

## Research Statement

I am a cosmochemist, isotope geochemist, and a planetary scientist. My research focuses on the study of chemical, microstructural, and isotopic characteristics of meteorites and astromaterials. One of my highest aspirations is to work on pioneering methods, which significantly advance our knowledge about the building blocks of the Solar System. I have a strong interest in

developing coordinated laboratory techniques to study cosmochemistry and isotope geochemistry of meteorites and samples returned from various planetary missions. I actively participate in outreach activities representing Lunar and Planetary Institute, USRA in accordance with the principles of diversity, equity, and inclusion.

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## Education

Arizona State University (School of Earth and Space Exploration) <b>PhD in Geological Sciences</b>	TEMPE, USA <i>Aug 2011 – Sept 2016</i>
Indian Institute of Technology <b>MSc in Applied Geology</b>	MUMBAI, INDIA <i>June 2008 – April 2010</i>
Mumbai University (St. Xavier's College) <b>BSc in Geology</b>	MUMBAI, INDIA <i>June 2005 – May 2008</i>

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## Professional Experience

Lunar and Planetary Institute (USRA) <b>Staff Scientist</b>	HOUSTON, USA <i>June 2022 – present</i>
Lunar and Planetary Institute (USRA) <b>Visiting Scientist</b>	HOUSTON, USA <i>Sept 2021 – May 2022</i>
Lunar and Planetary Institute (USRA)/NASA Johnson Space Center <b>Postdoctoral Fellow</b> <ul style="list-style-type: none"><li>Isotopic and microstructural analysis of refractory materials in meteorites to determine chemical pathways and conditions of high-temperature processes in the early solar system materials</li></ul>	HOUSTON, USA <i>July 2018 – Aug 2021</i>
Lunar and Planetary Laboratory, University of Arizona <b>Postdoctoral Research Associate</b> <ul style="list-style-type: none"><li>Electron backscatter diffraction and transmission electron microscopy analysis of primitive materials from meteorites</li></ul>	TUCSON, USA <i>Dec 2016 – June 2018</i>
School of Earth and Space Exploration, Arizona State University <b>Graduate Research Associate</b> <ul style="list-style-type: none"><li><math>^{26}\text{Al}</math>-<math>^{26}\text{Mg}</math> chronology of Wark-Lovering rims around Calcium-Aluminum rich Inclusions from primitive meteorites using Nano Secondary Ion Mass Spectrometer (NanoSIMS 50L)</li><li>Hydrogen isotopic composition of martian meteorites using Secondary Ion Mass Spectrometer (SIMS 6f) to acquire insight into martian water reservoirs</li><li>Magnesium isotopic fractionation in Calcium-Aluminum rich Inclusions from primitive meteorites using Multi Collector Inductively Plasma Mass Spectrometer (MC-ICP-MS)</li><li>Zirconium isotopic fractionation in Calcium-Aluminum rich Inclusions from primitive meteorites to understand nucleosynthetic anomalies in the early solar system</li><li>Trace elements geochemistry of refractory inclusions from primitive meteorites using SIMS</li></ul>	TEMPE, USA <i>2011 – 2016</i>
Physical Research Laboratory <b>Project Associate</b> <ul style="list-style-type: none"><li>Characterizing petrology and mineralogy of Allende CAIs using Electron Microprobe</li><li><math>^{26}\text{Al}</math>-<math>^{26}\text{Mg}</math> chronology of Allende CAIs using MC-ICP-MS</li><li>Sulfur isotopic systematics of sedimentary rocks from Permian-Triassic boundary</li></ul>	AHMEDABAD, INDIA <i>May 2010 – June 2011</i>
Schlumberger (DSC@ccess segment) <b>Summer Intern</b> <ul style="list-style-type: none"><li>Geological Studies of Mumbai High North Field using Azimuthal Density Neutron and GeoVision Resistivity tools</li></ul>	MUMBAI, INDIA <i>June 2009 – July 2009</i>

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## Federal Grants

Co-I, Laboratory Analysis of Returned Samples (PI C. A. Goodrich)	2023 - 2026
Co-I, 2021 NASA TEAMS II (PI L.R. Gaddis)	2023 - 2026
PI, Emerging Worlds Title: Assessing the efficacy of $^{92}\text{Nb}$ - $^{92}\text{Zr}$ chronometer: A powerful tool to constrain the timescales of early Solar System events	2021 - 2023
Collaborator, Emerging Worlds (PI T. J. Zega)	2019 - 2021
Collaborator, Emerging Worlds (PI J. I. Simon)	2017 - 2020
Graduate Student, NASA Earth and Space Science Fellowship (PI M. Wadhwa)	2013 - 2016

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## Awards and Honors

Lunar and Planetary Institute, USRA Spot Award	2020
NASA Earth and Space Science Fellowship (NESSF)	2013 - 2016
NASA Mars Student Travel Grant - to support workshop attendance, <i>Volatiles in the Martian Interior</i> , Houston, TX	2014
Graduate Excellence Award, ASU College of Liberal Arts and Sciences (CLAS)	2014
NASA Astrobiology Winter School travel award (University of Hawaii-NASA)	2014
Meteoritical Society (Metsoc) travel grants	2013 - 2016
NASA Planetary Science Summer School travel grant (JPL)	2014
GPSA Travel Grant for Lunar and Planetary Science Conference (ASU)	2014
Council for Scientific and Industrial Research fellowship (CSIR - Govt. of India)	2010
Mumbai University scholarship for securing 1st rank in BSc Geology	2008

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## Skills

- CAMECA NanoSIMS 50L (Nano Secondary Ion Mass Spectrometer):** Developing protocols for Mg isotopic analyses, to analyse Al-Mg chronology of chondritic components, Oxygen isotopic imaging of chondritic components
  - CAMECA SIMS 6f (Secondary Ion Mass Spectrometer):** Hydrogen isotopic analyses of martian meteorites and Trace element analyses of refractory inclusions from primitive meteorites
  - Hitachi HF5000 TEM (Transmission Electron Microscope):** Microstructural and compositional analysis of refractory materials in primitive meteorites
  - Focused Ion Beam (FIB) Secondary electron Microscope (SEM):** Microstructural and compositional analysis of refractory materials in primitive meteorites
  - Electron Backscatter Diffraction (EBSD):** Microstructural and compositional analysis of refractory materials in primitive meteorites
  - Electron Probe (JEOL JXA-8530F Hyperprobe):** Mineralogical, compositional and textural characterization of CAIs, and martian meteorites, using back-scattered electron and X-ray mapping as well as spot analyses
  - MC-ICP-MS (MultiCollector Inductively Coupled Plasma Mass Spectrometer):** High precision Mg and Zr bulk isotopic analyses of refractory inclusions from primitive meteorites
  - Clean Chemistry Lab:** Experience with clean chemistry laboratory techniques, specifically for meteoritics and cosmochemistry research and developing Ion exchange chromatographic techniques for Mg and Zr
  - Rock sample preparation techniques,** in a petrographic section lab
  - Programming Skills** Experience with Java, Matlab and Git (distributed version control system); some experience managing Git repositories for small group projects
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## Workshop Participation

- NASA's PI Launchpad** University of Michigan, July 24-27, 2023
- Alan Alda Workshop for Science Communication** University of Arizona, Feb 6-7, 2018
- Workshop on Volatiles in the Martian Interior** Houston, TX, Nov 3-5, 2014
- NASA Planetary Science Summer School** Jet Propulsion Laboratory, Pasadena, July 2014
- NASA Astrobiology Winter school** (University of Hawaii-NASA), January 2014
- Geochronology and Isotope Geochemistry** at [National Geophysical Research Institute](#), Hyderabad, India, 14th-18th February 2011
- Mars Brain Storming Session** (Mars Brain Storming Session, at PLANEX, Physical Research Laboratory (PRL), India, 23rd-24th March 2011
- PLANEX 2010 workshop** (Planetary Sciences and Space Instrumentation at Punjab University, India, (Organized by PLANEX, Physical Research Laboratory, India), February 1-5, 2010
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## Service and Public Engagement

- Small Bodies Assessment Group (SBAG) Steering Committee Member 2022-present
- Executive secretary and panel member on 12 NASA Review Panels 2016-present
- Emerging Worlds
  - Laboratory Analysis of Returned Samples
  - Solar System Working
  - Planetary Data Archiving, Restoration, and Tools
  - Exoplanets Research Program
  - NASA Earth and Space Science Fellowship
  - Future Investigators in NASA Earth and Space Science and Technology
- Lunar and Planetary Science Conference Program Committee Member 2020-2021
- Planetary Scientists of Color Panel Discussion Co-Organizer March 2021
- Peripheral Event at the Lunar and Planetary Science Conference
- Session Chair, 84<sup>th</sup> Meteoritical Society Meeting, Chicago Aug 2021
- Lunar and Planetary Institute Virtual Seminars Co-Organizer 2020-2021
- Reviewer for The Planetary Science Journal 2019-present
- [Unlearning Racism in Geosciences \(URGE\)](#) 2021
- USRA Pod member
- LPI Career Development Award Reviewer 2020
- Writer for LPI Planetary News 2018-2021
- Session Chair, Microscopy and Microanalysis meeting, Baltimore Aug 2018
- Outreach Volunteer Aug 2011 to Oct 2016
- Monthly Earth and Space Exploration Open House events, ASU
  - Annual Earth and Space Exploration (ESE) Day, ASU
- Graduate and Professional Students Association (GPSA) Volunteer 2012 – 2014
- Travel Grant reviewer, ASU
- Outreach Volunteer October 2013
- Astronomy Day at Arizona Science Center, representing the Center for Meteorite Studies
- Panelist for Phoenix Comicon 2013
- Served on Meteorites Panel
- India Fellow, Summer Intern with 'TVolunteer' May – June 2006
- Worked with BASIX, Intermon Oxfam and a grass roots NGO Paryay in Osmanabad, India, helping to develop a Community Based Micro Finance (CBMFI) project for Dalit marginalized women laborers, in order to initiate and support their small scale business ventures.
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## Academic Mentoring

Victoria Burnett, LPI Summer Intern Currently undergraduate student at University of Texas, Austin	June-Aug 2023
Keynab Mouti, LPI Summer Intern Currently undergraduate student at Arizona State University	June-Aug 2022
Matt Comins, LPI Summer Intern Currently Ph.D. student at University of Notre Dame	June-Aug 2019

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## Invited Talks

Center for Integrative Planetary Sciences, University of California, Berkeley	April 2023
Department of Earth and Planetary Science, University of Texas, San Antonio	Mar 2023
Physical Research Laboratory, Ahmedabad, India	Dec 2021
<a href="#">Galaxy Frights</a> (Space Center, Houston)	Oct. 2021
Center for Meteorite Studies,(Arizona State University)	Jan. 2021
Space Telescope Institute (STScI)	Nov. 2020
Lunar and Planetary Institute, USRA Houston (Summer Internship Program Seminar)	June. 2020
Lunar and Planetary Institute, USRA Houston (Asteroid Day Outreach Talk)	June. 2020
St. Xaviers College, Mumbai, India (TERRA Lecture)	Nov. 2019
Indian Institute of Technology, Bombay, Mumbai, India	Nov. 2019
ARES NASA Johnson Space Center, Houston, TX (Brown bag Seminar)	Oct. 2019
Lunar and Planetary Institute, Houston, TX	Apr. 2018
University of Arizona, Tucson, AZ (Origin Seminar)	Nov. 2017
Lunar and Planetary Laboratory Conference, LPL, University of Arizona	Aug. 2017
Indian Institute of Technology, Bombay, Mumbai, India	Nov. 2016
ASU Astrobiology Coffee Hour talk (broadcasted on <a href="http://sagannet.org">sagannet.org</a> )	Sept. 2014
St.Xaviers College, Mumbai, India	Aug. 2014

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## Publications

12. **Mane P.**, Nguyen A. N., Messenger S., Ross D. K., Simon J. I. (*under revisions in Earth and Planetary Science Letters*) Oxygen Isotopic Mapping of Calcium-Aluminum-rich Inclusions using NanoSIMS 50L: A Perovskite Perspective.
11. Nguyen A. N., **Mane P.**, Keller L., Piani L., and Hayabusa2 Initial Analysis Chemistry Team. Abundant presolar grains and primordial organics preserved in exogenous clasts in asteroid Ryugu. (*Science Advances* 9(28), eadh1003)
10. Desch S. J., Dunham E. T., Herbst A. K., Unterborn C. T., Sharp T. Bose M., **Mane P.**, Williams C. D. Origin of Low-<sup>26</sup>Al/<sup>27</sup>Al Corundum/Hibonite Inclusions in Meteorites. (*The Astrophysical Journal* 953(2), 146)
9. Desch S. J., Dunlap D. R., Dunham E. T., Williams C. D., **Mane P.**, (2023) Statistical Chronometry of Meteorites. I. A Test of <sup>26</sup>Al homogeneity and the Pb-Pb age of the Solar System's t=0. (*Icarus* 402, 115607)
8. Desch S. J., Dunlap D. R., Williams C. D., **Mane P.**, (2023) Statistical Chronometry of Meteorites II. Initial abundances and homogeneity of short-lived radionuclides. (*Icarus* 402, 115611)
7. **Mane P.**, Bose M., Wadhwa M., Defouilloy C. (2023) Protracted Timescales for Processing of Chondritic Refractory Inclusions in the Solar Nebula. (*The Astrophysical Journal* 946:37)

6. **Mane P.**, Wallace S., Wallace P., Bose M., Domanik K., Wadhwa M., Zega T. J. (2022) Earliest Evidence of Nebular Shock Waves Recorded in Calcium-Aluminum-rich Inclusions. (*Geochimica et Cosmochimica Acta* 332, 369 - 388)
5. Jenniskens P., Moskovitz N., Garvie L. A. J., Yin Q-Z., Howell J. A. Howell, Free D. L., Abers J., Samuels D., Fries M. D., **Mane P.**, Dunlap D. R., Ziegler K., Sanborn M. E., Zhou Q., Li Q-L., Li X-H., Liu Y., Tang G-Q., Welten K. C., Cafee M. W., Busemann H., Meier M. M. M., Nesvorny D. (2020) Orbit and origin of the Dishchibikoh (Arizona) LL7 chondrite. (*Meteoritics and Planetary Science*, 55(3), 535 - 557)
4. Shollenberger Q. R., Wittke A., Render J., **Mane P.**, Schuth S., Weyer S., Gussone N., Wadhwa M., Brennecka G. A. (2019) Combined Mass-Dependent and Nucleosynthetic Isotope Variations in Refractory Inclusions and their Mineral Separates to Determine their Original Fe Isotope Compositions. (*Geochimica et Cosmochimica Acta* 263, 215 - 234)
3. Stephant A., Garvie L.A.J., **Mane P.**, Hervig R., Wadhwa M. (2018) Terrestrial Exposure of a Fresh Meteorite Causes Rapid Changes in Hydrogen Isotopes and Concentrations. (*Scientific Reports* 8, 12385)
2. **Mane P.**, Hervig R., Wadhwa M., Garvie L.A.J., M., Balta J. B., McSween H. Y. Jr. (2016) Hydrogen Isotopic Composition of the Martian Mantles inferred from the Newest Martian Meteorite Fall Tissint. (*Meteoritics and Planetary Science* 51(11), 2073 - 2091)
1. Filiberto J., Baratoux D., Beaty D., Breuer D., Farcy B. J., Grott M., J.H. Jones J. H., W.S. Kiefer W. S., **Mane P.**, McCubbin F. M., Schwenzer S. P. (2016) A Review of Volatiles in the Martian Interior. (*Meteoritics and Planetary Science*, 51(11), 1935 - 1958)

**PhD Thesis (2016)** Isotopic Investigations of Meteoritic Materials: From Earliest-Formed Solids to Planetary Bodies. (Advisor: Meenakshi Wadhwa, School of Earth and Space Exploration, Arizona State University, USA)

**MSc Thesis (2010)** Geochemistry of 'Red Boles' along the Poladpur- Mahabaleshwar section, Deccan Volcanic Province. (Advisor: Kanchan Pande, Indian Institute of Technology, Bombay, India)

#### **Planetary Decadal Survey White Paper**

Jacobson S., Bose M., Bodewits D., Fries M., Jha D., **Mane P.**, Nittler L., Sanford S., Thompson M., (2020) Small Bodies Tell the Story of the Solar System: A Scientific Rationale for a Multi-Target Small Body Sample Return Program including the Earth-based Laboratory Analysis of Returned Samples. (*LPI Contribution* #2399)

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#### **Conference Abstracts**

54. Nguyen A. N., **Mane P.**, Keller L. P., Rahman Z., Piani L. and The Hayabusa2 initial analysis chemistry team (2023) Cr-rich AND Al-rich Oxide Grains with <sup>16</sup>O-rich Compositions in Ryugu Ssamples. *85th Annual Meteoritical Society Meeting*, #61445
53. Mouti Al-Hashimi X., **Mane P.**, Setera J. B., and Simon J. I. (2023) Trace Elemental Abundances in Calcium-Aluminum-Rich Inclusions in CV Chondrites *54th Lunar and Planetary Science Conference*, #2925
52. Goodrich C. A., Lee S. **Mane P.**, Hamilton V. E., Zolensky M. E., Kita N. T., Harrington R., and Jercinovic M. J. (2023) Ryugu and the Quest for Unaltered CI-Like Materials from the Early Solar System *54th Lunar and Planetary Science Conference*, #1446
51. McAdam M. M., Rathbun J., McCanta M. C., A. Deutsch A., Knically J., Neveu M., Dinwiddie C. L., Roberts J. H., Thomson B. J., Regoli L. H., Izenberg N. R., Stopar J., Gaddis L. R., **Mane P.**, Bjonnes E., Diniega S., Bennett K. A. and Venkatesan A. (2023) Cross-AG Inclusion, Diversity, Equity and Accessibility (IDEA) Working Group: 2023 Priorities. *54th Lunar and Planetary Science Conference*, #2403
50. **Mane P.**, Nguyen A. N., Hahn T. M. Jr., and Simon J. I. (2022) Oxygen Isotopic Composition of Refractory Inclusions from the Miller Range (MIL) 090019 Carbonaceous Chondrite *84th Annual Meteoritical Society Meeting*, #6369
49. Nguyen A. N., **Mane P.**, Piani L. and The Hayabusa2 initial analysis chemistry team (2022) Presolar C- and O-rich Grains in the Matrix and a Clast in Asteroid Ryugu *84th Annual Meteoritical Society Meeting*, #6376
48. Nguyen A. N., **Mane P.**, Piani L. and The Hayabusa2 initial analysis chemistry team (2022) Oxygen Isotopic Mapping of a Clast in Fragment C0002 from Asteroid Ryugu *84th Annual Meteoritical Society Meeting*, #6382

47. Ramprasad T., Seifert L. B., **Mane P.**, Zega T. J. (2022) A Correlative Electron Microscopy Study of a Ru-rich Metal Grain from a Calcium-aluminum-rich Inclusion *53rd Lunar and Planetary Science Conference*, #2809
46. Desch S. J., Dunlap D. R., Williams C. D., **Mane P.**, and E. T. Dunham (2022) A combined Al-Mg/Pb-Pb Age of the Solar System *53rd Lunar and Planetary Science Conference*, #2567
45. Ramprasad T., Seifert L. B., **Mane P.**, Zega T. J. (2022) A Transmission Electron Microscopy Study of a Refractory Metal Grain from a Calcium-Aluminum-Rich Inclusion in the Leoville CV3 Chondrite *Microscopy and Microanalysis 2022 Meeting*
44. Shupla C., Gorce J. S., Filiberto J., **Mane P.**, Rivera-Valentín E. G., Svambera C., (2022) Braving Diversity *53rd Lunar and Planetary Science Conference*, #2159
43. **Mane P.**, Ross D. K., Simon J. I. (2021) A Population Study of the Refractory Inclusions in Miller Range (MIL) 090019 CO3 Carbonaceous Chondrite. *84th Annual Meteoritical Society Meeting*, #6275 (**Presented as a talk**)
42. Desch S. J., **Mane P.**, Dunham E. T., Williams C. D. (2021) Oxygen Isotope Reservoirs in the Solar Nebula. *84th Annual Meteoritical Society Meeting*, #6244
41. Dunham E. T., Desch S. J., Torrano Z. T., **Mane P.**, Williams C. D. (2021) A Reassessment of Aluminum-26 in FUN CAIs. *84th Annual Meteoritical Society Meeting*, #6273
40. Torrano Z. T., Desch S. J., Dunham E. T., Williams C. D., **Mane P.** (2021) A Reassessment of the Titanium Isotopic Compositions of FUN CAIs. *84th Annual Meteoritical Society Meeting*, #6262
39. Herbst A. K., Desch S. J., Williams C. D., Dunham E. T., **Mane P.** (2021) Radial Distribution of Ca-Rich, Al-Rich Inclusions in the Solar Nebula. *84th Annual Meteoritical Society Meeting*, #6272
38. **Mane P.**, Desch S. J., Dunham E. T., Williams C. D. (2021) Oxygen Isotope Reservoirs in the Solar Nebula. *52nd Lunar and Planetary Science Conference*, #2566 (**Presented as a talk**)
37. Nguyen A. N., **Mane P.**, Ross D. K., Simon J. I. (2021) Presolar Grain Abundance Variation in the Miller Range 090019 CO3 Chondrite. *52nd Lunar and Planetary Science Conference*, #2709
36. Nguyen A. N., **Mane P.**, Ross D. K., Simon J. I. (2021) Identification of an <sup>16</sup>O-poor Solar System Condensate in Miller Range 090019 CO3 Chondrite. *52nd Lunar and Planetary Science Conference*, #2769
35. Desch S. J., Herbst A. K., Williams C. D., Dunham E. T., **Mane P.** (2021) Radial Distribution of CAIs. *52nd Lunar and Planetary Science Conference*, #2663
34. **Mane P.**, Nguyen A. N., Ross D. K., Simon J. I. (2020) Oxygen Isotopic Imaging of Refractory Inclusions from the Miller Range (MIL) 090019 CO3 Chondrite: A Perovskite Perspective. *51st Lunar and Planetary Science Conference*, #2681
33. **Mane P.**, Zega T. J., Nguyen A. N., Simon J. I. (2020) O Isotopic and Microstructural Analyses of Opaque Mineral Assemblages and their Alteration Products Hosted in a Refractory Inclusion. *51st Lunar and Planetary Science Conference*, #2467
32. Comins M.B., **Mane P.**, Simon J.I., Arnytage R.M.G., Ross D.K., Erickson T.M. (2020) Capturing an evolving nebular environment: A petrographic and geochemical study of a Type A, B and C CAIs. *51st Lunar and Planetary Science Conference*, #1612
31. **Mane P.**, Nguyen A. N., Barnes J. J., Needham A. W., Messenger S., Ross D. K., Simon J. I. (2019) Oxygen Isotopic Imaging of a Hibonite-Grossite-rich Inclusion from the Miller Range (MIL) 090019 CO3 Chondrite. *82nd Annual Meteoritical Society Meeting*, #6492
30. **Mane P.**, Wallace S., Wallace P., Chang Y. J., Domanik K., Zega T. J. (2018) Coordinated EBSD and TEM Analysis to Decipher Shock Deformation Effects in the Oldest Solids in the Solar System. *Microscopy and Microanalysis 2018 Meeting* (**Presented as a talk**)
29. Slick L. R., **Mane P.**, Howe J., Zega T. J. (2018) Toward Quantification of Ti-Oxidation States in Planetary Materials via Application of the EELS White-Line Ratio Technique *Microscopy and Microanalysis 2018 Meeting*
28. Ramprasad T., **Mane P.**, Zega T. J. (2018) Aberration-corrected STEM/TEM Chemical Analysis and Imaging of Meteoritic Refractory Oxide Assemblages. *Microscopy and Microanalysis 2018 Meeting*
27. **Mane P.**, Zega T.J. (2018) Timescales of Planet Formation from a Meteoritic Perspective *SPF2 Star and Planet Formation in the Southwest*.

26. **Mane P.**, Wallace S., Wallace P. M., Domanik K., Zega T.J. (2018) Electron Backscatter Diffraction Analysis of the Earliest-formed Solids in the Solar System. *48th Lunar and Planetary Science Conference*, #2450
25. **Mane P.**, Chang Y. J., Wallace P. M., Zega T.J. (2018) Transmission Electron Microscope Analysis of High Temperature Rims around Type-B CAIs. *48th Lunar and Planetary Science Conference*, #2851
24. Zega T.J., **Mane P.** (2018) Nanoscale Analysis of a Metal-Perovskite Assemblage in the NWA 5028 CR2 Chondrite. *48th Lunar and Planetary Science Conference*, #2991
23. Ramprasad T., **Mane P.**, Zega T. J. (2018) Transmission Electron Microscope Analysis of a Spinel-Perovskite Assemblage within a Refractory inclusion from the NWA 5028 CR2 Chondrite. *48th Lunar and Planetary Science Conference*, #2900
22. **Mane P.**, Domanik K., Wallace P. M., Zega T. J. (2017) Compositional and Microstructural Analysis of Metal Assemblages Hosted in a Refractory Inclusion. *80th Annual Meteoritical Society Meeting*, #6360 (**Presented as a talk**)
21. **Mane P.**, Wallace S., Zega T. J., Wadhwa M., Wallace P. M., (2017) Coordinated X-ray, Ion, and Electron Microanalysis Approach towards Understanding the Earliest-Formed Solids in the Solar System. *Microscopy and Microanalysis 2017 Meeting (Presented as a talk)*
20. Zega T. J., Manga V., Watanabe K., Domanik K., **Mane P.**, Hanawa A., Inada H., Howe J. Y., Muralidharan K. (2017) A Combined Atomic-Resolution STEM and First-Principles Approach Towards Understanding the Origins of the First Solar-System Solids. *Microscopy and Microanalysis 2017 Meeting (Presented as a talk)*
19. **Mane P.**, Wallace S., Zega T. J., Wadhwa M., Wallace P. M. (2017) Electron Back-scattered Diffraction Analysis of A Refractory Inclusion and Its Wark-Lovering Rims. *48th Lunar and Planetary Science Conference*, #2968
18. Stephant A., **Mane P.**, Garvie L. A. J., Hervig R., Wadhwa M. (2017) Effects of Desert Weathering on Meteoritic Hydrogen Isotope Systematics: Insights from Tissint. *48th Lunar and Planetary Science Conference*, #1232
17. **Mane P.**, Bose M., Wadhwa M. (2016) Al-Mg Systematics of Wark-Lovering Rims around a Refractory Inclusion from the NWA 5028 CR2 Chondrite. *79th Annual Meteoritical Society Meeting*, #6238 (**Presented as a talk**)
16. **Mane P.**, Bose M., Defouilloy C., Kita N. T., MacPherson G. J., Wadhwa M. (2016) Formation Timescales of Wark-Lovering Rims around Calcium-Aluminum rich Inclusions. *47th Lunar and Planetary Science Conference*, #2560 (**Presented as a talk**)
15. **Mane P.**, Torrano Z. A., Romaniello S. J., Brennecka S. J., Shollenberger Q. R., Borg L., Wadhwa M. (2016) Zirconium and Chromium Isotopic Systematics of Non-Allende CAIs. *47th Lunar and Planetary Science Conference*, #2778
14. **Mane P.**, Hervig R., Bose M., Wadhwa M. (2015) Trace Element Abundances in Wark-Lovering Rims of CAIs: Implications for their Chronology. *78th Annual Meteoritical Society Meeting*, #5327 (**Presented as a talk**)
13. **Mane P.**, Bose M., Wadhwa M. (2015) Resolved Time Difference between Calcium-Aluminum rich Inclusions and their Wark-Lovering Rims Inferred from Al-Mg Chronology of Two Inclusions from a CV3 Carbonaceous Chondrite. *46th Lunar and Planetary Science Conference*, #2898 (**Presented as a talk**)
12. Filiberto J., Baratoux D., Beaty D., Breuer D., Farcy B. J., Grott M., J.H. Jones J. H., W.S. Kiefer W. S., **Mane P.**, McCubbin F. M., Schwenzer S. P. (2015) Constraints, Questions, and Future Directions on Volatiles in the Martian Interior: A Summary of the Workshop. *46th Lunar and Planetary Science Conference*, #2064
11. Kööp L., Davis A. M., Heck P. R., Kita N. T., Krot A. N., **Mane P.**, Nagashima K., Nakashima D., Park D. C., Tenner T. J., Wadhwa M. (2015) Multiple Generations of Fractionated Hibonite-Rich CAIs Samples the Solar Nebula at Different Degrees of Isotopic Heterogeneity. *46th Lunar and Planetary Science Conference*, #2750
10. **Mane P.**, Hervig R., Wadhwa M., Garvie L. A. J. (2014) Hydrogen Isotopic Composition of Mars Mantle Inferred from the Most Recent Martian Meteorite Fall, Tissint. *Workshop on Volatiles in Martian Interior*, #1020 (**Presented as a talk**)
9. Arias-Young T. M., Jensema R. J., Wilkins A. N., Ermakov A., Bennett C., Dietrich A., Hemingway D., Klein V., **Mane P.**, Marr K. D., Masterson J., Siegel V., Stober K. J., Talpe M., Vines S. K., Wetteland C. J. (2014) Core to Atmosphere Exploration of Ice Giants: A Uranus Mission Concept Study. *American Geophysical Union Fall Meeting*

8. **Mane P.**, Romaniello S. J., Brennecka G. A., Williams C. D., Wadhwa M. (2014) Zr Isotope Systematics of Allende CAIs. *77th Annual Meteoritical Society Meeting*, #5430 **(Presented as a talk)**
  7. **Mane P.**, Brennecka G. A., Romaniello S. J., Wadhwa M. (2014) Mg and U Isotopic Systematics in Allende CAIs: Implications for the Origin of Uranium Isotopic Variations in Refractory Inclusions. *45th Lunar and Planetary Science Conference*, #1685 **(Presented as a talk)**
  6. Tucker K. Hervig R., **Mane P.**, Romaniello S., Wadhwa M. (2014) Hydrogen Isotopic Systematics of Maskelynyites in the Shergottites Zagami, QUE 94201 and Tissint: Terrestrial contamination or deuterium alteration? *44th Lunar and Planetary Science Conference*, #2190
  5. **Mane P.**, Wadhwa M., Keller L. P. (2013) Trace Elemental Abundances in an Unusual Hibonite-Perovskite Refractory Inclusion from Allende. *76th Meteoritical Society Meeting*, #5268 **(Presented as a talk)**
  4. **Mane P.**, Hervig R., Wadhwa M., Balta J. B., McSween H. Y. Jr. (2013) Hydrogen Isotopic Composition of Tissint, the Newest Martian Meteorite fall. *44th Lunar and Planetary Science Conference*, #2220 **(Presented as a talk)**
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## Media and Public Engagement

June 2016 Arizona Fireball

*ASU Press release*

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