Ozone Detectability on Weakly Oxygenated Terrestrial Exoplanets” LUIVOIR Seminar Series, NASA Goddard SFC. April 4, 2018. [Invited, Remote]
2017. “An Introduction to Planetary Habitability and the Search for Life Beyond Earth.” The Early History of Planetary Systems. Tartu, Estonia, Aug 8-10, 2017. [Invited]
2017. “Characterizing N₂O as an Exoplanet Biosignature: Early Earth as a Template” Goldschmidt conference, Paris, France, Aug 12-18, 2017.
2017. “A Phase-dependent Spectral Earth Database with Applications for Directly Imaged Earth-like Exoplanets.” The Astrobiology Science Conference 2017, held April 24–28, 2017 in Mesa, Arizona. No. 1965, id. 3515.

Selected Education and Outreach Talks and Events

2023. “Exoplanets and the Search for Life in the Universe” New Jersey Astronomical Association monthly meeting (virtual). July 22, 2023. Archived online. [Invited]
2023. “The frontier of exoplanetary science: towards the discovery of planets like our own” UCR Palm Desert Campus “Are We Alone?” seminar. March 23, 2023. 85 live audience members. [Invited]
2021. “Exoplanet Biosignatures: The Search for Life Outside the Solar System” UC Riverside Cosmic Thursdays, August 2021. 270 live viewers. Archived online. [Invited]
2020. “Ask an Astrobiologist with Dr. Eddie Schwieterman” streamed by SAGANet and NASA Astrobiology on June 16, 2020 and archived online. [Invited]
2020. “Seeking Extraterrestrial Life Like Us: Biosignatures, Technosignatures, and Habitable Zone for Complexity” UCR Palm Desert Campus “Are We Alone?” seminar on January 21, 2020. Approximately 300 members of the public attended. [Invited]
2019. “Alien Worlds: The Future of Exoplanet Science and the Search for Life Elsewhere.” Florida Institute of Technology on March 22, 2019. 110 attendees. [Invited]
2017. “Alien Planets: Are Other Earths Lurking in our Galaxy?” UCR Palm Desert Campus “Are We Alone?” Seminar on April 6, 2017. Approximately 350 members of the public attended. [Invited]
2017. Demonstrated cloud chamber to interested audience members during “Sensing the Universe” activity following “Are We Alone?” science lecture on February 1, 2017 at UCR.
2016. “Measuring Exoplanet Atmospheres for Signs of Life.” Night Sky Network webinar held on November 16, 2016. 111 audience members attended virtually. [Invited]
2016. “Life Beyond the Solar System: The hunt for habitable worlds and biosignatures in the 2020s and beyond”, public talk to the Seattle Astronomical Society (Seattle, April 20, 2016).
2016. “Biosignatures and Technosignatures: Finding life outside of the solar system”, the Pacific Science Center’s Science and a Movie Night (Seattle, March 23-24, 2016). [Invited]
2016. “Promoting Inclusivity in STEM through Active Recruiting and Mentoring: The Pre-Major in Astronomy Program (Pre-MAP) at the University of Washington.” AAS 227, #313.04.
2015. “An Astrobiologist in the Land of Eternal Sunsets”, NASA Famelab (Chicago, 2015).
2015. “Lifesigns and Biosignatures: How we’ll find life outside the solar system”, Astronomy on Tap science outreach talk (Seattle, October 28, 2015).
2015. “Bridging the Skill Gap from High School to Student Researcher: The Pre-Major in Astronomy Program (Pre-MAP) at the University of Washington.” Northwest Astronomy Teaching Exchange (NATE), Center for Astronomy Education (CAE).

Teaching and Advising Experience and Relevant Professional Development

- 2021-2023. Instructor, GEO 013—The Solar System and Beyond, UCR (W21, F21, W23, F23)
2023. Instructor, GEO 284 / 184—Planetary Atmospheres, UCR (S23) [Grad/Upper-div Undergrad]
2022. Instructor, GEO 182—Planetary Astrobiology, UCR (Winter 22) [Upper-div Undergrad]
- 2021-2023. Instructor, GEO 283—Graduate Astrobiology Seminar, UCR (F21, W22, F22, W23, S23)
2021. Instructor, GEO 290—Directed Studies: Planetary Atmospheres, UCR (Spring 21) [Grad]
- 2022-present. Primary advisor to Shang-Min Tsai. Postdoctoral Scholar at UCR.
- 2020-present. Co-advisor to Arturo Miranda, student at UNAM, Mexico (primary advisor: Dra. Antígona Segura; 1 paper)
- 2022-present. Primary advisor to Wynter Broussard. Graduate Student at UCR.
- 2020-present. Primary advisor to Daria Pidhorodetska. Graduate Student at UCR (2 papers)
- 2020-present. Primary advisor to Michaela Leung. Graduate Student at UCR (2 papers)

- 2017-2019. Lead Organizer. Astrobiology Seminar (weekly), UC Riverside
2018. How to Teach Students Problem Solving Skills (CAE/AAS) (participant, 06/05)
2018. Using Anchored Inquiry to Teach Astronomy /Physics (BSCS/AAS) (participant, 06/03)
- 2016-2018. Science co-advisor to Stephanie Olson, PhD student at UCR, now an assistant professor at Purdue University (6 papers)
- 2016-2019. Postdoc collaborator to Jacob Lustig-Yaeger, PhD Student at UW (2 papers)
2017. Co-advisor to Spandan Dash, student in BMSIS Young Scientist Summer Program
2016. Guest Lecturer, Astronomy 150 “The Planets” (UW)
2015. Facilitator, “Being an RA in the Physical Sciences” workshop, TA/RA Conference (UW)
2014. Instructor of Record, ASTR 192 “Pre-Major in Astronomy seminar” (UW)
2013. Teaching Assistant, ASTBIO 115 “Introduction to Astrobiology” (UW) 2012-
2013. Physics/Astronomy Tutor, Student Athlete Academic Services (UW)
2011. Teaching Assistant, ASTR 101 “Introduction to Astronomy” (UW)
- 2010-2011. Teaching Assistant, ASTR 150 “The Planets” (UW) 2011,
2014. Astronomy Tutor, CLUE program (UW)

Education and Outreach Service

- 2017-Present. Public speaker at UCR Palm Desert “Are we Alone?” seminars and other venues for communicating science to public (see above).
- 2010-2016. UW Planetarium and Mobile Planetarium Show Presenter (min 1/qrt)
- 2010-2016. Staff Member & Events Organizer, Pre-Major in Astronomy Program (UW)
2009. NASA International Year of Astronomy Student Ambassador, Florida
- 2006-2008. Coach, Brevard County (FL) Collaborative High School Science Bowl Team

Peer-Reviewed Papers and Book Chapters

(Google Scholar h-index=29; N_{cite}=3231; *includes a (co-)advised student (co-)author; student underlined)

- *Miranda-Rosete, A., Segura, A., & **Schwieterman, E. W.** (2023). Biosignature false positives in potentially habitable planets around M dwarfs: the effect of UV radiation from one flare. *The Astrophysical Journal*. In Press. <https://arxiv.org/abs/2308.01880>.
- Mettler, J.-N., Quanz, S. P., Helled, R., Olson, S. L., & **Schwieterman, E. W.** (2023). Earth as an Exoplanet: II. Earth's Time-Variable Thermal Emission and its Atmospheric Seasonality of Bio-Indicators. *Astrophysical Journal*, 946:82. [cited: 1]
- Ostberg, C., Kane, S. R., Li, Z., **Schwieterman, E. W.**, Hill, M. L., Bott, K., Dalba, P. A., Fetherolf, T., Head, J. W., & Unterborn, C. T. (2023). The Demographics of Terrestrial Planets in the Venus Zone. *The Astronomical Journal*, 165(4), 168. [cited: 1]
- ***Schwieterman, E. W.**, Olson, S. L., Pidhorodetska, D., Reinhard, C. T., Ganti, A., Fauchez, T. J., Bastelberger, S. T., Crouse, J. S., Ridgwell, A., & Lyons, T. W., 2022. Evaluating the Plausible Range of N₂O Biosignatures on Exo-Earths: An Integrated Biogeochemical, Photochemical, and Spectral Modeling Approach. *The Astrophysical Journal*, 937(2), 109. [cited: 2]
- *Leung, M., **Schwieterman, E.**, Parenteau, M., & Fauchez, T. 2022. Alternative Methylated Biosignatures. I. Methyl Bromide, a Capstone Biosignature. *The Astrophysical Journal*, 938(1), 6. [cited: 4]
- Haqq-Misra, J., **Schwieterman, E. W.**, Socas-Navarro, H., Kopparapu, R., Angerhausen, D., Beatty, T. G., Berdyugina, S., Felton, R., Sharma, S., De la Torre, G. G., & Apai, D. 2022. Searching for technosignatures in exoplanetary systems with current and future missions. *Acta Astronautica*, 198, 194–207. [cited: 6]

- *Seppus, C. D., Fer, E., Garcia, A. K., Adam, Z. R., **Schwieterman, E. W.**, & Kacar, B. 2022. Earliest Photic Zone Niches Probed by Ancestral Microbial Rhodopsins. *Molecular Biology and Evolution*, 39(5), 1–16. [cited: 5]
- *Peacock, S., Barman, T. S., Schneider, A. C., Leung, M., **Schwieterman, E. W.**, Shkolnik, E. L., & Loyd, R. O. P. 2022. Accurate Modeling of Ly α Profiles and Their Impact on Photolysis of Terrestrial Planet Atmospheres. *The Astrophysical Journal*, 933(2), 235. [cited: 5]
- Haqq-Misra, J., Fauchez, T. J., **Schwieterman, E. W.**, & Kopparapu, R. 2022. Disruption of a Planetary Nitrogen Cycle as Evidence of Extraterrestrial Agriculture. *The Astrophysical Journal Letters*, 929(2), L28. [cited: 3]
- *Pidhorodetska, D., Moran, S. E., **Schwieterman, E. W.**, Barclay, T., Fauchez, T. J., Lewis, N. K., Quintana, E. V., Villanueva, G. L., Domagal-Goldman, S. D., Schlieder, J. E., Gilbert, E. A., Kane, S. R., & Kostov, V. B. 2021. L 98-59: A Benchmark System of Small Planets for Future Atmospheric Characterization. *The Astronomical Journal*, 162(4), 169. [cited: 15]
- Lincowski, Andrew, P. et al. (including **Schwieterman, E.**). 2021. Claimed Detection of PH₃ in the clouds of Venius is Consistent with Mesospheric SO₂. *The Astrophysical Journal Letters* 908.2:L44. [cited: 40]
- Ranjan, S., **Schwieterman, E. W.**, et al. 2020. Photochemistry of Anoxic Abiotic Habitable Planet Atmospheres: Impact of New H₂O Cross Sections. *The Astrophysical Journal*, 896(2), 148. [cited: 45]
- Haqq-Misra, J., Kopparapu, R. K., & **Schwieterman, E.** 2020. Observational Constraints on the Great Filter. *Astrobiology*, 20(5), 572–579. [cited: 15]
- *Fauchez, T. J., Villanueva, G. L., **Schwieterman, E. W.**, et al. (inc. Pidhorodetska) 2020. Sensitive probing of exoplanetary oxygen via mid-infrared collisional absorption. *Nature Astronomy*, 4(4), 372–376. [cited: 34]
- DasSarma, S., DasSarma, P., Laye, V. J., & **Schwieterman, E. W.** 2020. Extremophilic models for astrobiology: haloarchaeal survival strategies and pigments for remote sensing. *Extremophiles*, 24(1), 31–41. [cited: 43]
- ***Schwieterman, E. W.**, Reinhard, C. T., Olson, S. L., Harman, C.E., Lyons, T.W. 2019b. A limited habitable zone for complex life. *The Astrophysical Journal*, 878, 19. [cited: 46]
- ***Schwieterman, E.W.**, Reinhard, C.T., Olson, S., et al. 2019a. Rethinking CO antibiosignatures in the search for life beyond the solar system. *The Astrophysical Journal*, 874, 9. [cited: 30]
- Glenar, D.A., Stubbs, T.J., **Schwieterman, E.W.**, Robinson, T.D., Livengood, T.A., 2019. Earthshine as an illumination source at the Moon. *Icarus* 321, 841–856. [cited: 12]
- *Lustig-Yaeger, J., Meadows, V., Tovar, G., **Schwieterman, E.**, et al. 2018. Detecting Ocean Glint on Exoplanets by Phase-Dependent Mapping. *The Astronomical Journal*, 156, 301. [cited: 56]
- DasSarma, S.D. & **Schwieterman, E. W.** 2018. Early Evolution of Purple Retinal Pigments on Earth and Implications for Exoplanet Biosignatures. *International Journal of Astrobiology*, 1- 10, doi: 10.1017/S1473550418000423 [cited: 45]
- ***Schwieterman, E.W.** et al. 2018. Exoplanet Biosignatures: A Review of Remotely Detectable Signs of Life. *Astrobiology*, 18(6), 663-708. doi: 10.1089/ast.2017.1729 [cited: 414]
- *Olson, S.L., **Schwieterman, E.W.**, Reinhard, C.T., Ridgwell, A., Kane, S.R., Meadows, V.S., and Lyons, T.W., 2018, Atmospheric seasonality as an exoplanet biosignature: *The Astrophysical Journal Letters*, 858, L14. doi.org/10.3847/2041-8213/aac171. [cited: 44]
- Schwieterman E.W.** (2018) Surface and Temporal Biosignatures. In: Deeg H., Belmonte J. (eds) Handbook of Exoplanets. Springer, Cham. doi: 10.1007/978-3-319-30648-3_69-1 [cited:16]
- Meadows, V.S., Arney, G.N., **Schwieterman, E.W.** et al. 2018. The Habitability of Proxima Centauri b: Environmental States and Observational Discriminants *Astrobiology*, 18, 133-189 [cited: 148]
- *Olson S.L., **Schwieterman E.W.**, Reinhard C.T., Lyons T.W. (2018) Earth: Atmospheric Evolution of a Habitable Planet. In: Deeg H., Belmonte J. (eds) Handbook of Exoplanets. Springer, Cham. doi: 10.1007/978-3-319-55333-7_189 [cited: 28]

- *Reinhard, C.T., Olson, S.L., **Schwieterman, E.W.**, Lyons, T.W., 2017. False Negatives for Remote Life Detection on Ocean-Bearing Planets: Lessons from the Early Earth. *Astrobiology* 17, 287–297. [cited: 90]
- Schwieterman, E.W.**, Meadows, V.S., et al. 2016. Identifying Planetary Biosignature Impostors: Spectral Features of CO and O₄ Resulting from Abiotic O₂/O₃ Production. *The Astrophysical Journal Letters*, 819: L13 [cited: 114]
- Krissansen-Totton, J., **Schwieterman, E.W.**, et al., 2016. Is the Pale Blue Dot Unique? Optimized Photometric Bands for Identifying Earth-Like Exoplanets. *The Astrophysical Journal* 817, 31. [cited: 40]
- Schwieterman, E.W.**, Robinson, T.D., Meadows, V.S., Misra, A., Domagal-Goldman, S., 2015. Detecting and Constraining N₂ Abundances in Planetary Atmospheres Using Collisional Pairs. *The Astrophysical Journal* 810, 57. [cited: 83]
- Harman, C.E., **Schwieterman, E.W.**, Schottelkotte, J.C., Kasting, J.F., 2015. Abiotic O₂ Levels on Planets Around F, G, K, and M Stars: Possible False Positives for Life? *The Astrophysical Journal* 812, 137. [cited: 199]
- Schwieterman, E.W.**, Cockell, C.S., Meadows, V.S., 2015. Nonphotosynthetic Pigments as Potential Biosignatures. *Astrobiology* 15, 341–361. [cited: 72]
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American Astronomical Society, Division of Planetary Sciences, American Physical Society, American Geophysical Union, European Association of Geochemistry