

# Devin Lee Schrader

## 2014 – 2016 Curriculum Vitae

Center for Meteorite Studies  
School of Earth and Space Exploration  
Arizona State University  
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### Current Appointments

- 05/2015 – present:** Assistant Director, Center for Meteorite Studies, Arizona State University  
**05/2015 – present:** Assistant Research Professor, School of Earth and Space Exploration, Arizona State University

### Past Appointments

- 10/2013 – 09/2015:** Postdoctoral Fellow, Smithsonian Institution, National Museum of Natural History, Department of Mineral Sciences, Washington, DC.  
Advisor: Timothy J. McCoy  
**9/2012 – 8/2013:** Postdoctoral Fellow, Hawai‘i Institute of Geophysics and Planetology, University of Hawai‘i at Mānoa, Honolulu, HI.  
Advisor: Alexander N. Krot

### Professional Experience

- 2013 – present:** Science Team Collaborator with the Carbonaceous Meteorites Working Group, OSIRIS-REx asteroid sample return mission (NASA)

### Teaching and Outreach Experience

#### *Teaching*

GLG 485. *Meteorites and Cosmochemistry*. Presented one guest lecture for Dr. Meenakshi Wadhwa: OSIRIS-REx and Asteroid Sample Return Missions (ASU, Fall 2016)

#### *Lectures Given*

Silicate geothermometers in meteorites: Practice and Application (ASU/CMS, Fall 2016)

Formation and geothermometry of sulfides in meteorites (ASU/CMS, Spring 2016)  
Thermal Metamorphism in chondritic meteorites (ASU/CMS, Fall 2015)

### ***Outreach***

Conducted numerous tours of the Meteorite Gallery and the Meteorite Vault (2016, 2015)  
Managed the ASU Center for Meteorite Studies Facebook and Twitter pages (May 1<sup>st</sup> 2015–present)

Astronomy Night, Poston Jr. High School, Mesa, Arizona (Nov. 30<sup>th</sup>, 2016)

Earth and Space Exploration Day, SESE, ASU (Nov. 5<sup>th</sup>, 2016)

ASU Homecoming, Tempe, Arizona (Oct. 22<sup>nd</sup>, 2016)

Meet the Scientist, Arizona Museum of Natural History, Mesa, AZ (Oct 14<sup>th</sup>, 2016)

Phoenix ComiCon, Phoenix, Arizona (June 4<sup>th</sup>, 2016)

Astronomy Night, Arete Preparatory Academy, Gilbert, Arizona (Apr. 15<sup>th</sup>, 2016)

Night of the Open Door, SESE, ASU (Feb. 27<sup>th</sup>, 2016)

Astronomy Night, Carson Jr. High School, Mesa, Arizona (Feb. 23<sup>rd</sup>, 2016)

Outreach booth at Astronomy Night, Poston Jr. High School, Mesa, Arizona (Dec. 1<sup>st</sup>, 2015)

Outreach booth at ASU Homecoming, Tempe Arizona (Nov. 14<sup>th</sup>, 2015)

Outreach booth at Earth and Space Exploration Day, SESE, ASU (Nov. 7<sup>th</sup>, 2015)

Oral presentation at Daisy Mountain Gem and Mineral Club, Anthem, Arizona (Oct. 6<sup>th</sup>, 2015)

Panelist for Smithsonian Science How Webcast: Astrogeology – Meteorites and Spacecraft Missions (2015)

Outreach booth at Air & Scare Family Night, Udvar-Hazy Center, National Air and Space Museum (2014)

Oral presentation for Q?rius: The Expert is In, National Museum of Natural History (2014)

Outreach booth at Discover the Moon Day! National Air and Space Museum (2014)

### **Professional Service/Activities**

#### ***Journal Peer Review***

*Geochimica et Cosmochimica Acta* (6; 1, 2014; 3, 2015; 2, 2016)

*Meteoritics & Planetary Science* (5; 1, 2014; 1, 2015; 3, 2016)

*Earth and Planetary Science Letters* (1; 2014)

#### ***Book Peer Review***

*Book proposal for Elsevier* (2016)

#### ***Service***

Meteorite Working Group (MWG), Member (January 1<sup>st</sup>, 2016 – December 31<sup>st</sup>, 2019)

Curation and Analysis Planning Team for Extraterrestrial Materials (CAPTEM), Member (January 1<sup>st</sup>, 2016 – December 31<sup>st</sup>, 2019)

Meteoritical Society Membership Committee, Member (January 1<sup>st</sup>, 2017–December 31<sup>st</sup>, 2020) [accepted appointment in 2016]

### ***ASU/SESE/CMS Service***

2016 Development Success Seminars  
2016 Ninninger Student Travel Award Organizer and Reviewer  
2015 Ninninger Meteorite Award Organizer (2016)  
2016 CLAS Communicators  
2015 Development Success Network Meetings  
2015 CLAS Communicators Meetings  
2014 Ninninger Meteorite Award Organizer (2015)

### ***Review Panels (2014 – 2016)***

NASA Hayabusa2 Participating Scientist Program, Panel Member (2016)  
NASA Postdoctoral Program, External Reviewer (2016)  
NASA Earth and Space Science Fellowship, Panel Member (2015)  
NASA Emerging Worlds, External Reviewer (2015)  
NASA Emerging Worlds, External Reviewer (2014)

### ***Conferences***

46<sup>th</sup> Lunar and Planetary Science Conference – Session Chair (2015)

### ***Invited Talks***

Japan Society for the Promotion of Science, Pre-Forum Meeting on Future Cosmochemistry. The 21<sup>st</sup> “Science in Japan” Forum – US-Japan Collaboration in Space Sciences – Past, Present and Future, Washington DC (June 9<sup>th</sup>, 2016)  
McPherson College, Keynote Speaker, Kansas Academy of Science, McPherson, KS (April 1<sup>st</sup>, 2016)  
School of Earth and Space Exploration, Arizona State University, AZ (February 25<sup>th</sup>, 2015)  
Department of Physics, Washington University in St. Louis, MO (February 12<sup>th</sup>, 2015)  
Department of Physics, Washington University in St. Louis, MO (February 11<sup>th</sup>, 2015)  
Department of Mineral Sciences, Smithsonian Institution, Washington, DC (January 14<sup>th</sup>, 2015)

### ***Conferences Talks***

Lunar and Planetary Science Conference (2016, 2015, 2014)  
37<sup>th</sup> Symposium on Antarctic Meteorites, National Institute of Polar Research (2014)  
Hayabusa 2014, 2<sup>nd</sup> symposium of Solar System materials, JAXA (2014)

### ***Professional Societies/Memberships***

The Meteoritical Society

## Grants and Contracts

### *Current (awarded in 2016)*

Title: Constraining asteroidal formation and alteration conditions via microstructure and elemental compositions of sulfides from returned samples

Role: Principle Investigator

Sponsoring agency: NASA

Program Name: Laboratory Analysis of Returned Samples

Total budget: \$343,000

Performance period: Feb. 01<sup>st</sup>, 2017 – Jan. 31<sup>st</sup>, 2020

Commitment: 3 months/year, 0.25 FTE

Title: **E**xperimental Astrophysics **R**esearch into **T**errestrial growth **H** (EARTH)

Role: Collaborator

Name of PI: Nicolás Mujica

Sponsoring agency: Comisión Nacional de Investigación Científica y Tecnológica (CONICYT), Chile

Program name: QUIMAL-CONICYT FUND – 2016

Total budget: 549,060,520 CLP (~821,230 USD)

Performance period: Jan. 2<sup>nd</sup> 2017 to Jan. 1<sup>st</sup>, 2020

Commitment: *de minimis*

### *Previously Funded (ended in 2016)*

Title: Supporting the Spectral Analysis Science Test Data

Role: Principle Investigator

Sponsoring agency: NASA

Program name: OSIRIS-REx Mission Subcontract

Total budget: \$50,798

Performance period: Nov. 1<sup>st</sup>, 2015 to Dec. 31<sup>st</sup>, 2016

Commitment: 3 months/year, 0.25 FTE

## Publications

### *In Print and In Press*

7. **Schrader D. L.**, Nagashima K., Krot A. N., Ogliore R. C., Yin Q.-Z., Amelin Y. A., Stirling C. H., and Kaltenbach A. (2017) Distribution of <sup>26</sup>Al in the CR chondrite chondrule-forming region of the protoplanetary disk. *Geochim. Cosmochim. Acta.* (in press, doi. 10.1016/j.gca.2016.06.023). *in press June 2016, awaiting special issue*
6. **Schrader D. L.**, Davidson J., and McCoy T. J. (2016) Widespread evidence for high-temperature formation of pentlandite in chondrites. *Geochim. Cosmochim. Acta.* **189**, 359–376.
5. **Schrader D. L.**, Connolly H. C. Jr., Lauretta D. S., Zega T. J., Davidson J., and Domanik K. J. (2015) The formation and alteration of the Renazzo-like carbonaceous

- chondrites III: Towards understanding the genesis of ferromagnesian chondrules. *Meteorit. Planet. Sci.* **50**, 15–50.
4. Howard K. T., Alexander C. M. O'D., **Schrader D. L.**, and Dyl K. A. (2015) Classification of hydrous meteorites (CR, CM and C2 ungrouped) by phyllosilicate fraction: PSD-XRD modal mineralogy and planetesimal environments. *Geochim. Cosmochim. Acta.* **149**, 206–222.
  3. Davidson J., **Schrader D. L.**, Laretta D. S., Busemann H., Alexander C. M. O'D., Greenwood R. C., Domanik K. J., Franchi I. A., and Verchovsky A. (2014) Petrology, geochemistry, stable isotopes, Raman spectroscopy, and presolar components of RBT 04133: A reduced CV3 carbonaceous chondrite. *Meteorit. Planet. Sci.* **49**, 2133–2151.
  2. **Schrader D. L.**, Davidson J., Greenwood R. C., Franchi I. A., and Gibson J. M. (2014) A water-ice rich minor body from the early Solar System: The CR chondrite parent asteroid. *Earth Planet. Sci. Lett.* **407**, 48–60.
  1. **Schrader D. L.**, Nagashima K., Krot A. N., Oglione R. C., and Hellebrand E. (2014) Variations in the O-isotope compositions of gas during the formation of chondrules from the CR chondrites. *Geochim. Cosmochim. Acta.* **132**, 50–74.

## Abstracts

- Nagashima N., Krot A. N., Libourel G., and **Schrader D. L.** (2016) <sup>16</sup>O-rich olivine abundances in FeO-rich chondrules and their rims from CR chondrites. *Goldschmidt*.
- Mori M., Tachibana S., Piani L., Marrocchi Y., **Schrader D. L.**, and Connolly H. C., Jr. (2016) Cooling experiments of Fe-FeS melt: A cooling speedometer of chondrules. *Goldschmidt*.
- Busemann H., Kuga M., Spring N. H., **Schrader D. L.**, Holinger S., Maden C., and Fehr M. (2016) Noble gases in CR chondrites: The primordially trapped inventory and records of parent body, space and terrestrial processing. *Developments In Noble Gas Understanding and Expertise 4*.
- Schrader D. L.** and Davidson J. (2016) Pristine pre-accretionary signatures in CM chondrite silicates: A common parent-body with the CO chondrites? *Lunar Planet. Sci. XLVII*, Lunar Planet. Inst., Houston, #1288.
- Schrader D. L.**, Fu R. R., and Desch S. J. (2016) Evaluating chondrule formation models and the protoplanetary disk background temperature with low-temperature, sub-silicate solidus chondrule cooling rates. *Lunar Planet. Sci. XLVII*, Lunar Planet. Inst., Houston, #1180.
- Sanborn M. E., Yin Q.-Z., and **Schrader D. L.** (2015) Aqueous alteration and its effect on  $\epsilon^{54}\text{Cr}$ : An investigation of CR1 and CR2 chondrites. *78<sup>th</sup> Meeting of the Meteoritical Society* (abstract #5157).
- Schrader D. L.**, McCoy T. J., and Davidson J. (2015) Widespread evidence for high-temperature formation of pentlandite in chondrites. *Lunar Planet. Sci. XLVI*, Lunar Planet. Inst., Houston, #1604.
- Davidson J., Alexander C. M. O'D., **Schrader D. L.**, Nittler L. R., and Bowden R. (2015) Miller Range 090657: A very pristine Renazzo-like (CR) carbonaceous chondrite. *Lunar Planet. Sci. XLVI*, Lunar Planet. Inst., Houston, #1603.

- Fu R., Weiss B. P., and **Schrader D. L.** (2015) Magnetic fields in the late-stage solar nebula recorded in CR chondrites. *Lunar Planet. Sci.* XLVI, Lunar Planet. Inst., Houston, #1587.
- Schrader D. L.**, McCoy T. J., Keller L. P., Connolly H. C. Jr., Nakamura-Messenger K., Lauretta D. S., and the OSIRIS-Rex Team. (2014) Abundant amorphous silicates in primitive chondrites: Implications for asteroid Bennu. *Hayabusa 2014, 2<sup>nd</sup> symposium of Solar System materials*, JAXA.
- Schrader D. L.**, McCoy T. J., and Davidson J. (2014) Widespread evidence for high-temperature formation of pentlandite in chondrites. *37<sup>th</sup> Symposium on Antarctic Meteorites*, National Institute of Polar Research.
- Jilly C. E., Huss G. R., Nagashima K., and **Schrader D. L.** (2014) Oxygen isotopes and geothermometry of secondary minerals in CR chondrites. *77<sup>th</sup> Meeting of the Meteoritical Society* (abstract #5395).
- Schrader D. L.**, Davidson J., Greenwood R. C., Franchi I. A., and Gibson J. M. (2014) O-isotope compositions of CR chondrite matrix: Implications for aqueous alteration. *Lunar Planet. Sci.* XLV, Lunar Planet. Inst., Houston, #1562.