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## ANNA ELIZABETH ENGLE

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### Education

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**Ph.D. Student, Astronomy & Planetary Sciences**, Northern Arizona University, 2019 – Present

**B.S., Astronomy**, Minor in Planetary Sciences, University of Maryland, 2018

**B.A., Studio Art**, University of Maryland, 2011

### Honors & Awards

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NASA FINESST Fellowship, 2020

Outstanding Undergraduate Teaching Assistant Award, University of Maryland, 2018

Department of Astronomy Senior Honors Program, University of Maryland, 2017-2018

NSF REU Summer Program, Northern Arizona University, 2017

Maryland Space Grant Consortium Scholarship Award, 2017

### Publications

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**A.E. Engle**, J. Hanley, S. Dustrud, G.E. Lindberg, W.M. Grundy, G. Thompson, S.C. Tegler (2021). Phase Diagram for Methane-Ethane System and its Implications for Titan. *The Planetary Science Journal*, 2,118.

J.K. Steckloff, J.M. Soderblom, K.K. Farnsworth, V.F. Chevrier, J. Hanley, A. Soto, J.J. Groven, W.M. Grundy, L.A. Pearce, S.C. Tegler, **A.E. Engle** (2020). Stratification Dynamics of Titan's Lakes via Methane Evaporation. *The Planetary Science Journal*, 1, id. 26.

S.C. Tegler, T. Stufflebeam, W. Grundy, J. Hanley, G.E. Lindberg, S. Dustrud, **A. Engle**, T. Dillingham, D. Matthew, D. Trilling, H. Roe, J. Llama, G. Mace, E. Quirico (2019). A New Two-Molecule Combination Band as a Diagnostic of Carbon Monoxide Diluted in Nitrogen Ice on Triton. *Astronomical Journal*, 158, id. 17.

### Presentations & Posters

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**A.E. Engle**, J. Hanley, S.P. Tan, S.C. Tegler, W.M. Grundy, G.E. Lindberg, J.K. Steckloff (2021), Mapping Changes in the Methane-Ethane System when adding Nitrogen at Titan Surface Conditions. *LPSC LII*, Abstract #1722.

**A.E. Engle**, J. Hanley, S. Dustrud, G. Thompson, G.E. Lindberg, W.M. Grundy, S.C. Tegler (2020), Phase Diagram for the Methane-Ethane System at Conditions Relevant to Titan. *52nd DPS Meeting*.

**A.E. Engle**, J. Hanley, W.M. Grundy, G.E. Lindberg, S. Dustrud, S.C. Tegler, G. Thompson (2020). Phase Diagram for Methane-Ethane System and its Implications for Titan. *Titan Through Time V*.

**A. Engle**, J. Hanley, W.M. Grundy, S. Dustrud, G.E. Lindberg, S.C. Tegler (2019). Identifying the Solid Phase Transitions of Ethane Using Raman Spectroscopy at Conditions Relevant to Titan's Surface. *Northern Arizona Planetary Science Alliance (NAPSA) Poster Session*.

**A. Engle**, J. Hanley, W.M. Grundy, S. Dustrud, G.E. Lindberg, S.C. Tegler (2019). Ethane Studies at Conditions Relevant to Titan. *Flagstaff Astronomy Symposium*.

**A. Engle**, J. Hanley, W.M. Grundy, S. Dustrud, G.E. Lindberg, S.C. Tegler (2019). Identifying the Solid Phase Transitions of Ethane Using Raman Spectroscopy at Conditions Relevant to Titan's Surface. *LPSC L*, Abstract #2509.

J. Hanley, J.J. Groven, W.M. Grundy, S. Dustrud, **A. Engle**, G.E. Lindberg, S.C. Tegler (2019). Characterization of Possible Two Liquid System in Titan's Seas. *LPSC L*, Abstract #1712.

S.C. Tegler, T. Stufflebeam, W. Grundy, J. Hanley, G.E. Lindberg, S. Dustrud, **A. Engle**, T. Dillingham, E. Quirico (2018). A New, Unusual, and Diagnostic Band in Near-Infrared Spectra of Laboratory Ice Samples on Triton. *50th DPS Meeting*.

- A. Engle**, J. Hanley, W.M. Grundy, G.E. Lindberg, S. Dustrud, S.C. Tegler (2018). Laboratory Experiments of Ices Relevant to Outer Solar System Bodies. *Flagstaff Astronomy Symposium*.
- A. Engle**, W. Grundy, S. Dustrud (2018). Raman Shop: Exploring the Carbon Monoxide-Nitrogen-Methane Ternary System of Sputnik Planitia via Raman Spectroscopy. *LPSC XLIX*, Abstract #2763.
- A. Engle**, W. Grundy, S. Dustrud (2017). Raman Shop: Using Raman Spectroscopy to Probe the Carbon Monoxide-Nitrogen-Methane Ternary System. *Planetary Astronomy Late-Morning Seminar (PALS)*.
- A. Engle**, W. Grundy, S. Dustrud (2017). Raman Shop: Using Raman Spectroscopy to Probe the Carbon Monoxide-Nitrogen-Methane Ternary System. *REU End of Program Presentation*.
- J.M. Sunshine, L.M Feaga, T. Farnham, S. Protopapa, M.S. Kelley, **A. Engle** (2016). Characterizing the Large (cm-size) Grains Around Comet 103P/Hartley 2". *48<sup>th</sup> DPS Meeting*.

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## Research

**FINESST Fellow**, Northern Arizona University, Dept. of Astronomy & Planetary Sciences, 2021 – Present

Advisor: Dr. Jennifer Hanley

Topic: Mapping temperatures changes of methane-ethane liquidus when nitrogen and hydrocarbons found on Titan are added to the system

**Graduate Research Assistant**, Northern Arizona University, Dept. of Astronomy & Planetary Sciences, 2019–Present

Advisor: Dr. Jennifer Hanley

Topic: Mapping temperatures changes of methane-ethane liquidus when nitrogen and hydrocarbons found on Titan are added to the system

**Research Specialist**, Northern Arizona University, Dept. of Physics & Astronomy, 2018 – 2019

Advisor: Dr. Jennifer Hanley & Dr. Will Grundy

Topic: Mapping the methane-ethane binary system at Titan-like conditions

**Honors Thesis Student**, University of Maryland, Dept. of Astronomy, 2017 – 2018

Advisor: Prof. Jessica Sunshine

Topic: Removing terrestrial alteration from meteorite sample GRA 06128/9 through chemical leaching

**REU Summer Student**, Northern Arizona University, Dept. of Physics & Astronomy, 2017

Advisor: Dr. Will Grundy

Topic: Perturbing the nitrogen-methane binary system with the addition of carbon monoxide at Pluto conditions

**Undergraduate Research Assistant**, University of Maryland, Small Bodies Group, 2016 – 2017

Advisor: Prof. Jessica Sunshine

Topic: Characterizing the grains surrounding Comet 103P/Hartley 2

**Undergraduate Summer Research Assistant**, University of Maryland, Small Bodies Group, 2015

Advisor: Dr. Lori Feaga

Topic: Cataloging ultraviolet spectra of minerals commonly found in small bodies

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## Teaching and Mentor Experience

**NSF REU Co-Mentor**, Northern Arizona University, Dept. of Astronomy & Planetary Sciences, Summer 2021

**Graduate Teaching Assistant**, Northern Arizona University, Dept. of Astronomy & Planetary Sciences, 2020

**Undergraduate Teaching Assistant**, University of Maryland, Dept. of Astronomy, 2017 – 2018

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## Programming Languages

Python

MATLAB

IDL

IDL/ENVI

GMT