

EDUCATION

<i>Ph.D. Degree</i> , Geosciences ASU School of Earth and Space Exploration, Tempe AZ	Aug. 2014 – May 2020
<i>B.S. Degree</i> in Astronomy, Minors: Physics and Geology Case Western Reserve University (CWRU), Cleveland OH	Aug. 2010 – May 2014

SELECTED GRANTS AND AWARDS

51 Pegasi b Fellowship for Postdoctoral Research	2020 – 2023
NASA Earth and Space Science Fellowship (\$30,000 per year)	2016 – 2019
O. Richard Norton Award, 82nd Meteoritical Society Meeting (\$1700)	2019
ASU College of Liberal Arts and Sciences Graduate Excellence Award	2018
Brian Mason Award for conference abstract, IMCA (\$1,500)	2017

RESEARCH EXPERIENCE

Arizona State University, School of Earth and Space Exploration (Tempe, AZ)

NESSF graduate student with Dr. Meenakshi Wadhwa (2014-2020)

- Conducted REE geochemistry measurements using secondary ion mass spectrometry (SIMS) of martian meteorite shergottites LAR 12095, LAR 12240, and LAR 12011.
- Measured the Be-B, Al-Mg, and oxygen isotope systems in primitive meteorite inclusions from CV3, CR2, CO3, CR2, and CH/CB carbonaceous chondrites utilizing SIMS in order to better understand the astrophysical birth environment of our Solar System.

Research assistant with Dr. Steven Desch (2014-2019)

- Modeled the Kuiper Belt Object (KBO) Haumea using an algorithm by Hachisu (1986) in order to constrain its shape and predict its composition.

Classification of meteorites (2017-2019)

[*NWA 10918*](#) (CV3), [*NWA 11970*](#) (Lodranite), [*NWA 12282*](#) (Eucrite), [*NWA 12281*](#) (LL3)

- Conducted EPMA work to write Meteoritical Bulletin characterization.

TECHNICAL SKILLS

- Sample preparation including cutting, mounting, polishing, and cleaning of meteorites
- 4 years experience of secondary ion mass spectrometry (SIMS)
- 4 years experience of electron microprobe (EPMA)
- Experience using a DelTech high temperature furnace to make glass standards
- Matlab (astrophysical modeling, data reduction), Microsoft products, Illustrator

SELECTED PUBLIC SERVICE

- ASU, Center for Meteorite Studies outreach events: Earth and Space Exploration Day, Homecoming, Night of the Open Door, and Open House (2015-2019)
- Phoenix Astronomy Society public lecture – “Events in the Solar System from the solar nebula to Mars to the Kuiper Belt” (February 2018).
- Executive Secretary at Emerging Worlds Panel Proposal Review (August 2017)
- Girls Rule Foundation, Wings to Fly Summer Camp – presentation focused on empowering girls to pursue science and activities with meteorites (June 2017)
- Events (PI day and Girl Scout day) at Arizona Natural History Museum (2015, 2016)
- STEM Arizona conference showing teachers our loanable meteorite module (Spring 2015)
- *Meteorite Times Magazine*: [Understanding Solar System History: CAIs in Meteorites](#)

PEER-REVIEWED PUBLICATIONS

Dunham E.T., Wadhwa M., Desch S.J., Hervig, R.L. 2020. Best practices for determination of initial $^{10}\text{Be}/^{9}\text{Be}$ in early Solar System materials by SIMS. *Geostandards and Geoanalytical Research*, submitted.

Jarmak S., Leonard E., Schurmeier L., Akins A., Dahl E., Cremons D.R., Cofield S., Curtis A., Dong C., **E.T. Dunham**, Journaux B., Murakami D., Ng W., Piquette M., Pradeepkumar Girija A., Rink K., Stein N., Tallarida N., Telus M., Lowes L., Budney C., Mitchell. K.L. 2019. QUEST: A New Frontiers Uranus Orbiter Mission Concept Study. *Acta Astronautica* 170:6-26. <https://www.sciencedirect.com/science/article/abs/pii/S0094576520300412>

Dunham E.T., Desch S.J., Probst, L. 2019. Haumea’s Shape, Composition, and Internal Structure. *The Astrophysical Journal* 877:41.
<https://iopscience.iop.org/article/10.3847/1538-4357/ab13b3/meta>

Dunham E., Balta B., Wadhwa M., Sharp T.G., McSween H.Y. 2019. Petrology and geochemistry of olivine-phyric shergottites LAR 12095 and LAR 12240: Implications for their petrogenetic history on Mars. *Meteoritics and Planetary Science* 13262:1-25.
<https://onlinelibrary.wiley.com/doi/10.1111/maps.13262>

Dunham E., Kosiarek M., Markatou E.A., Wang A. 2014. Limits of astrometric and photometric precision on KBOs. *Publications of the Astronomical Society of the Pacific* 126: 863-867.
https://www.jstor.org/stable/10.1086/678328?seq=3#metadata_info_tab_contents

SELECTED CONFERENCE ABSTRACTS (*oral presentation)

***Dunham E.T.**, Liu M.-C., Herwig A.T., Desch, S.J., Wadhwa M. 2019. CO₃ and CH/CB CAIs suggest ^{10}Be was distributed uniformly in the solar nebula (abstract#6346). 82nd *Meteoritics & Planetary Science*.

***Dunham E.T.**, Wadhwa M., Liu M.-C., Herwig A.T., Kita N., Fukuda K., Schrader D.L., Davidson J. 2018. Pristine CR2 CAIs preserve initial abundances of short-lived radionuclides ^{10}Be and ^{26}Al (abstract#1928). 50th *Lunar and Planetary Science Conference*.

- ***Dunham E.**, Wadhwa M., Liu M.-C. 2017. The range of initial $^{10}\text{Be}/^{9}\text{Be}$ ratios in the early Solar System: a re-assessment based on analyses of new CAIs and melilite composition glass standards. (abstract #6381). 80th *Meteoritics & Planetary Science*.
- ***Dunham E.**, Desch S.J., Perera V., Schwartz S. 2017. Probing the internal structure and habitability of icy worlds using Haumea (abstract #3486). *Astrobiology Science Conference*.