



Dr. Vlada Stamenković | Blue Origin

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“A spaceman at heart, with tools of a theoretical physicist, engineer & mission architect at hand — trying to help us live between the stars, find life beyond Earth and infuse this know-how to create a more sustainable & humane society on Earth.”

EMPLOYMENT

- **Senior Director, Principal Technologist *In Situ* Resource Utilization** 10/2020-now
Blue Origin LLC
- **Research Scientist** 01/2018-10/2020
NASA Jet Propulsion Laboratory (JPL)
 - ⇒ *PI for TH₂OR: liquid water sounder development to find groundwater on Mars and help rural communities on the Earth access drinkable water.*
 - ⇒ *Lead scientist for Mars Small Spacecraft Advanced Concepts on how to do great science at low cost.*
 - ⇒ *Lead scientist for ASGAR D Mars Deep Drill Advanced Concepts on how to drill on other planets at low mass.*
 - ⇒ *Founder and PI PHYRE (Planetary Hydrology & Resource Exploration) Lab.*
- **Research Staff Scientist** 09/2017-01/2018
California Institute of Technology
- **Simons Foundation's Collaboration on the Origins of Life Fellow** 08/2015-09/2017
Postdoctoral Scholar in Geobiology & JPL Research Associate
California Institute of Technology & NASA Jet Propulsion Laboratory (JPL)
- **Swiss National Science Foundation Postdoctoral Fellow** 2012-07/2015
MIT – Department of Earth, Atmospheric & Planetary Sciences
- **European Space Agency (ESA) Graduate Student Fellow** 2008-2012
Institute of Planetary Research @ the German Aerospace Center (DLR)
European Space Research and Technology Center (ESTEC)
- **Visiting Scientist** 2007-2008
Institute of Planetary Research @ German Aerospace Center

EDUCATION

- **PhD in Earth & Planetary Sciences (*Dr. rer. nat., summa cum laude, 0.0*)** 01/13/2012
The University of Münster, ESA & Institute of Planetary Research @ DLR
Dissertation: High-pressure thermal & transport properties of mantle rock & the thermal evolution of massive rocky planets. Advisors: Tilman Spohn & Doris Breuer.
- **BSc/MSc in Physics (*Dipl. Phys. ETH*), Swiss Federal Institute of Technology (ETH)** 2006
Thesis: Dynamical analysis of generic signal transduction networks. Advisor: Sebastian Bonhoeffer



SELECTED HONORS & AWARDS

- Voyager Team Award for Mars Small Spacecraft 2020
- Voyager Award for Mars Subsurface Exploration & Science 2019
- Fellow of the Canadian Institute of Advanced Research (CIFAR) 2019
Core-member of the CIFAR Earth 4D Program for Subsurface Science & Exploration
- Simons Foundation's Collaboration on the Origin of Life Fellow 08/2015-09/2017
- Swiss National Science Foundation Advanced Researcher Fellow 2014-2015
- Swiss National Science Foundation Prospective Researcher Fellow 2012-2014
- PhD Summa Cum Laude and "0.0" award by the University of Münster 2012
- Nobel Laureate Symposium Award by German Aerospace Center 2009
- European Space Agency & German Space Agency Doctoral Fellowship 2008-2012

PUBLICATION LIST

(>29, 18 peer-reviewed of which 10 first-author, 4 Nature-journals (of which 2 x 1st author), 2 x cover page)

Peer-reviewed Journals

1. Carrier, B. et al., (incl. **Stamenković, V.**), 2020. Mars Extant Life: What's Next? *Astrobiology*, in press.
Find on: <https://www.liebertpub.com/doi/10.1089/ast.2020.2237>
2. **Stamenković, V.**, et al., 2019. The next frontier in planetary and human exploration, *Nature Astronomy* 3, 116-120.
Find on: <https://www.nature.com/articles/s41550-018-0676-9>
3. Lewis, W., **Stamenković, V.**, Mischna, M., Fischer, W., 2019. Follow the oxygen: comparative histories of planetary oxygenation and opportunities for aerobic life. *Astrobiology*, 19.
Find on: <https://www.liebertpub.com/doi/abs/10.1089/ast.2017.1779>
4. Airapetian, V. et al. (incl. **Stamenković, V.**), 2019. International Journal of Astrobiology, 1-59.
Find on: <https://doi.org/10.1017/S1473550419000132>
5. **Stamenković, V.**, Lewis, W., Mischna, M., Fischer, W., 2018. O₂ solubility in Martian near-surface brines and implications for aerobic life. *Nature Geoscience* 11, 905-909. **Cover page** of the Dec 2018 Edition.
Find on: <https://www.nature.com/articles/s41561-018-0243-0>
6. Yung, Y., et al. (incl. **Stamenković, V.**), 2018. Methane on Mars and Habitability: Challenges and Responses. *Astrobiology*, 18, doi: 10.1089/ast.2018.1917. **Cover page.**
Find on: <https://www.liebertpub.com/doi/full/10.1089/ast.2018.1917>
7. De Wit, J., et al. (incl. **Stamenković, V.**), 2018. Atmospheric reconnaissance of TRAPPIST-1's Habitable Zone Exoplanets. *Nature Astronomy*, doi:10.1038/s41550-017-0374-z
Find on: <https://www.nature.com/articles/s41550-017-0374-z>
8. Bourrier, V., de Wit, J., Bolmont, E., **Stamenković, V.**, + 12 co-authors, 2017. Temporal Evolution of the High-energy Irradiation and Water Content of TRAPPIST-1 Exoplanets. *The Astronomical Journal*, 154, 121-137.
Find on: <http://iopscience.iop.org/article/10.3847/1538-3881/aa859c>
9. **Stamenković, V.**, Höink, T., Lenardic, T., 2016. The importance of temporal stress variation for the initiation of plate tectonics. *JGR Planets*, 121, 1–20.
Find on: <http://onlinelibrary.wiley.com/doi/10.1002/2016JE004994/abstract>

10. **Stamenković, V.**, Seager, S., 2016. Emerging possibilities and insuperable limitations of exogeodynamics: the example of plate tectonics. *The Astrophysical Journal*, 825, 78-95.
Find on: <https://iopscience.iop.org/article/10.3847/0004-637X/825/1/78>
11. Demory, B., (incl. **Stamenković, V.**), 2016. A map of the large day–night temperature gradient of a super-Earth exoplanet. *Nature* 532, 207-209.
Find on: <http://www.nature.com/nature/journal/v532/n7598/abs/nature17169.html>
12. **Stamenković, V.**, Breuer, D., 2014. The tectonic mode of rocky planets, Part 1: driving factors, models & parameters. *Icarus* 234, 174-193.
Find on: <http://www.sciencedirect.com/science/article/pii/S0019103514000736>
13. Zsom, A., Seager, S., De Wit, J., **Stamenković, V.**, 2013. Towards the minimum inner edge distance of the habitable zone. *The Astrophysical Journal*, 778, 109-126.
Find on: <http://iopscience.iop.org/article/10.1088/0004-637X/778/2/109>
14. **Stamenković, V.**, Noack, L., Breuer, D., Spohn, T., 2012. The influence of pressure-dependent viscosity on the thermal evolution of super-Earths. *The Astrophysical Journal*, 748, 41-63.
Find on: <http://iopscience.iop.org/article/10.1088/0004-637X/748/1/41>
15. **Stamenković, V.**, Breuer, D., Spohn, T., 2011. Thermal and transport properties of mantle rock at high pressure: applications to super-Earths. *Icarus*, 216, 572–596.
Find on: <http://www.sciencedirect.com/science/article/pii/S0019103511003824>
16. **Stamenković, V.**, Keller, G., Nesic, D., Cogoli, A., Grogan, S.P., 2010. Neocartilage formation in 1 g, simulated, and microgravity environments: implications for tissue engineering. *Tissue Engineering: part A*, 16 (5), 1729-1736.
Find on: <http://online.liebertpub.com/doi/abs/10.1089/ten.tea.2008.0624>

Peer-reviewed Book Contributions

17. **Stamenković, V.**, 2011, 2015. Serpentinization (Mars). In: Gargaud, M., et al., (Eds.), *Encyclopedia of Astrobiology*, Part 19. Springer, 1505-1506.
Find on: <http://www.springer.com/us/book/9783662441848>
18. **Stamenković, V.**, 2011, 2015. Serpentinization (Mars). In: Gargaud, M., et al., (Eds.), *Encyclopedia of Astrobiology*, Part 19. Springer, 1505-1506.
Find on: <http://www.springer.com/us/book/9783662441848>

Selected Conference Proceedings

19. Sohl, F., Noack, L., **Stamenković, V.**, Breuer, D., Wagner, F.W., 2010. *Thermal state of Earth-like exoplanets: Implications for CoRoT-7b*. In: Eos Trans. AGU, 91 (26). The Meeting of the Americas, 8-12 Aug. 2010, Brazil.
20. **Stamenković, V.**, & Breuer, D., 2009. Hades: Habitability of the deep subsurface, In: *Origins of Life and Evolution of Biospheres*, Springer.

Technology Publications

21. **Stamenković, V.**, & Keller, G., 2003. CHONDRO, ESA Erasmus Publications.
22. Keller, G., & **Stamenković, V.**, 2002. Study of the process of cartilage structure formation in microgravity, ESA Erasmus Experiment Publications.

23. **Stamenković, V.**, Keller, G., Walser, S., Fuchsberger, G., 2001. LYMPHOSIG - LIDIA3 Hardware test & behavior of two fluids mixing for T-Lymphocyte investigation on MASER, ESA Erasmus Publications.

White Papers

24. **Stamenković, V.** et al. (and 27 co-authors), *Mars Subsurface Access*, A White Paper Submitted to The National Academies of Sciences, Engineering and Medicine's Astrobiology Science Strategy for the Search for Life in the Universe, 2018.
25. **Stamenković, V.** et al. (and 35 co-authors, and 100 Co-Signatories so far), *Deep Trek: Science of Subsurface Habitability & Life on Mars*, A White Paper Submitted to The National Academies of Sciences Decadal Survey on Planetary Sciences & Astrobiology, 2020.
26. **Stamenković, V.** et al. (and 35 co-authors, and 100 Co-Signatories so far), *Deep Trek: Missions Concepts for Exploring Subsurface Habitability & Life on Mars*, A White Paper Submitted to The National Academies of Sciences Decadal Survey on Planetary Sciences & Astrobiology, 2020.
27. Edwards, C. et al. (*I am the lead on subsurface technologies*), *Emerging Capabilities for Mars Exploration*, A White Paper Submitted to The National Academies of Sciences Decadal Survey on Planetary Sciences & Astrobiology, 2020.
28. Barba, N. et al. (*I am the lead for science & science instruments*), *Mars Small Spacecraft: Opportunity of the Decade*, A White Paper Submitted to The National Academies of Sciences Decadal Survey on Planetary Sciences & Astrobiology, 2020.
29. Stoker, C. et al. (*I am the lead for extant subsurface life*), *We should search for modern life on Mars in the next decade*, A White Paper Submitted to The National Academies of Sciences Decadal Survey on Planetary Sciences & Astrobiology, 2020.

FUNDED GRANTS AND PROPOSALS (total of 10 as PI, total sum >\$13 M)

- Mars Subsurface Exploration Initiative TH₂OR Task (**PI TH₂OR ~\$1.7 Million**) 2018-2021
- CIFAR Fellow (**PI, \$25 k/year for the next 10 years**) 2019-2029
- HST-GO-15304.024, Collecting the Puzzle Pieces: Completing HST's UV+NIR Survey of the TRAPPIST-1 System ahead of JWST (**Science PI, \$31 k**) 2020-2021
- Simons Foundation's Collaboration on the Origin of Life Fellowship (**PI, \$342 k**) 2015-2017
Life from inside out – geodynamic drivers for the origins of life.
- Swiss National Science Foundation Advanced Researcher Fellowship (**PI, \$100 k**) 2014-2015
The Caladan-Dune project – deep water cycle and planet evolution.
- Swiss National Science Foundation Prospective Researcher Fellowship (**PI, \$90 k**) 2012-2014
Planetary geofluxes with importance to the question of life – geophysical biosignature gases.
- Kepler: GO Cycle 5 (on ultra-cool stars) (**Co-I**) 2013
Searching for terrestrial planets orbiting cool stars and brown dwarfs with K2.
- Spitzer: Cycle-9 (**Co-I, \$5 k**) 2013
55 Cnc e phase curve – first heat map of an exoplanet.
- European Space Agency & German Space Agency PhD Fellowship (**PI, \$180 k**) 2008-2012
High pressure physics and planet evolution/Zones of extinct and extant life on.
- Space experiment Chondro II on Cervantes Mission to ISS (**PI, ~\$5 Million**) 2003-2006
Chondro II – tissue engineering/fluid mixing on the International Space Station to improve cartilage transplants and explore fluid dynamics and cellular matrix formation in microgravity.

- Space experiment Chondro I (**PI, ~ \$5 Million**) 2001-2002
***Chondro I** – tissue engineering/fluid mixing on the Russian space satellite Foton M1 to improve cartilage transplants and explore fluid dynamics and cellular matrix formation in microgravity.*
- Microgravity experiment Lidia on parabolic flights (**PI, ~ \$20 k**) 2000-2001
***Lidia** – fluid dynamics in test units for T-lymphocyte apoptosis studies in microgravity.*

PI ON FLOWN MISSIONS & STUDIED MISSION CONCEPT PROPOSALS

- PI for the LOKI mission concepts studies 2020-now
(Localizing Organic Key Ingredients)
 - *Localization of groundwater, trace gases and organics*
 - *Currently studied at JPL for potential implementation in Simplex.*
- PI for the VALKYRIE mission concept proposal 2019-now
(Volatiles And Life: KeY Reconnaissance & In-situ Exploration)
 - *NASA PMCS proposal in 2019.*
 - *Mission concept internally studied at JPL for Simplex, Discovery, and New Frontiers (just completed a three day long Team X).*
 - *Subsurface habitability and life search mission concept for Mars.*
- PI for the flown space experiment Chondro II on the crewed Cervantes Mission 2003-2006
to the International Space Station (ISS)
- PI for the flown space experiment Chondro I on the Russian Foton M1 Science satellite 2000-2001
- PI for Microgravity experiment Lidia on parabolic flight campaign 2000-2001

SELECTED INVITED DEPARTMENT COLLOQUIA & SEMINARS

- Brown University, Department Colloquium Earth and Planetary Sciences, October 22-25, 2019.
- ELSI, Tokyo, September 9-21, 2019.
- MIT, EAPS, Origins Seminar, February 2, 2018.
- Scripps Institute of Oceanography, Institute of Geophysics, Departmental Seminar, Dec 1, 2017.
- Jet Propulsion Laboratory, Planetary Seminar, May 15, 2017.
- University of Cambridge, Cambridge UK, February 26-March 3, 2017.
- University of Southern California, Los Angeles, March 8, 2017.
- University of California in Los Angeles, Los Angeles, March 14, 2017.
- University of California in Davis, Earth & Planetary Sciences Department Seminar Series, 2017.
- NASA Goddard, Planetary Seminar, 2016.
- University of California in Los Angeles, Center for Planets iPLEX, 2016.
- Tokyo Institute of Technology, ELSI Seminar, 2016.
- Massachusetts Institute of Technology, PICS Seminar, 2015.
- California Institute of Technology, GPS, Yuk Yung Seminar, 2015.
- NASA Jet Propulsion Laboratories, Planet Seminar, 2015.
- Harvard University, Center for Astrophysics, 2014.
- California Institute of Technology, GPS, Yuk Yung Seminar, 2013.
- University of California in Los Angeles, Department of Earth and Planetary Sciences, 2013.
- Berkeley University, Departments of Earth & Planetary Sciences and Astronomy, 2013.

SELECTED INVITED CONFERENCE/WORKSHOP TALKS & KEYNOTE LECTURES

- **Stamenković, V.**, 2020. **INVITED**, COSPAR, Sydney, 2020 (postponed to 2021), *“Scientific Opportunities & Technological Challenges in the Search for Mars Subsurface Life”*.
- **Stamenković, V.**, 2020. **INVITED**, JpGU-AGU, Tokyo, 2020 (now virtual), *“Subsurface Habitability on Mars and Beyond”*.
- **Stamenković, V.**, 2020. **INVITED KEYNOTE**, Interplanetary Small Satellite Conference, Pasadena, 2020, *“Mars Small Spacecraft: Opportunity of the Roaring Twenties”*.
- **Stamenković, V.**, 2019. **INVITED KEYNOTE**, Power-MEMS, Poland, *“Small Instruments in the Search for Subsurface Life”*.
- **Stamenković, V.**, 2018. **INVITED KEYNOTE**, Mars Society Convention, Pasadena, Aug 7-9, 2018, *“Is there Life on Mars?”*.
- **Stamenković, V.**, 2018. **INVITED**, CIFAR-Canadian Institute for Advanced Research: Earth 4D, Toronto, Aug 23-26, 2018, *“Life from Inside Out: Technologies”*.
- **Stamenković, V.**, 2018. **INVITED**, Workshop in Geology and Geophysics of the Solar System, Petnica, Serbia, June 22-July 1, 2018, *“Exploring Life Underground in the Solar System”*.
- **Stamenković, V.**, 2017. **INVITED**, CIFAR Research Workshop- Earth 3D – Subsurface Science and Exploration, Toronto, Canada, December 4-8, 2017, *“Life & Geodynamics”*.
- **Stamenković, V.**, 2016. **INVITED**, Impact of planetary space weather on climate and habitability, New Orleans, USA, *“Exogeodynamic Control on Habitability”*.
- **Stamenković, V.**, 2015 & 2016. **INVITED**, Keck Institute for Space Studies, Methane on Mars, Pasadena, USA, *“Geophysical Methane Formation on Mars Across Time and Space”*.
- **Stamenković, V.**, 2015. **INVITED KEYNOTE**, Space Vision SEDS, Boston, USA, *“Life in the Solar System and Beyond”*.
- **Stamenković, V.**, 2015. **INVITED KEYNOTE**, GeoBerlin: 100 Years of Plate Tectonics, Berlin, Germany, *“Controls on Plate Tectonics: The Revolution Continues”*.
- **Stamenković, V.**, 2015. **INVITED**, Early Earth Dynamo, Kawaguchiko Lake, Japan, *“Geophysical Controls on Dynamo Formation: No Paradox at All?”*.
- **Stamenković, V.**, Höink, Tobias, Lenardic, A., 2015. **INVITED**, Spring AGU, Montreal, Canada, *“Time Dependence and Plate Tectonics”*.
- Breuer, D., **Stamenković, V.**, 2012. **INVITED**, European Geosciences Union, Vienna, Austria, *“No Magnetic Fields on Super-Earths?”*.
- **Stamenković, V.**, 2011. **INVITED**, Astron. Society Meeting, Max Planck Institute, Heidelberg, Germany, *“Exoplanet Habitability”*.
- **Stamenković, V.**, & Keller, G., 2004. **INVITED**, International Astronautical Congress, Vancouver, Canada, *“Cartilage Growth on the ISS and Its Medical Use on the Earth”*.

SELECTED RECENT PUBLIC SPEECHES OR SCIENCE SHOWS

- **New York City Astronomy Night at the Intrepid Sea, Air & Space Museum under the Space Shuttle, postponed to 2021 due to Covid-19.**
- **The WALRUS Survival Talk, 2019:** https://www.youtube.com/watch?v=26yGTy7_F4o
- **SciShow Space, 2019:** <https://www.youtube.com/watch?v=Dg3dlhevnH0&t=1s>
- **Mars Society Convention, 2018:** <https://www.youtube.com/watch?v=LYcmcxSsGEC&t=1378s>
- **MIT Origin of Life Series, 2018:** <https://www.youtube.com/watch?v=cBTPYSaW8Fs>

TEACHING & MENTORING EXPERIENCE

- Record of passionately advising over 15 students in planetary sciences for over a decade, from ETH, DLR, MIT, Caltech to JPL.
- Course Creator/Lecturer for “Planets & Life: Human & Planetary Perspectives”, in 2014-2015 on connecting geodynamics & astrobiology.
- Lecturer for Petnica (<http://psi.petnica.rs/>) summer workshops that support planetary science in developing countries of the Balkans (2018, 2021). Co-organizer for 2021.
- Keynote Panel Out-To-Innovate '19 – LGBTQ+ Mentoring Summit (www.noglstp.org/outtoinnovate/).
- **Advisor to students at JPL working on TH₂OR & groundwater modeling** 2019-now
- **SURP (Strategic University Research Partnership @ JPL)** 2018-now
- **Lecturer**, Workshop in Geology and Geophysics of the Solar System, Petnica, Serbia 2018
- **Research Co-adviser**, MIT, Caltech, and JPL 2013-now
- **Main Instructor for new MIT/Harvard class**, MIT 2014-2015
- **Mentoring graduate and undergraduate students**, DLR Berlin 2008-2012
- **Teaching Assistant**, ETH Zurich 2003-2004
- **Teaching high school students in physics and astronomy** 1996-2000

SELECTED LEADERSHIP IN WORKSHOPS/CONFERENCES/SESSIONS/ACADEMIC COURSES

- ISSI Working Group Lead, Bern September 2020, Beijing 2021.
- JpGU/AGU Co-convenor for Union Session on “Deep Dive into Subsurface Life”, 2020.
- AGU: Lead for New Mars Underground Session, 2018, 2019.
- NASA Astrobiology Institute Workshop Without Walls on Mars Subsurface Life, 2019.
- AbSciCon Session Co-Organizer for Mars Subsurface Life Session, 2019.
- Mars X KISS workshop lead on subsurface exploration, 2018.
- Lecturer for Petnica (<http://psi.petnica.rs/>) summer workshops that support planetary science in developing countries of the Balkans, 2018. Co-organizer for 2021.
- Created and Taught Academic Course for a new class at MIT with Harvard, “Planets & Life: Human & Planetary Perspectives”, on connecting geodynamics & astrobiology, 2014-2015.
- Co-lead for first AbGradCon in Europe, Tallberg, Sweden, 2010.

SERVICE ACTIVITIES

- Lead for the New Mars Underground (NMU)—a diverse community promoting subsurface exploration on Mars and beyond (→see outreach such as AGU sessions & workshops).
- Lead for 2018 KISS Mars subsurface science & exploration workshop.
- Lead for two new subsurface & life science & exploration AGU sessions (> 82 abstracts; 2018 [32], 2019 [50]). I have handed over the organization of this session for 2020 to the next generation of the NMU that I am mentoring, J. Tarnas (Brown), A.-C. Plesa (DLR), and R. Harris (Princeton/Harvard).
- Lead for one NASA Astrobiology Institute Workshop Without Walls series on Mars subsurface life in 2019.
- Lead for two white papers to be submitted to the Planetary Decadal (on Subsurface & Life Science and Subsurface & Life technologies and mission concepts).
- Lead of International Space Science Institute (ISSI) Working Group on astrobiological subsurface science and exploration in this decade, which will for the first time bring NASA, ESA, CSA, JAXA & the

Chinese Space Program multilaterally together in Bern & Beijing in 2020 and 2021, see for more information (www.issibern.ch/workinggroups/subsurflifeonmars/).

PARTICIPATION IN PANELS AND REVIEWS FOR PUBLICATIONS AND PROPOSALS

- Reviewer for Nature Geoscience; Nature Astronomy; Scientific Reports; Icarus; Earth & Planetary Science Letters; PEPI; G-Cubed, Elsevier Books, and Springer Books amongst others.
- Panelist in many NASA's NESSF Geophysics, Exoplanet, ICEE, SBIR & various Technology Development Programs.
- Internal JPL Review: Discovery Mission Proposals 2018, Simplex Mission Proposals 2020, SURP 2020.

PROFESSIONAL SOCIETIES

- Elected Fellow of the Canadian Institute for Advanced Research (CIFAR). Fellow of the Earth 4D Subsurface Science & Exploration Program.
- Member of AGU, the AAS and AAS DPS.
- Member of NOGLSTP, National Organization of Gay & Lesbian Scientists & Technical Professionals.

LANGUAGE SKILLS (SPOKEN & READING)

Native Tongue: Serbian, German, and Swiss-German

Fluent in: English and French

Good skills in: Italian, Russian and Dutch