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Jet Propulsion Laboratory, California Institute of Technology
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EDUCATION

California Institute of Technology, Pasadena, CA, USA

Ph.D. in Chemistry (chemical physics) **June, 1999**

Dissertation: "Terahertz Generation via Optical-Heterodyne Conversion:
Development of a New Far-Infrared Spectrometer and Its Applications toward a
Better Understanding of Nonrigid, Astronomically Important Molecules."

University of California, Berkeley, CA, USA

B.S. in Chemistry **December, 1991**

SELECTED AWARDS & HONORS

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| • JPL Team Award "for critical leadership and exceptional contributions in leading the development and formulation of the HWO architecture" | 2025 |
| • JPL Team Award "for significant contributions to the highly impactful Habitable Worlds Observatory teams" | 2024 |
| • JPL Voyager Award "for outstanding leadership of the ExEP Coronagraph Technology Roadmap Working Group" | 2024 |
| • NASA Group Achievement Award for "dedicated service and sustained exemplary performance for the Deep Space Atomic Clock Project in support of the Technology Demonstration Missions Program" | 2020 |
| • <i>Journal of the Optical Society of America</i> Editor's Pick for manuscript titled "Vector vortex coronagraphy for exoplanet detection with spatially-variant diffractive waveplates" | 2019 |
| • NASA Group Achievement Award for "the development and tests at Mauna Kea observatories of a near-infrared Laser Frequency Comb as a wavelength standard for the detection and characterization of exoplanets" | 2017 |
| • JPL Team Award "for contribution to the Deep Space Atomic Clock (DSAC) Project Assembly Team" | 2017 |
| • JPL Voyager Award "for successful organization of the two-part Keck Institute for Space Studies workshop at Caltech" | 2016 |
| • JPL Discovery Award "for being the lead for Exoplanets informal meetings that were valuable to formulating the Exoplanets strategic initiative at the Jet Propulsion Laboratory" | 2015 |
| • JPL Team Award "for outstanding contributions to the Deep Space Atomic Clock (DSAC) Environmental Test Team" | 2015 |
| • JPL Team Award "for outstanding contributions to the Deep Space Atomic Clock (DSAC) Flight Clock First Light Team" | 2015 |

- JPL Team Award “for outstanding contributions to the Deep Space Atomic Clock (DSAC) Ion Trap Tube Team” **2015**
- JPL Team Bonus Award “for outstanding contributions to the Deep Space Atomic Clock (DSAC) Project Preliminary Design Review (PDR) Team” **2013**
- JPL Certificate of Appreciation “for outstanding contribution to the Culture Exchange Panel at the D & I 2011 Summer Student Meet & Greet Luncheon” **2011**
- NASA Certificate of Appreciation in recognition of “valuable contribution and outstanding support to the Advanced Component Technologies (ACT) program and the NASA Earth Science Technology Office” **2009**
- JPL Team Bonus Award for the “successful balloon flight of the Planetscope Precursor Experiment” **2008**
- NASA Group Achievement Award for the “Molecular Spectroscopy Team” **2006**
- NASA Group Achievement Award for the “Aura Microwave Limb Sounder Instrument Team” **2005**
- NASA Group Achievement Award for the “Balloon Observations of the Stratosphere Team” **2004**
- JPL Star Award "in recognition of outstanding focus on safety in Division 32 as seen in a Major Laboratory clean-up effort conducted in the month of March 2002." **2002**
- NASA New Investigator in Earth Science **2002 – 2005**
- National Research Council's Postdoctoral Research Associateship **1999 – 2000**
- NASA New Technology Report Award for “Tunable Terahertz Source Using Near Infrared Diode Lasers” **1999**

JOB EXPERIENCE

Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA

Deputy Pre-Formulation Scientist, Habitable Worlds Observatory **2024 – present**

Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA

Deputy Technology Manager, NASA Exoplanet Exploration Program **2019 – present**

Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA

Scientist (Planetary Science Section) **2006 – present**

Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA

Cognizant Engineer, Deep Space Atomic Clock Project **2013 - 2015**

California Institute of Technology, Pasadena, CA, USA

Visiting Associate (Division of Chemistry & Chemical Engineering) **2007 – 2013**

Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA

Group Supervisor, Acting (Atmospheric Laser Spectroscopy Group)	12/2006 – 2/2007
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Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA

Scientist (Earth Science Section, Planetary Science Section)	2000 – 2006
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National Institute of Standards & Technology (NIST), Boulder, CA, USA

Research Chemist (post-doctoral, Time and Frequency Division)	1999 – 2000
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California Institute of Technology, Pasadena, CA, USA

Graduate Research Assistant	1992 – 1999
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Air Instruments & Measurements, LLC, Baldwin Park, CA, USA

Consultant	1997 – 1998
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Lawrence Berkeley Laboratory (LBL), Berkeley, CA, USA

Undergraduate Research Assistant, Research Associate (approximate title)	1990 – 1992, 1988 – 1989
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PRINCIPAL-INVESTIGATOR EXPERIENCE

Habitable Worlds Observatory Internship Program

Award to fund a graduate intern to conduct research on “What Geochemical Environments Enabled the Origin of Life?”	2025
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JPL Center for Academic Partnership

“Establishing a Vertically Integrated Partnership with Howard University through Planetary and Exoplanetary Sciences”	2022 – Present
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JPL Advanced Concept Studies Program

“MEMS Plasma Emission Spectrometer for Mars Exploration”	2021
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JPL HBCU/MSI

“A Novel Approach to Coronagraph Design for ExoEarth Observations”	2020
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JPL Research & Technology Development (R&TD)

“Chip-Scale Heterodyne Imaging Spectrometers for CubeSats and Small Landers”	2016 – 2018
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JPL Strategic Research & Technology Development (R&TD): Special Exoplanet and Comparative Planetary Science Systems Initiative

“A New Framework for Detecting Exoplanet Habitability and Life”	2015 – 2018
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JPL Advanced Concept Studies Program

“3-D Spectral-Imager for Venus Observations”	2013
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JPL Research & Technology Development Program (R&TD)

“Chemistry & Transport Modeling of Exoplanetary Atmospheres”	2010 – 2011
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NASA Planetary Instrument Definition & Development Program (PIDDP)

“Massively Parallel, Cavity-Enhanced, Laser Spectroscopy (MCELS) for Planetary and Lunar Exploration”	2009 – 2013
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JPL Center for Exoplanet Science

"Seeing in the Stratosphere" 2009

NASA Planetary Instrument Definition & Development Program (PIDDP)

"Aquarius: An *In Situ* Water Isotope Analyzer for Exploring Planetary Ice," PI: Dr. Miles Smith (JPL) 2008 – 2011

NASA Mars Fundamental Research Program (MFRP)

"Kinetic-Isotope Effects of Key Photochemical Reactions on Mars" 2007 – 2010

NASA Planetary Instrument Definition & Development Program (PIDDP)

"A New *In-Situ* Measurement Technique for Stable-Isotope Analysis of Methane and Other Important Atmospheric/Volatile Species on Mars" 2005 – 2008

JPL Innovative Spontaneous Concepts (ISC)

"Proof of a Novel Concept for Measuring Optical Properties of Aerosols" 2006

JPL Research & Technology Development Program (R&TD)

"A Promising New Near-Infrared Laser Technique for *In-Situ* Mars Exploration" 2003 – 2005

NASA New Investigator Program in Earth Science (NIP)

"Tropospheric Monitoring of CO Isotopes by Cavity-Enhanced, Optical Heterodyne Spectroscopy" 2002 – 2005

CO-INVESTIGATOR EXPERIENCE

JPL Strategic Research & Technology Development Program

"Assessing Origin of Life (OOL) Scenarios for Exoplanet Studies" 2022 – present

NASA Development & Advancement of Lunar Instrumentation (DALI):

"Water Isotope Tunable Laser Spectrometer," PI: Dr. Lance Christensen 2022 - 2025

NASA Exoplanet Research Program (XRP)

"Adaptation of high precision atmospheric trace gas retrieval technique and updated spectroscopy to model micro-telluric features enabling EPRV," PI: Dr. Keeyoon Sung (JPL) 2021 – present

JPL Research & Technology Development Program (R&TD)

"Precision modeling of telluric absorption features through the retrieval of atmospheric trace gases and spectroscopy update toward Extreme Precision Radial Velocity (EPRV) measurements," PI: Dr. Keeyoon Sung (JPL) 2020 – present

JPL Research & Technology Development Program (R&TD)

"Prebiotic and Microbial Bioindicators for Exoplanetary Discovery," PI: Dr. Tiffany Kataria (JPL) 2018 – 2020

NASA Strategic Astrophysics Technology

"Super Lyot ExoEarth Coronagraph (SLEEC)," PI: Dr. John Trauger (JPL) 2018 – 2021

NASA Solar System Workings

"Mars' Ancient Climate: Production and Evolution of a Reduced Greenhouse Atmosphere," PI: Dr. A. Jim Friedson (JPL) **2015 – 2018**

JPL President's & Director's Fund

"Exoplanet Clouds and Hazes," Co-PIs: Dr. Mark Swain (JPL) & Prof. Yuk Yung (Caltech) **2015 – 2016**

JPL President's & Director's Fund

"NIR-Visible Astrocomb with Frequency Doubling for Broadband Spectrograph Calibration," Co-PIs: Dr. Chas Beichman (JPL) & Prof. Kerry Vahala (Caltech) **2015 – 2016**

JPL President's & Director's Fund

"Micro-Astrocomb for Planet Finding Through Precision Radial Velocity Measurements", Co-PIs: Dr. Chas Beichman (JPL) & Prof. Kerry Vahala (Caltech) **2013 – 2015**

JPL President's & Director's Fund

"Next Generation Tunable Laser Spectrometer (TLS) - Maintaining JPL's Leadership Position", Co-PIs: Dr. Lance Christensen (JPL) & Prof. Mitchio Okumura (Caltech) **2013 – 2015**

JPL Innovative Spontaneous Concepts (ISC)

"Divergent Evolution of Earth's and Venus' Atmospheres," PI: Dr. A. Jim Friedson (JPL) **2012**

NASA Experimental Program to Stimulate Competitive Research (EPSCoR)

"New Mexico Exoplanet Spectroscopic Survey Instrument (NESSI)," PI: Dr. Patricia Hynes (New Mexico State University) **2009 – 2012**

JPL Research & Technology Development Program (R&TD)

"Advanced InGaAs-based Single-Mode Semiconductor Lasers for Atmospheric Sensing and Lidar," PI: DR. Yueming Qiu (JPL) **2002 – 2005**

JPL Bio-Nano Technology Program

"Quantum Dot Lasers for NASA *In-Situ* Sensing Applications," Dr. Yueming Qiu (JPL) **2002 – 2005**

INVITED TALKS

NASA Habitable Worlds Observatory System Trades Meeting

"Segmented Coronagraph Design and Analysis: Insights, trades, and updates relevant to telescope on/off-axis and primary-mirror segmentation" **Apr 2025**

NASA Habitable Worlds Observatory Coronagraph Coordination Meeting

"Segmented Coronagraph Design and Analysis: Insights, trades, and updates relevant to telescope on/off-axis and primary-mirror segmentation" **Apr 2025**

NASA Habitable Worlds Observatory Integrated Modeling Working Group Meeting

"SCDA (Segmented Coronagraph Design and Analysis) End-to-End Modeling" **Mar 2024**

<u>Meeting of the NASA Habitable Worlds Observatory Technical Assessment Group</u>	Dec 2023
"Technology Focus Areas for the Habitable Worlds Observatory, A Preliminary List"	
<u>Meeting of the NASA Habitable Worlds Observatory Technical Assessment Group</u>	Dec 2023
"The Coronagraph Technology Roadmap Briefing"	
<u>Towards Starlight Suppression for the Habitable Worlds Observatory Workshop</u>	Aug 2023
"Coronagraphy and the Coronagraph Technology Roadmap Effort for the Habitable Worlds Observatory"	
<u>Habitable Worlds Observatory and Beyond Workshop</u>	Jul 2023
"Coronagraphs for the Habitable Worlds Observatory"	
<u>241st Meeting of the American Astronomical Society, Seattle, WA, USA</u>	Jan 2023
Panelist & Presenter at the "Starlight Suppression Technologies for the IR/O/UV Flagship" splinter session	
<u>AOGS (Asia Oceania Geosciences Society) 8th Annual Meeting, Taipei, Republic of China (Taiwan)</u>	Aug 2011
"Massively Parallel, Cavity-Enhanced, Laser Spectroscopy (MCELS) for Planetary Exploration"	
<u>Institute of Astronomy & Astrophysics, Academia Sinica, Taipei, Republic of China (Taiwan)</u>	Aug 2011
"Atmospheric Chemistry of Extrasolar Planets"	
<u>IGPP (Institute of Geophysics Planetary Physics) Seminar Series, University of California, Los Angeles, CA, USA</u>	May, 2011
"Atmospheric Chemistry of Extrasolar Planets"	
<u>Workshop on Innovative Approaches to Exoplanet Spectra, Keck Institute for Space Studies, California Institute of Technology, CA, USA</u>	Nov 2009
"Balloon Environment"	
<u>Planetary Evolution & Habitability course, California Institute of Technology, Pasadena, CA, USA</u>	Mar 2009
"Atmospheric Laser Spectroscopy for <i>In-Situ</i> Habitability Detection"	
<u>The Center for Adaptive Optics Fall 2007 Retreat, Lake Arrowhead, CA, USA</u>	Nov 2007
"Stratospheric seeing & contrast limits for a balloon-borne coronagraph"	
<u>Yuk Yung Lunch Seminar Series, California Institute of Technology, CA, USA</u>	Feb 2006
"Noise-immune, cavity-enhanced spectroscopy and ultra-sensitive atmospheric measurements"	
<u>"Enlightenment Lecture", Nippon Institute of Technology, Japan</u>	Feb 2003
"Optoelectronic terahertz sources based on photomixers"	

TEACHING/MENTORING/OUTREACH EXPERIENCE

La Cañada High School

Invited Speaker, Challenge Success: Build Your Path Event

Sep 2023

Pasadena City College (PCC)

Industrial Advisor, LaserTech program (a PCC career technical education program)

Oct 2021 -
present

Shadow Hills Elementary School (Fontana, CA), College & Career Week

Invited Speaker: "Searching for Life in our Galaxy & Discovering Diverse Career Paths on Earth"

May 2021

Howard University, Electrical Engineering & Computer Science Graduate Seminars (EECE501)

"To See Another Planet Like Earth"

Oct 2020

Palm Crest Elementary School, Gifted and Talented Education (GATE) Class, Pasadena, CA, USA

Volunteer JPL Speaker

Feb 2016

Chinese-American Oceanic & Atmospheric Association, Irvine, CA

Invited Speaker

Spoke about career development and proposal writing in the session "Golden Keys to Success" to young researchers

2012

California Institute of Technology, Pasadena, CA, USA

Invited Lecturer

Presented lecture on "Extrasolar Planets: Life, Habitability, Climate, & Atmosphere" to the "Planetary Evolution & Habitability" class in the Geological & Planetary Sciences Division

2011

California Institute of Technology, Pasadena, CA, USA

Invited Lecturer

2009

Presented lecture on "Atmospheric Laser Spectroscopy for In-Situ Habitability Detection" to the "Planetary Evolution & Habitability" class in the Geological & Planetary Sciences Division.

Jet Propulsion Laboratory, California Institute of Technology, CA, USA

Post-Doctoral Research Mentor

2011 – present

California Institute of Technology, Pasadena, CA, USA

Graduate-Student Mentor/Ph.D. Thesis Committee Member

2003 – present

Mentoring chemistry graduate students conducting research in spectroscopic instrumentation and planetary habitability.

Jet Propulsion Laboratory, California Institute of Technology, CA, USA

Undergraduate-Student Mentor

2007 – present

Mentoring summer undergraduate research interns

Nippon Institute of Technology, Saitama Prefecture, Japan

Invited Lecturer

2003

Presented four lectures to graduate students in the Department of Electrical and Electronics Engineering on advanced theories and techniques in the areas of collisional broadening of molecular lines, quantitative spectroscopic measurements, and terahertz technology. Directly advised graduate students on experimental

design and data analysis techniques. Presented an “enlightenment lecture” to department faculty and general audience.

California Institute of Technology, Pasadena, CA, USA

Teaching Assistant – “Fundamental Techniques of Experimental Chemistry.” **1993**

Instructed and supervised students in introductory undergraduate laboratory chemistry course.

Teaching Assistant – “Chemical Equilibrium and Analysis Laboratory.” **1993**

Instructed and supervised students in conducting experiments designed to illustrate modern instrumental techniques that are currently employed in industrial and academic research. Emphasis was on determinations of chemical composition, measurement of equilibrium constants, evaluation of rates of chemical reactions, and trace-metal analysis.

SCIENTIFIC COMMUNITY ORGANIZATION & SERVICE

Towards the Habitable Worlds Observatory: Visionary Science and Transformational Technology

Co-Organizer: Observatories Synergies Panel Session **Jul 2025**

Ball Aerospace Advanced Technology Center, Boulder, CA, USA

NASA Reviewer: ULTRA-TM program final on-site review **Sep 2023**

Lockheed Martin Advanced Technology Center, Palo Alto, CA, USA

NASA Reviewer: TechMAST program final on-site review **Sep 2023**

SPIE Astronomical Telescopes + Instrumentation Conference, Yokohama, Japan, June 2024

Committee Member: Optical, Infrared, and Millimeter Wave Program **Dec 2023 – Jun 2024**

NASA Habitable Worlds Observatory Technical Assessment Group (TAG)

Co-Chair: Coronagraph Technology Subgroup **Dec 2023 – present**

NASA Cosmic Origins Program’s Habitable Worlds Observatory UV Technology Working Group

Member & white paper co-author **Aug 2023-present**

San Diego, CA, USA

Co-Chair: Coronagraph Technology Roadmap Working Group Meeting **Aug 2023**

Keck Institute for Space Studies, California Institute of Technology, Pasadena, CA, USA

Participant: “The Biology of Biosignature Detection” KISS Study Program **Jul 2023**

NASA NESC (NASA Engineering & Safety Center) “Near Angle Scatter” Study

Chair: Independent Review Team **2023 – present**

NASA Cosmic Origins Program’s Ultra-stable Observatory Roadmap Team

Member **2023 – present**

NASA Exoplanet Exploration Program, Coronagraph Technology Roadmap Working Group

Co-Lead	2022 – present
<u>NASA Headquarters</u>	
Panelist: NASA Technology Interchange Meeting organized by HQ to discuss the best approaches to mature key technology for the IR/Optical/UV Great Observatory Flagship Mission recommended by the <i>Astro2020</i> Decadal Survey	2021
<u>Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA</u>	
Co-Author: White Paper, Planetary and Astrobiology Decadal Survey: “Importance of Applying Abiotic / Prebiotic Chemistry to the Search for Life on Other Planets”	2020
<u>NASA Exoplanet Exploration Program Survey on Deformable Mirror Technology</u>	
Subject-Matter-Expert Panelist	2020
<u>NASA Exoplanet Exploration Program's Virtual Workshop on Wavefront Sensing</u>	
Member, Science Organizing Committee	Apr 2020
<u>19th Annual Mirror Technology SBIR/STTR Workshop, Redondo Beach, CA, USA</u>	
Member, Organizing Committee	Nov 2019
<u>Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA</u>	
Co-Author: White Paper, Astro 2020 Decadal Survey: “The Super-Earth Opportunity – Search for Habitable Exoplanets in the 2020s”	Mar 2019
<u>Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA</u>	
Poster Award Judge: JPL Postdoc Research Day	Jun 2018
<u>Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA</u>	
Tiger Team Member: NASA CAL (Cold Atom Laboratory) project: Review of the frequency-locking approach for CAL's master laser	May-Jun 2017
<u>Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA</u>	
Poster Award Judge: JPL Postdoc Research Day	Aug 2017
<u>Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA</u>	
Co-Lead: JPL Exoplanet Science Initiative	2016
<u>Keck Institute for Space Studies, California Institute of Technology, Pasadena, CA, USA</u>	
Co-Lead: “Methane on Mars” KISS Study Program	2015 – 2016
<u>Keck Institute for Space Studies, California Institute of Technology, Pasadena, CA, USA</u>	
Core Member: “Optical Frequency Combs for Space Applications” KISS Study Program	2015 – 2016
<u>Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA</u>	

Member, Science Team: “The Exoplanet and Comparative Planetary Systems Science Initiative” **2014**
Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA

Member, Hiring Committee: Scientist III & Scientist VI, Exoplanet and Comparative Planetary Systems Science Strategic Hires **2015**
Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA

Member, Hiring Committee: Postdoctoral Research in the Exoplanetary and Comparative Planetary Sciences at JPL/Caltech **2014 – 2015**
NASA, Research Opportunities in Space and Earth Sciences (ROSES)

Panelist, Proposal Review Panel **2013**
Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA

Co-Author: “Faint Object Explorer,” NASA Study on Applications of Large Space Optics (SALSO) **2013**
Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA

Lead Organizer: “UCLA-JPL Planets Meeting” workshop **2013**
Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA

Lead Organizer: “UCLA-JPL Planets/Exoplanets Day” workshop **2011**
Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA

Member, hiring committee: staff scientist position in earth atmospheric science **2010**
Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA

Co-author: white paper on “Laboratory Spectroscopy to Support Remote Sensing of Atmospheric Composition,” submitted to the National Academies Space Studies Board's Planetary Science Decadal Survey. **2009**
Keck Institute for Space Studies, California Institute of Technology, Pasadena, CA, USA

Core member of study program: “Innovative Approaches to Exoplanet Spectra.” **2009**
Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA

Co-author: “Planetscope: Exoplanet Characterization from a Balloon Platform,” in response to the request for information from Astro2010: Astronomy and Astrophysics Decadal Survey Subcommittee on Programs. **2009**
Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA

Co-signer: white paper on “Exoplanet Characterization and the Search for Life,” submitted to *Astro2010: the Astronomy and Astrophysics Decadal Survey*. **2009**
Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA

Member, Technical Excellence Committee	2008 - Present
<u>Small Business Innovation Research Program (SBIR)</u>	
Proposal Peer Reviewer	2000 – Present
<u>Applied Optics, Applied Physics B, Chemical Physics Letters, Journal of Molecular Spectroscopy, Science</u>	
Peer Reviewer	1999 – Present
<u>NASA Advanced Component Technology Program</u>	
Proposal Peer Reviewer	2008
<u>Earth System Scholars Network (ESSN)</u>	
Member, Mission Statement Committee	2004
<u>National Urban League Conference, Los Angeles, CA, USA</u>	
Volunteer: Career Fair for JPL	July, 2002
<u>Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA</u>	
Lead Organizer: “Atmospheric Chemistry, Dynamics & Radiation Seminar Series”	2001 – 2002

PEER-REVIEWED PUBLICATIONS

- Ganel, O, Chen, P, Crill, B, Derleth, J, Perez, M, Rivera, R, Siegler, N, “Linking strategic astrophysics missions, technology gaps, and technology maturation investments,” *J. Astron. Telesc. Instrum. Syst.*, 11(2), 024003-1, doi: 10.1117/1.JATIS.11.2.024003, 2025
- Keller, F, Kataria, T, Barge, L, Chen, P, Yung, Y, Weber, J, “An exploration of origin of life for exoplanetary science,” *Front. Astron. Space Sci.*, 12, <https://doi.org/10.3389/fspas.2025.1544426>, 2025
- Keeyoon Sung, Geoffrey C. Toon, Bryson L. Cale, Pin Chen, Gautam Vasisht, Graca M. Rocha, Rose K. Gibson, Rebecca Oppenheimer, Peter Plavchan, and Charles A. Beichman, “Analyzing Stellar Spectra for PRV by Accurate Modeling and Retrieval of Telluric Absorption Features,” *Publications of the Astronomical Society of the Pacific*, 136(10), 104503, doi: 10.1088/1538-3873/ad830a, 2024.
- Bertrand Mennesson, Ruslan Belikov, Emiel Por, Eugene Serabyn, Garreth Ruane, A. J. Eldorado Riggs, Dan Sirbu, Laurent Pueyo, Remi Soummer, Jeremy Kasdin, Stuart Shaklan, Byoung-Joon Seo, Christopher Stark, Eric Cady, Pin Chen, Brendan Crill, Kevin Fogarty, Alexandra Greenbaum, Olivier Guyon, Roser Juanola-Parramon, Brian Kern, John Krist, Bruce Macintosh, David Marx, Dimitri Mawet, Camilo Mejia Prada, Rhonda Morgan, Bijan Nemati, Leonid Pogorelyuk, Susan Redmond, Sara Seager, Nicholas Siegler, Karl Stapelfeldt, Sarah Steiger, John Trauger, James K. Wallace, Marie Ygouf, Neil Zimmerman, “Current laboratory performance of starlight suppression systems and potential pathways to desired Habitable Worlds Observatory exoplanet science capabilities,” *J. Astron. Telesc. Instrum. Syst.* 10(3), 035004, doi: 10.1117/1.JATIS.10.3.035004, 2024.
- Klusman, R., Luo, Y., Chen, P., Mischna, M., Yung, Y., “Short-term variation in Mars atmospheric methane concentrations driven by barometric pumping,” *Icarus*, 408, 15810, <https://doi.org/10.1016/j.icarus.2023.115810>, 2024.
- West, R.A., Dumont, P., Hu R., Natraj, V., Breckinridge, J., Chen, P., “Spectropolarimetry as a Means to Address Cloud Composition and Habitability for a Cloudy Exoplanetary Atmosphere in the Habitable Zone,” *Astrophys. J.*, 940(183), <https://doi.org/10.3847/1538-4357/ac9b42>, 2022.

- Yan, S., Chen, P., Wade, M.I., Gill, T.L., "Optimal pupil basis set for telescope-coronagraph design and perturbation analysis based on the method of moments," *J. Opt. Soc. Am. A*, 39(12), 2422, <https://doi.org/10.1364/JOSAA.472995>, 2022.
- Potier, A, Ruane, G., Stark, C., Chen, P., Chopra, A., Dewell, L., Juanola-Parramon, R., Nordt, A., Pueyo, L., Redding, D., Riggs, AJ E., Sirbu D., "Adaptive optics performance of a simulated coronagraph instrument on a large, segmented space telescope in steady state," *J. Astron. Telesc. Instrum. Syst.* 8(3), 035002-1, doi: 10.1117/1.JATIS.8.3.035002, 2022.
- Klusman, R.W., Luo Y.-C., Chen, P., Yung, Y.L., Tallapragada, S., "Seasonality in Mars atmospheric methane driven by microseepage, barometric pumping, and adsorption," *Icarus*, 383(2022), 115079, DOI: <https://doi.org/10.1016/j.icarus.2022.115079>, 2022.
- Ruane, G., Wallace, J.K., Steeves, J., Mejia-Prada, C., Seo, B.-J., Bendek, E., Coker, C., Chen, P., Crill, B., Jewell, J., Kern, B., Marx, D., Poon, P.K., Redding, D., Riggs, A.J., Siegler, N., & Zimmer, R., "Wavefront sensing and control in space-based coronagraph instruments using Zernike's phase-contrast method," *J. Astron. Telesc. Instrum. Syst.*, 6(4), doi: 10.1117/1.JATIS.6.4.045005, 2020.
- Serabyn, E; Mejia Prada, C; Chen, P; Mawet, D. "Vector vortex coronagraphy for exoplanet detection with spatially variant diffractive waveplates," *J. Opt. Soc. Am. B*, 36(5), DOI: 10.1364/JOSAB.36.000D13, 2019.
- Yung, YL; **Chen, P** (corresponding author); Nealon, K; Atreya, S; Beckett, P; Blank, JG; Ehlmann, B; Eiler, J; Etioppe, G; Ferry, JG; Forget, F; Gao, P; Hu, RY; Kleinbohl, A; Klusman, R; Lefevre, F; Miller, C; Mischna, M; Mumma, M; Newman, S; Oehler, D; Okumura, M; Oremland, R; Orphan, V; Popa, R; Russell, M; Shen, LH; Lollar, BS; Staehle, R; Stamenkovic, V; Templeton, A; Vandaele, AC; Viscardi, S; Webster, CR; Wennberg, PO; Wong, ML; Worden. "Methane on Mars and Habitability: Challenges and Responses," *Astrobiology*, 18(10), 1221-1242, DOI: 10.1089/ast.2018.1917, 2018.
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- Chen, P, Pueyo, L, Siegler, N, "A coronagraph technology roadmap for future space observatories to directly image Earth-like exoplanets," SPIE Astronomical Telescopes + Instrumentation Conference, Yokohama, Japan, June 16-21, 2024
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LANGUAGES

- Mandarin Chinese – native language
- English – as proficient and fluent as native speakers.
- German – two years of college coursework, very rusty now.

MEMBERSHIPS

- American Chemical Society (ACS)
- American Geophysical Union (AGU)
- American Physical Society (APS)
- Asia Oceania Geosciences Society (AOGS)
- American Astronomical Society (AAS)