

DARIA PIDHORODETSKA

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University of California, Riverside

EDUCATION

University of California, Riverside

PhD Student, Earth and Planetary Sciences Department

September 2020 - Present

Expected May 2025

Salisbury University

Bachelor of Science in Biological Sciences

August 2014 - December 2017

RESEARCH EXPERIENCE

Earth & Planetary Sciences Department, University of California, Riverside

Present

Advisors: Eddie Schwieterman, Stephen Kane

Understanding Biosignatures in the Context of Exoplanet Atmospheres

- Using photochemistry to spectral simulations of exoplanet atmospheres while analyzing the effects of stellar activity on planetary habitability.
- Assessing the detectability of spectral features with ground- and space-based telescopes to plan for future observational missions.
- Conducting exoplanet observations with the HIRES instrument at the Keck Observatory.

Planetary Systems Lab, NASA Goddard Space Flight Center

March 2018 - August 2020

Advisors: Thomas Fauchez, Geronimo Villanueva, Elisa Quintana, Shawn Domagal-Goldman

Detection and Characterization of Terrestrial Exoplanets and their Atmospheres, Data + Modeling

- Simulated the feasibility of detecting and characterizing terrestrial exoplanet atmospheres with analysis via radiative transfer models.
- Used the 3-D Global Climate Model ExoCAM to constrain the parameter space of the habitable zone.
- Performed optical photometry with Kepler/K2/TESS datasets in addition to the use of planet finding and validation software for light curve creation.

Department of Biological Sciences, Salisbury University

September 2016 - December 2017

Advisor: Eugene Williams

Synthesis of Lipids and Analysis of their Chirality in the Context of Astrochemistry

- Developed a methodology to study lipid chirality in the context of astrochemistry/astrobiology. Responsible for preparing, storing, and performing multiple tests such as freeze/dry cycles on a variety of lipids, as well as deciding which lipids to use to maintain the scope of the project.
- Used various teaching methods including the development of a hardbound manual and one-on-one demonstrations to train new students to continue the project upon graduation.

AWARDS AND SCHOLARSHIPS

RHG Exceptional Achievement for Science Award, NASA

2022

Dean's Distinguished Fellowship Award, University of California, Riverside

2020

GradEdge/JumpStart Summer Diversity Award, University of California, Riverside	2020
Dean's List, Salisbury University	2017
Delegate Scholarship, Maryland Higher Education Commission	2016

PUBLICATIONS

- Van Zandt et al. inc. **Pidhorodetska, D.** 2023, AJ (<https://iopscience.iop.org/article/10.3847/1538-3881/aca6ef/pdf>)
TESS-Keck Survey. XIV. Two Giant Exoplanets from the Distant Giants Survey
- MacDougall et al. inc. **Pidhorodetska, D.** 2022, AJ (<https://iopscience.iop.org/article/10.3847/1538-3881/ac7ce1/pdf>)
The TESS-Keck Survey. XIII. An Eccentric Hot Neptune with a Similar-mass Outer Companion around TOI-1272
- Schwieterman, E.W., Olson, S.L., **Pidhorodetska, D.**, et al. 2022, ApJ (<https://iopscience.iop.org/article/10.3847/1538-4357/ac8cfb/pdf>)
Evaluating the Plausible Range of N₂O Biosignatures on Exo-Earths: An Integrated Biogeochemical, Photochemical, and Spectral Modeling Approach
- Damiano et al. inc. **Pidhorodetska, D.** 2022, AJ (<https://iopscience.iop.org/article/10.3847/1538-3881/ac9472/pdf>)
A transmission spectrum of the sub-Earth planet L98-59 b in 1.1-1.7 micron
- Pidhorodetska, D.**, Moran, S.E., Schwieterman, E.W., Fauchez, T.J., Quintana, E.V., et al. 2021, AJ (<https://iopscience.iop.org/article/10.3847/1538-3881/ac1171/meta>)
L 98-59: a Benchmark System of Terrestrial Planets for Future Atmospheric Characterization
- Fauchez et al. inc. **Pidhorodetska, D.** 2021, PSJ (<https://iopscience.iop.org/article/10.3847/PSJ/abf4df>)
TRAPPIST Habitable Atmosphere Intercomparison (THAI) Workshop Report
- Pidhorodetska, D.**, Fauchez, T.J., Villanueva, G.L., Domagal-Goldman, S.D., Kopparapu, R.K., 2020, ApJ (<https://doi.org/10.3847/2041-8213/aba4a1>)
Detectability of Molecular Signatures on TRAPPIST-1e through Transmission Spectroscopy Simulated for Future Space-Based Observatories
- Gilbert et al. inc. **Pidhorodetska, D.** 2020, ApJ (<https://doi.org/10.3847/1538-3881/aba4b2>)
An Earth-sized Planet in the Habitable Zone of a Nearby Cool Star: Validation of the System
- Fauchez, T.J., Villanueva, G.L., Schwieterman, E.W., Turbet, M., Arney, G., **Pidhorodetska, D.**, et al. 2019, Nature Astronomy (<https://www.nature.com/articles/s41550-019-0977-7>)
Sensitive Probing of Exoplanetary Oxygen via Mid Infrared Collisional Absorption
- Fauchez et al. inc. **Pidhorodetska, D.** 2019, ApJ (<https://doi.org/10.3847/1538-4357/ab5862>)
Impact of Clouds and Hazes on the Simulated JWST Transmission Spectra of Habitable Zone Planets in the TRAPPIST-1 System
- Kostov et al. inc. **Pidhorodetska, D.** 2019, AJ (<https://doi.org/10.3847/1538-3881/ab2459>)
The L 98-59 System: Three Transiting, Terrestrial-Sized Planets Orbiting a Nearby M-dwarf

FUNDED PROPOSALS

- PI, Future Investigators in NASA Earth and Space Science and Technology (FINESST) 2022
High CO₂ Climates and Observables in the Outer Habitable Zone
- Co-Investigator, HST-GO-16448 (8 Orbits) 2020
Confirming a Tentative Detection of an Atmosphere Around a Potentially Rocky Planet, PI: T. Barclay

INVITED TALKS

Geneva Observatory Laboratory Seminar, Geneva, Switzerland September 2019
From Climates to Biosignatures: Comparative Planetology within the TRAPPIST-1 System

Salisbury University Department of Biological Sciences Seminar September 2019
The Search for Life Beyond our Solar System: How NASA is Taking on its Greatest Challenge Yet

CONTRIBUTED TALKS AND POSTERS

AAS Winter Meeting, Virtual (Talk) January 2021
L 98-59: A Benchmark System of Terrestrial Exoplanets for Future Atmospheric Characterization

Planets 2020 Meeting, Santiago, Chile (Poster) March 2020
Detectability of Habitability Signatures on TRAPPIST-1e Simulated for Future Space-based Observatories

Exoplanets in our Backyard Meeting, Houston, Texas (Poster) February 2020
L 98-59: A Benchmark System of Terrestrial Exoplanets for Future Atmospheric Characterization

AAS Winter Meeting, Honolulu, Hawaii (Poster) January 2020
Diversity of Exoplanets with LUVUOIR I: Optical and NIR

DPS/EPSC Joint Meeting, Geneva, Switzerland (Talk) September 2019
Detectability of Habitability Signatures on TRAPPIST-1e with Future Space-based Observatories

Astrobiology Science Conference, Seattle, Washington (Talk) June 2019
Detectability of Habitability Signatures on TRAPPIST-1e with Future Space-based Observatories

TRAPPIST-1 Conference, University of Liege, Belgium (Talk) June 2019
Detectability of Habitability Signatures on TRAPPIST-1e with Future Space-based Observatories

AGU Fall Meeting, Washington D.C. (Poster) December 2018
Impact of Background N₂ Pressure on the Habitability of Tidally Locked Rocky Exoplanets Around Cool Stars

Salisbury University Biochemistry Laboratory (Poster) 2017
Transformation, Expression, and Purification of Green Fluorescent Protein

Salisbury University Student Research Conference (Poster) 2016
Docosahexaenoic Acid (DHA) Inhibits Metastasis in B16 Cell Lines by Altering Membrane Molecular Order and Cell Adhesion Potentials

LEADERSHIP AND SERVICE

Communications Lead for LUVUOIR Mission Concept Present
 LUVUOIR Exoplanets Working Group Member Present
 Exoplanet Program (ExoPAG) Science Analysis Group 21 Member Present
 NASA Panel Service as an Executive Secretary 2019, 2020
 Sellers Exoplanet Environments Collaboration (SEEC) Local Organizing Committee 2019