

## Anastasia G. Yanchilina

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### Education:

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**Ph.D., Earth and Environmental Sciences, 2016:** Columbia University, New York, NY, USA.  
Specialization: Marine geology & geophysics, paleoceanography, and isotope geochemistry.

**M. Phil., Earth and Environmental Sciences, 2014:** Columbia University, New York, NY, USA.  
Specialization: Marine geology & geophysics, paleoceanography, and isotope geochemistry.

**M. A., Earth and Environmental Sciences, 2012:** Columbia University, New York, NY, USA.  
Specialization: Marine geology & geophysics, paleoceanography, and isotope geochemistry.

**B.S., Atmospheric Sciences and Meteorology, 2009:** Atmospheric Sciences, Creighton University, Omaha, NE, USA. Specialization: Climate change effects on monsoons and Western African Hydrology.

### Selected Research and Professional Experience:

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**Postdoctoral Scholar Research Associate in Geochemistry, December 2023 to present:** Division of Geological and Planetary Science, California Institute of Technology: Vapor pressure isotope effects relevant to planetary atmospheres and surface liquids.

**Research scientist, January 2021 to October 2023:** Impossible Sensing, LLC: Supporting Mars 2020 / Perseverance SHERLOC operations with focus on imaging, Raman and fluorescence data analysis and developing Raman and LIBS technologies for deployment of InVADER and VIPER for studying the dynamics of hydrothermal vents and marine mineral exploration.

**Visiting scientist, July 2020 to January 2021:** Impossible Sensing, LLC: Using Raman and LIBS to assess mineralogy and elements with DiSCO and LIBS in prep for deployment of InVADER and development of VIPER technologies.

**STEM Zuckerman Postdoctoral Fellow, October 2016 to July 2020:** Weizmann Institute of Science:  $\delta^{18}\text{O}$  of biogenic opal and chert.

**Postdoctoral Scholar, April 2016 to September 2016:** Lamont-Doherty Earth Observatory, Columbia University: Preparing chapters from dissertation for publication, preparing additional specimens for stable isotope and radiocarbon analysis.

**Staff Associate, January – March 2016:** Lamont-Doherty Earth Observatory, Columbia University: Preparing dissertation for publication, U/Th dating of mollusks. Supervisor: Bill Ryan.

**Graduate Student Research Fellow, Fall 2009-2016:** Lamont-Doherty Earth Observatory, Columbia University: Deglaciation of the Black Sea; advisors: Bill Ryan and Jerry McManus.

**Significant Opportunities in Atmospheric Research and Science (SOARS) protégée, Summer 2009:** Atmospheric Chemistry Division (ACD), National Center for Atmospheric Research (NCAR): Upper atmospheric photochemistry and climate; advisor: Dan Marsh.

**REU (Research Experience for Undergraduates) fellow, Summer 2008:** Geology and Geophysics Department, Woods Hole Oceanographic Institution (WHOI): TEX86 and alkenone analysis of a sediment core at Bermuda Rise; advisors: Jerry McManus, Tim Eglinton, Daniel Montlucon.

### **International Field Experience:**

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**Chief Scientist Training Cruise, Honolulu to San Diego, December 2016.**

**Black Sea Research Expedition, Black Sea, 25<sup>th</sup> June – 3<sup>rd</sup> July 2011.**

**Pacific Atmospheric Sulfur Experiment, Christmas Island (Kiritimati), 2<sup>nd</sup> August – 10 September 2007.**

### **Selected Teaching Positions Held:**

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**New York Academy of Science Mentor, Spring 2016:** Oyster Restoration and Ecology afterschool mentorship program.

**Teaching Assistant, Department of Earth Science, Columbia University, 2010 to 2015:** Quantitative methods of data analysis, Weapons of Mass Destruction, Oceanography, and Planet Earth.

**New York Academy of Science Teaching Fellow, Fall 2012.**

### **Selected Publications:**

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*Yanchilina, A. G., Yam, R. and A. Shemesh, in review:* Lack of change in biogenic opal  $\delta^{18}\text{O}$  in marine Sediments through the Cenozoic Era and implications for ocean cooling, *Chemical Geology*.

*Yanchilina, A. G., L. Rodriguez, L. Barge, R. Price, and P. Sobron, accepted:* Mission to explore deep sea environments on Earth and other Ocean Worlds, *EOS Transactions*, Features column.

*Siljestrom, S. et al. (co-authored), accepted:* Evidence of Sulfate-Rich Fluid Alteration in Jezero Crater Floor, Mars, *Nature*.

*Sharma, S. et al. (co-authored), 2023:* Diverse organic-mineral associations in Jezero crater, Mars, *Nature*, pp. 1-9.

*Garczynski, B. et al. (co-authored), 2023:* Rock coatings as Evidence for Late Surface

- Alteration on the Floor of Jezero Crater, Mars, *Authorea preprints (submitted to ESS Open Archive)*.
- Corpolongo, A. et al., (co-authored), **2023**: SHERLOC Raman mineral class detections of the Mars 2020 Crater Floor Campaign, *Journal of Geophysical Research, Planets*, 128 (3), e20222JE007455.
- Scheller, E. et al. (co-authored), **2022**: Aqueous alteration processes and implications for organic geochemistry in Jezero crater, Mars, *Science*, eabo5204.
- Fries, M. et al. (co-authored), **2022**: The SHERLOC Calibration Target on the Mars 2020 Perseverance Rover: Design, Operations, Outreach, and Future Human Exploration Functions, *Space Science Reviews*, 218, pp. 1-33.
- Farley, K. et al. (co-authored), **2022**: Aqueously altered igneous rocks sampled on the floor of Jezero Crater, Mars, *Science*, 377, eabo2196.
- Ibarra D. E., A. Yanchilina, M. K. Lloyd, K. A. Methner, C. P. Chamberlain, R. Yam, A. Shemesh, D. A. Stolper, **2021**: Triple oxygen systematics of diagenetic recrystallization of diatom opal-A to opal-CT to microquartz in deep sea sediments, *Geochimica et Cosmochimica Acta*, 320, pp. 304- 323.
- Yanchilina, A.G., R. Yam, A. Shemesh, **2021**: The effect of sediment lithology on oxygen isotope composition and phase transformation of marine biogenic silica, *Chemical Geology*, 570.
- Yanchilina, A.G., R. Yam, Y. Kolodny, A. Shemesh, **2020**: From diatom opal-A  $\delta^{18}\text{O}$  to chert  $\delta^{18}\text{O}$  in deep sea sediments, *Geochimica et Cosmochimica Acta*, 268, pp. 368-382.
- Yanchilina, A.G., W.B.F. Ryan, T.C. Kenna, and J.F. McManus, **2019**: Meltwater floods into the Black and Caspian Seas during Heinrich Stadial 1, *Earth Science Reviews*, 198.
- Briceag, A., A. Yanchilina, W.B.F. Ryan, M. Stoica, M. C. Melinte-Dobrinescu, **2019**: Late Pleistocene to Holocene paleoenvironmental changes in the NW Black Sea, *J. Quaternary Science*, 32, pp. 87-100.
- Yanchilina, A.G., S. Yelisetti, M. Wolfson-Schwer, N. Voss, T. B. Kelly, J. Brizzolara, K. L. Brown, J.M. Zayak, M. Fung, M. Guerra, B. Coakley, R. Pockalny, **2017**: Exploring Methane Gas Seepage in the California Borderlands, *EOS Transactions*, Project Update Column.
- Yanchilina, A.G., et al., **2017**: Compilation of geophysical, geochronological, and geochemical evidence indicates a rapid Mediterranean-derived submergence of the Black Sea's shelf and subsequent salinification in the early Holocene, *Marine Geology*, 383, pp. 14-34.
- Langebroek, P., C. Bradshaw, A. Yanchilina, R. Cabellero-Gill, C. Pew, K. Armour, S.-Y. Lee, I. – M. Jansson, **2012**: Improved proxy of past warm climates needed, *EOS Transactions*, 93, 14, pp. 144-145.