

Curriculum Vitae, Denton S. Ebel

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DEGREES

Ph.D. Purdue University	Geology, December, 1993
M.S. Purdue University, W. Lafayette, IN	Geology, August 1988
B.A. Harvard College, Cambridge, MA	Sociology, June 1982

ACADEMIC APPOINTMENTS

2015-present	Adjunct Professor, Dept. Earth & Environmental Sci. , Columbia U.
2015-present	Faculty, Master of Arts in Teaching , Earth Sci. Residency Program, RGGGS
7/2012-6/2024	Chair, Division of Physical Sciences , AMNH.
7/2011-present	Curator, American Museum of Natural History , NY.
7/2011-present	Professor, Richard Gilder Graduate School (RGGGS) , AMNH.
2009-present	Adjunct Graduate Faculty, CUNY Graduate School and University Center, Ph.D. Program in Earth & Environmental Sciences .
7/2007-6/2024	Curator-in-Charge, Dept. of Earth and Planetary Sciences , AMNH.
7/2006-6/2011	Associate Professor, Richard Gilder Graduate School (RGGGS), AMNH.
7/2006-6/2011	Associate Curator with tenure, AMNH.
2005-present	Director, OFM Research
2002-present	Adjunct Associate Research Scientist, Lamont-Doherty Earth Observatory of Columbia University , New York.
7/2001-6/2006	Assistant Curator, Meteorites, American Museum of Natural History, NY.
1999-2001	Research Scientist, University of Chicago , Chicago, Illinois.
1995-1999	Research Associate, University of Chicago, with L. Grossman.
1993-1995	Post Doctoral Fellow, University of Toronto , with A. J. Naldrett.
1985-87; 90-93	Teaching fellow in mineralogy and petrology, EAPS , Purdue University.
1982	Geological field assistant, Sierra Nevada.

PUBLICATIONS (peer reviewed, accepted)

- (2026) **Meteor over New York City: Brines in a primitive CM asteroid.** Jenniskens, P., M. E. Zolensky, A. Gordon, J. Gordon, M. Hankey, P. Spurný, J. Borovička, L. Shrubny, E. A. Silber, J. Han, L. Loan, M. D. Fries, K. Ziegler, Q. H. S. Chan, J. Brakeley, B. Munday, M. Grady, S. Verchovsky, F. Abernethy, Y. Kebukawa, Z. Gainsforth, M. Suzuki, G. A. Brennecka, J. H. Render, W. Fujiya, H. Busemann, A. Schuppisser, C. Maden, K. C. Welten, K. Nishizumi, M. W. Caffee, T. Hiroi, P. Schmitt-Kopplin, D. P. Glavin, J. P. Dworkin, H. L. McLain, A. Mojarro, N. O. Ogawa, S. Tikoo-Schantz, J. I. Jung, E. M. Riveros, J. M. Friedrich, and D. S. Ebel. Accepted, *Science Advances*
- (2026) **Effects of particle size, temperature, and metal content on VNIR spectra of ordinary chondrite meteorites in a simulated asteroid environment.** Gemma, M. E., K. A. Shirley, T. D. Glotch, D. S. Ebel, and K. T. Howard. *Journal of Geophysical Research-Planets* **131**: e2025JE008963 (29pp) doi: 10.1029/2025JE008963

- (2025) **Dust collisions in protoplanetary disks: Atomic simulations of the surface free energy.** Morrissey, L. S., D. S. Ebel, L. E. J. Eriksson, A. Georgiou, Z. Huang, M.-M. Mac Low, and T. Pfeil. *The Astronomical Journal* **171**:42 (6pp)
- (2025) **Condensation and the volatility trend of the Earth.** Lodders, K., B. Fegley, K. Mezger, and D. S. Ebel. *Space Science Reviews* **221**: 54 (44pp). doi: [10.1007/s11214-025-01182-6](https://doi.org/10.1007/s11214-025-01182-6) arXiv:2411.01362 [astro-ph.EP]
- (2025) **Metal-forsterite condensate nodules and H-L-LL compositions.** Ebel, D. S., M. E. Gemma, M. K. Weisberg, and J. M. Friedrich. *Meteoritics & Planetary Science* **60**: 757-777. doi: 10.1111/maps.14328
- (2025) **Physical properties, internal structure, and the three-dimensional petrography of CI chondrites.** Friedrich J. M., E. M. Riveros, R. J. Macke, S. J. Jaret, M. L. Rivers, and D. S. Ebel. *Meteoritics and Planetary Science* **60**: 632-645. doi: 10.1111/maps.14320
- (2025) **Theoretical calculations on the effect of adsorbed atom coverage on the sodium exospheres of airless bodies.** Morrissey, L. S., J. Lewis, A. Ricketts, C. Bu, C. Dong, D. S. Ebel, G. E. Harlow, Z. Huang, F. LeBlanc, M. Sarantos, D. W. Savin, and S. Ververcke. *Astrophysical Journal*. **981**: 73 (9pp) <https://doi.org/10.3847/1538-4357/adad63>
- (2024) **Is there a genetic relationship between chondrules and matrix?** Van Kooten, E. M. M. E., A. Brearley, D. S. Ebel, C. M. O'D. Alexander, M. E. Gemma, and D. C. Hezel. *Space Science Reviews* **220**: 74. Online 24 Sep 2024: <https://rdcu.be/d3Mh9> doi: 10.1007/s11214-024-01107-9 arXiv:2409.08662 [astro-ph.EP]
- (2024) **Composition and mineralogy of nuclei material of short period comets revealed by recent spacecraft missions.** Zolensky, M. E., C. Engrand, T. Nakamura, and D. S. Ebel. *Space Science Reviews* **220**: 79. Online 3 Oct 2024: <https://rdcu.be/dVQCa> doi: 10.1007/s11214-024-01111-z
- (2024) **Solar wind ion sputtering from airless planetary bodies: New insights into the surface binding energies for elements in plagioclase feldspars.** Morrissey, L. S., S. Bringer, C. Bu, M. H. Burger, C. Dong, D. S. Ebel, G. E. Harlow, Z. Huang, R. M. Killen, F. LeBlanc, O. J. Tucker, and D. W. Savin. *Planetary Science Journal* **5**: 272 (11p) doi: 10.3847/PSJ/ad8caf
- (2024) **EH6 enstatite chondrites Northwest Africa 7976 and Northwest Africa 12945: Implications for EH chondrite metamorphism.** Gray, M. L., M. K. Weisberg, S. J. Jaret, and D. S. Ebel. *Meteoritics & Planetary Science* **60**: 51-63. doi: 10.1111/maps.14287
- (2024) **Abundance, sizes, and major element compositions of components in CR and LL chondrites: Formation of CC and NC bodies from single reservoirs.** Ebel, D. S., M. E. Gemma, S. P. Alpert, J. Bayron, A. H. Lobo, and M. K. Weisberg. *Meteoritics & Planetary Science* **59**: 2276-2295. doi: 10.1111/maps.14191 arXiv:2407.05199 [astro-ph.EP]
AMNH DSpace data supplement: <https://doi.org/10.5531/sd.eps.8>
- (2024) **Absolute doubly differential angular sputtering yields for 20 keV Kr+ on polycrystalline Cu.** Bu, C., L. S. Morrissey, B. C. Bostick, M. H. Burger, K. P. Bowen, S. N. Chilrud, D. L. Domingue, C. A. Dukes, D. S. Ebel, G. E. Harlow, P.-M. Hillenbrand, D. A. Ivanov, R. M. Killen, J. M. Ross, D. Schury, O. J. Tucker, X. Urbain, R. Zhang, and D. W. Savin. *Journal of Applied Physics* **135**: 035302. doi: 10.1063/5.0184417 arXiv:2312.12208 [astro-ph.EP]
- (2023) **Nanophase magnetite in matrix of anomalous EL3 chondrite Northwest Africa (NWA) 8785.** Weisberg, M. K., M. E. Zolensky, M. Kimura, K. T. Howard, D. S. Ebel, M. L. Gray, and C. M. O'D. Alexander. *Meteoritics & Planetary Science* **58**:1693-1706. <https://doi.org/10.1111/maps.14092>

- (2023) **The Manhattan project: Isotope geochemistry and detrital zircon geochronology of schists in New York City.** Jaret, S. J., N. D. Tailby, K. G. Hammond, E. T. Rasbury, K. Wooton, D. S. Ebel, T. plank, E. Dipadova, V. Yuan, L. Spaeth, L. M. Smith, N. Jaffe, and R. Smith. *Bulletin of the Geological Society of America*. Online 13-Oct-2023. 40 pp. [doi: 10.1130/B37024.1](https://doi.org/10.1130/B37024.1)
- (2023) **Dust dynamics in current sheets within protoplanetary disks I. Isothermal models including ambipolar diffusion and Ohmic resistivity.** Lebreuilly, U., M-M. Mac Low, B. Commerçon, and D. S. Ebel. Accepted, *Astronomy & Astrophysics* 675: A38, 11pp. [doi: 10.1051/0004-6361/202141840](https://doi.org/10.1051/0004-6361/202141840) [arXiv:2305.16839](https://arxiv.org/abs/2305.16839) [astro-ph.EP]
- (2023) **Lewis Cliff 87223, an anomalous enstatite chondrite and the diversity of enstatite chondrites.** Goss, K. R., M. L. Gray, M. K. Weisberg, and D. S. Ebel (2022) *Meteoritics & Planetary Science* 58: 433-443.
- (2021) **Size-frequency distributions and physical properties of chondrules from x-ray computed microtomography and digital data extraction.** Friedrich, J. M., M. M. Chen, S. A. Giordano, O. K. Matalka, J. W. Strasser, K. A. Tamucci, M. L. Rivers, and D. S. Ebel. *Microscopy Research and Technique* (online) [doi: 10.1002/jemt.24043](https://doi.org/10.1002/jemt.24043)
- (2021) **Machine learning mid-infrared spectral models for predicting modal mineralogy of CI/CM chondritic asteroids and Bennu.** Breitenfeld, L. B., A. D. Rogers, T. D. Glotch, V. E. Hamilton, P. R. Christensen, D. S. Lauretta, M. Gemma, K. T. Howard, D. S. Ebel, G. Kim, A. M. Kling, H. Nekvasil, and N. J. DiFrancesco. *Journal of Geophysical Research: Planets*, 126, e2021JE007045 DOI: 10.1029/2021JE007035
- (2021) **The Pecora Escarpment (PCA) 91020 EL3 chondrite and deformation on the EL3 asteroid.** Boleaga, Y., M. K. Weisberg, J. M. Friedrich, and D. S. Ebel. *Meteoritics and Planetary Science* 56: 2144-2154. [doi: 10.1111/maps.13762](https://doi.org/10.1111/maps.13762)
- (2021) **Metal-rich nodules in anomalous EL3 chondrite Northwest Africa (NWA) 8785.** Rindlisbacher, M. A., M. K. Weisberg, D. S. Ebel and S. Alpert. *Meteoritics and Planetary Science* 56: 960-970. [doi: 10.1111/maps.13658](https://doi.org/10.1111/maps.13658)
- (2021) **Condensation calculations in planetary science and cosmochemistry.** Ebel, D. S. In *Oxford Research Encyclopedia of Planetary Science*. Online 5/26/2021. <https://doi.org/10.1093/acrefore/9780190647926.013.201>, [arXiv:2306.12645](https://arxiv.org/abs/2306.12645) [astro-ph.EP]
- (2021) **Petrology of the opaque assemblages in unequilibrated ordinary chondrites.** Alpert, S. P., D. S. Ebel, M. K. Weisberg, and J. R. Neiman. *Meteoritics & Planetary Science* 56: 311-330. [doi: 10.1111/maps.13619](https://doi.org/10.1111/maps.13619) AMNH DSpace CT data supplement: <https://doi.org/10.5531/data.eps.0001>
- (2021) **Micro-distribution of oxygen isotopes in unequilibrated enstatite chondrites.** Weisberg, M. K., N. T. Kita., K. Fukuda, G. Siron and D. S. Ebel. *Geochimica et Cosmochimica Acta* 400: 279-295.
- (2021) **Simultaneous determination of mass-dependent Mg isotopic variations and radiogenic ²⁶Mg by laser ablation-Mc-ICP-MS and implications for the formation of chondrules.** Deng, Z., M. Chaussidon, D. S. Ebel, J. Villeneuve, J. Moureau, and F. Moynier. *Geochimica et Cosmochimica Acta* 299: 163-183. <https://doi.org/10.1016/j.gca.2021.01.015>
- (2021) **Comparison of the Murchison CM2 and Allende CV3 chondrites.** Fendrich, K. V. and D. S. Ebel. *Meteoritics & Planetary Science* 56: 77-95. [doi: 10.1111/maps.13623](https://doi.org/10.1111/maps.13623) AMNH DSpace CT data supplement: <http://dx.doi.org/10.5531/sd.eps.7>
- (2020) **Chondrules reveal large-scale outward transport of inner Solar System materials in the protoplanetary disk.** Williams, C. D., M. E. Sanborn, C. Defouilloy, Q-Z. Yin, N. T. Kita., D. S.

- Ebel, A. Yamakawa and K. Yamashita. Online 9/8/2020, *Proc. National Academy Sciences* **117**: 23426-23435. DOI: 10.1073/pnas.2005235117; www.pnas.org/cgi/doi/10.1073/pnas.2005235117
AMNH DSpace data supplement: <https://doi.org/10.5531/sd.eps.5>
- (2020) **Formation of chondrules and matrix in Kakangari chondrites.** Barosch, J., D. S. Ebel, D. C. Hezel, S. Alpert, and H. Palme. *Earth & Planetary Science Letters* **542**: 116286 (11 pp)
AMNH DSpace data supplement: <https://dx.doi.org/10.5531/sd.eps.6>
- (2020) **Reducing supervision of quantitative image analysis of meteorite samples.** Crapster-Pregont, E. J. and D. S. Ebel. *Microscopy and Microanalysis* **26**: 63-75. DOI: 10.1017/S1431927619015216
- (2019) **Trace element partitioning between CAI-type melts and grossite, melilite, hibonite and olivine.** Ustunisik, G., D. S. Ebel, D. Walker, R. L. Nielsen and M. Gemma. *Geochimica et Cosmochimica Acta* **267**: 124-146. DOI: 10.1016/j.gca.2019.08.038, arXiv:2306.15001 [astro-ph.EP]
- (2019) **Best practices for the use of meteorite names in publications.** Heck, P. R., C. Herd, J. N. Grossman, D. Badjukov, A. Bouvier, E. Bullock, H. Chennaoui, V. Debaille, T. L. Dunn, D. S. Ebel, L. Ferrière, L. Garvie, J. Gattacceca, M. Gounelle, R. Herd, T. Ireland, E. Jacquet, R. J. Macke, T. McCoy, F. M. McCubbin, T. Mikouchi, K. Metzler, M. Roskosz, C. Smith, M. Wadhwa, L. Welzenbach-Fries, T. Yada, A. Yamaguchi, R. A. Zeigler and M. Zolensky. *Meteoritics and Planetary Science* **54**: 1397-1400. doi: 10.1111/maps.13291
- (2019) **Mineralogically zoned chondrules in ordinary chondrites as evidence for open system chondrule behaviour.** Barosch, J., D. C. Hezel, D. S. Ebel and P. Friend. *Geochimica et Cosmochimica Acta* **249**: 1-16 <https://doi.org/10.1016/j.gca.2019.01.018>
- (2019) **Fine-grained material associated with a large sulfide returned from Comet 81P/Wild 2.** Gainsforth Z., A. J. Westphal, A. L. Butterworth, C. E. Jilly-Rehak, D. E. Brownlee, D. Joswiak, R. C. Ogliore, M. E. Zolensky, H. A. Bechtel, D. S. Ebel, G. R. Huss, S. A. Sandford and A. J. White. *Meteoritics and Planetary Science* **54**: 1069-1091 <https://arxiv.org/abs/2307.00652> [astro-ph.EP]
- (2019) **Effect of polychromatic x-ray microtomography imaging on the amino acid content of the Murchison CM chondrite.** Friedrich, J. M., H. L. McLain, J. P. Dworkin, D. P. Glavin, W. H. Towbin, M. Hill and D.S. Ebel. *Meteoritics and Planetary Science* **54**: 220-228. doi: 10.1111/maps.13188
- (2019) **X-ray computed tomography of extraterrestrial rocks eradicates their natural radiation record and the information it contains.** Sears D. W. G., A. Sehlke, J. M. Friedrich, M. L. Rivers and D. S. Ebel. *Meteoritics and Planetary Science*, **53**: 2624-2631.
- (2018) **The elusive origin of Mercury.** Ebel, D. S. and S. T. Stewart. In *Mercury: The View after MESSENGER*. Eds. S. C. Solomon, B. J. Anderson and L. R. Nittler. *Cambridge U. Press*. pp. 497-515. arXiv:1712.08234 [astro-ph.EP]
- (2018) **Vapor-melt exchange - Constraints on chondrule formation conditions and processes.** Ebel, D. S., C. M. O'D. Alexander and G. Libourel. In *Chondrules: Records of Protoplanetary Disk Processes*. Eds. S. S. Russell, H. C. Connolly Jr., and A. N. Krot. *Cambridge U. Press*. pp. 151-174. arXiv:2306.12664 [astro-ph.EP] (chapter 6)
- (2018) **Dust concentration and chondrule formation.** Hubbard, A., M-M. Mac Low and D. S. Ebel. *Meteoritics and Planetary Science* **53**: 1507-1515. (17 April 2018) doi: [10.1111/maps.13101](https://doi.org/10.1111/maps.13101), [arXiv:1803.10047](https://arxiv.org/abs/1803.10047)
- (2018) **Evaluating non-shock, non-collisional models for chondrule formation.** Hubbard, A. and D. S. Ebel. In *Chondrules*. Eds. S. Russell, A. Krot and H. C. Connolly Jr. *Cambridge U. Press*. pp. 400-427.

- (2017) **Petrogenesis of Miller Range 07273, a new type of anomalous melt breccia: Implications for impact effects on the H chondrite asteroid.** Ruzicka, A. M., M. Hutson, J. M. Friedrich, M.L. Rivers, M. K. Weisberg, D. S. Ebel, K. Ziegler, D. Rumble III, and A. A. Dolan. *Meteoritics and Planetary Science* **52**: 1963-1990.
- (2017) **Relationships among physical properties as indicators of high temperature deformation or post-shock thermal annealing in ordinary chondrites.** Friedrich, J. M., A. Ruzicka, R. J. Macke, J. O. Thostenson, R. A. Rudolph, M. L. Rivers and D. S. Ebel. *Geochimica et Cosmochimica Acta* **203**: 157-174.
- (2016) **The motion of chondrules and other particles in a protoplanetary disc with temperature fluctuations.** Loesche, C., G. Wurm, T. Kelling, J. Teiser, and D.S. Ebel. *Monthly Notices of the Royal Astronomical Society* **463**: 4167-4174. doi:10.1093/mnras/stw2279
- (2016) **Microchondrules in three unequilibrated ordinary chondrites** Bigolski J. N., M. K. Weisberg, H. C. Connolly Jr., and D. S. Ebel. *Meteoritics and Planetary Science*, **51**: 235-260.
- (2016) **X-ray computed tomography imaging: A not-so-nondestructive technique** Sears D. W. G., H. Sears, D. S. Ebel, S. Wallace and J. M. Friedrich. *Meteoritics and Planetary Science*, **51**: 833-838.
- (2016) **Abundance, major element composition and size of components and matrix in CV, CO and Acfer 094 chondrites.** Ebel, D. S., C. Brunner, K. Leftwich, I. Erb, M. Lu, K. Konrad, H. Rodriguez, J. M. Friedrich, and M. K. Weisberg. *Geochimica et Cosmochimica Acta* **172**: 322-356. doi: 10.1016/j.gca.2015.10.007 AMNH DSpace supplement: <http://dx.doi.org/10.5531/sd.eps.2> [arXiv:2306.12650](https://arxiv.org/abs/2306.12650) [astro-ph.EP]
- (2015) **Chlorine on the surface of Mercury: Implications for Mercury's surface evolution.** Evans, L. G., P. N. Peplowski, D. S. Ebel, D. J. Lawrence, T. J. McCoy, L. R. Nittler, R. D. Starr, S. Z. Weider, and S. C. Solomon. *Icarus* **257**:417-427.
- (2015) **Evidence for geochemical terranes on Mercury: Global mapping of major elements with MESSENGER's x-ray spectrometer.** Weider, S. Z., L. R. Nittler, R. D. Starr, E. J. Crapster-Pregont, P. N. Peplowski, B. W. Denevi, J. W. Head, P. K. Byrne, S. A. Hauck II, D. S. Ebel, and S. C. Solomon. *Earth and Planetary Science Letters* **416**: 109-120.
- (2015) **Semarkona: Lessons for chondrule and chondrite formation** Hubbard A. and D. S. Ebel. *Icarus* **245**: 32-37. DOI: 10.1016/j.icarus.2014.09.025 [arXiv:1409.3853](https://arxiv.org/abs/1409.3853) [astro-ph.EP]
- (2015) **Late formation of a comet Wild 2 crystalline silicate particle, Pyxie, inferred from Al-Mg chronology of plagioclase.** Nakashima, D., T. Ushikubo, N. T. Kita, M. K. Weisberg, M. E. Zolensky, and D. S. Ebel. *Earth and Planetary Science Letters* **410**: 54-61. DOI: 10.1016/j.epsl.2014.11.020
- (2015) **Petrology and geochemistry of chondrules and metal in NWA 5492 and GRO 95551: A new type of metal-rich chondrite.** Weisberg, M. K., D. S. Ebel, D. Nakashima, N. T. Kita, and M. Humayun. *Geochimica et Cosmochimica Acta*, **167**: 269-285.
- (2015) **The origin of chondrules: constraints from matrix composition and matrix-chondrule complementarity.** Palme, H., D. C. Hezel, and D. S. Ebel. *Earth and Planetary Science Letters* **411**: 11-19. DOI: 10.1016/j.epsl.2014.11.033, [arXiv:2307.02017](https://arxiv.org/abs/2307.02017) [astro-ph.EP]
- (2015) **Chondrule size and related physical properties: A compilation and evaluation of current data across all meteorite groups.** Friedrich, J. M., M. K. Weisberg, D. S. Ebel, A. E. Biltz, B. M.

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Fu, R. R., B. P. Weiss, E. A. Lima, R. J. Harrison, X.-N. Bai, C. Suavet, D. S. Ebel, T. Kasama, H. Wang, S. J. Desch, and A. T. Kuan. *Science* **346**: 1089-1092. DOI: 10.1126/science.1258022
- (2014) **Imaging samples in silica aerogel using an experimental point spread function.**
White, A. J. and D. S. Ebel. *Microscopy and Microanalysis*. Published online: 17 December 2014. DOI: 10.1017/S1431927614013610
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Ustunisik, G, D. S. Ebel, D. Walker, and J. S. Boesenberg. *Geochimica et Cosmochimica Acta* **142**: 27-38. DOI: 10.1016/j.gca.2014.07.029, [arXiv:2307.00643](https://arxiv.org/abs/2307.00643) [astro-ph.EP] (1 October 2014)
- (2014) **Protoplanetary dust porosity and FU Orionis outbursts: Solving the mystery of Earth's missing volatiles.** Hubbard, A. and D.S. Ebel. *Icarus* **237**: 84-96. DOI: 10.1016/j.icarus.2014.04.015 [arXiv:1404.3995](https://arxiv.org/abs/1404.3995) [astro-ph.EP]
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Supplement: www.sciencemag.org/cgi/content/full/338/6114/1583/DC1
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EXTENDED ABSTRACTS

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GRANTS: Active (P.I., Co-PI. or Co-I.)

- 2025 Principal Investigator, NSF REU (#1852360, AST + EAR)
 "REU Site: Collaborative Research: Earth and Planetary Science and Astrophysics REU at the American Museum of Natural History in Collaboration with the City University of New York" (3 yr.) start 3/1/2025 end 3/2028.
- 2024 Principal Investigator, NSF EAR (#2407745)
 "MRI :Track 1 X-ray Microdiffraction System to Identify Crystalline Specimens for Education, Research, and Museum Conservation". Start 9/2024, end 8/2026.
- 2019 Co-Investigator, NASA SSW (PI: S. Jaret, CUNY KBCC)
 "Shock Recovery Experiments and Laboratory Sample Analysis of Lunar-Relevant Plagioclase: Implications for Remote Observations of the Moon"
 (3 yr., AMNH subcontract) end 6/2025.
- 2015 Co-Investigator, NASA SMD Science Education CAN (renewal #1)
 "OpenSpace: An Engine for Dynamic Visualization of Earth and Space Science for Informal Education and Beyond" (5 yr. x 2) end 12/2025.

GRANTS: Concluded (P.I., Co-PI. or Co-I.)

- 2023 Principal Investigator, NSF REU (#2348998, EAR)

- "Collaborative Research: REU Site: Earth and Planetary Science and Astrophysics REU at the American Museum of Natural History in Collaboration with the City University of New York" (3 yr.)
- 2022 Co-Investigator, NASA Solar System Workings program (PI: S. Jaret, AMNH)
"Shock Recovery Experiments and Laboratory Sample Analysis of Lunar-Relevant Plagioclase: Implications for remote observations of the Moon"
(3 yr., AMNH contract)
- 2021 Principal Investigator, NSF REU (#2050852, EAR)
"REU Site: Collaborative Research: Earth and Planetary Science and Astrophysics REU at the American Museum of Natural History in Collaboration with the City University of New York" (3 yr.+NCE) end 3/2026
- 2021 Co-Investigator, NASA Solar System Workings (PI: D. Savin, Columbia, 20-SSW20-0019)
"Continued Studies of the Impact of Solar Wind Ions on the Surface and Exosphere of Mercury" (3 yr.+NCE, AMNH subcontract) end 9/2025.
- 2019 Co-Investigator, NASA SSERVI (PI: T. Glotch, Stony Brook U.)
"RISE2: Remote, In Situ, and Synchrotron Studies for Science and Exploration 2"
(5 yr., AMNH subcontract) end 10/2024.
- 2019 Principal Investigator, NSF MRI (#1828110)
"Acquisition of an Electron Microprobe at the American Museum of Natural History"
- 2019 Principal Investigator, NSF REU (#1852360, AST and EAR)
"REU Site: Collaborative Research: Earth and Planetary Science and Astrophysics REU at the American Museum of Natural History in Collaboration with the City University of New York" (2 yr.)
- 2018 Co-Investigator, NASA Solar System Workings program (PI: D. Savin, Columbia)
"The Impact of Solar Wind Ions on the Surface and Exosphere of Mercury"
(3 yr., AMNH contract)
- 2018 Principal Investigator, NSF EAR (#1759583; original PI J. D. Webster)
"Collaborative Research: Tracking the Exsolution and Migration of Volatiles in Shallow Magma Reservoirs" (3 yr.)
- 2016 Principal Investigator, NASA Emerging Worlds program (# NNX16AD37G)
"Chemistry and Architecture of Meteorites: Constraints on Astrophysical Models and Ground Truth for Exploration" (3 yr.)
- 2016 Principal Investigator, NASA LARS program (# NNX16AI32G)
"Non-destructive Analysis of Comet Grains and Tracks: Minerals and Original Grain Properties" (3 yr.)
- 2016 Principal Investigator, NSF EAR/Instrumentation (#1559416, original PI J. Webster)
"Upgrade of IHPV in the AMNH Earth and Planetary Sciences Dept "
- 2015 Principal Investigator, NSF REU (#1852360, original PI J. Webster, AST + EAR)
"REU Site: Collaborative Research: Earth and Planetary Science and Astrophysics REU at the American Museum of Natural History in Collaboration with the City University of New York" (5 yr.)
- 2015 P.I. Steven Desch (ASU), NASA Nexus for Exoplanet System Science (NExSS)

- “Exoplanetary ecosystems: Exploring life’s detectability on chemically diverse exoplanets” (5 yrs)
- 2014 Principal Investigator, NASA Lab Analysis of Returned Samples, equipment grant
“Support for a Raman Spectrometer for Laser Scanning Confocal Microscopy of Stardust Samples” (1 yr.)
- 2013 Co-Investigator, NSF NOYCE (#1340006 PI: E. Howes, AMNH Education)
“Preparing and Supporting New Earth Science Teachers through a Museum- and School Based Teacher Residency Program”
- 2012 Co-Investigator, NSF EarthScope education and outreach grant
“Collaborative Research: Immersive audio-visualization of seismic wave fields in the Earth” (with Columbia and Princeton, 1 yr.)
- 2012 Co-Principal Investigator, NYSTAR grant
“Innovation Economy Matching Grant: High Resolution CT Scanner (1 yr.)
- 2012 Principal Investigator, NASA Cosmochemistry, equipment grant
“Support for an Electron Backscatter aion Instrument for Scanning Electron Microscopy of Meteorite and Comet Samples” (1 yr.)
- 2010 Principal Investigator, NASA Cosmochemistry program (# NNX10AI42G)
“Thermochemical Histories of the Earliest Solar System Solids” (4 yrs).
- 2010 Co-Principal Investigator, NSF MRI-R2 equipment grant.
“Acquisition of a High Resolution CT-Scanner at the American Museum of Natural History” (3 yrs)
- 2010 Principal Investigator, NASA LARS equipment grant (#NNX10AH06G)
“Partial Support for Upgrading a Laser Confocal Scanning Microscope for Non-destructive High-resolution 3D Imaging of Comet Sample Tracks in Aerogel Returned by the Stardust Mission” (1 yr).
- 2008 Principal Investigator, NASA Cosmochemistry Program (# NNX09AE84G)
“Thermochemical and Petrological Exploration of the Earliest Solar System Solids” (1 yr)
- 2008 Principal Investigator, NASA SRLIDAP grant NNX09AC31G, (3 yrs).
“Laser Confocal Microscopy and X-ray Fluorescence Analysis of Grains in Aerogel”
- 2008 Co-Principal Investigator, NSF Cyber-Enabled Discovery Initiative (Type I)
“Combined Global Physical, Chemical, and Mineralogical Models of Protoplanetary Disks” PI: M-M. Mac Low, AMNH. (3 yrs)
- 2007 Co-Investigator, NASA Planetary Geology and Geophysics Program.
“Planetary Impact Ejecta and the Physico-Chemical Evolution of Expansion Plumes: A Multidisciplinary Approach” PI: N. Artemieva, Planetary Science Institute., Tucson. (3 yrs)
- 2007 Co-Investigator, NASA Laboratory Astrophysics Program.
“Far-infrared Spectroscopy of Mineral Particles”
PI: R.E. Peale, U. Central Florida. (3 yrs)
- 2006 Principal Investigator, NASA SRLIDAP grant NNG06GE42G.
“Synchrotron X-ray Tomographic 3-dimensional Location of Particles and Tracks in Whole Aerogel Tiles” (2 yrs)

- 2006 Principal Investigator, NASA Cosmochemistry grant NANG06GD89G.
“Thermochemistry and Petrology of Early Solar System Materials” (3 yrs)
- 2003 Team Lead, NASA Institutional Education/Public Outreach supplement
to grant NAG5-12855, “Outreach for Opening a New Hall of Meteorites
and Planetary Science at the American Museum of Natural History: Online
Guide, Open House, Teachers Institute”
- 2003 Principal Investigator, NASA Cosmochemistry grant NAG5-12855
“Thermochemistry and Petrology of Early Solar System Materials”
- 2001-2020 Principal Investigator, over 20 successful Advanced Photon Source synchrotron
beamtime proposals for x-ray computer-assisted microtomography (XR-CMT)
and x-ray fluorescence analysis (XRF).
- 1998-2001 Co-Investigator, NASA Cosmochemistry grant NAG5-4476
(PI: L. Grossman, U. Chicago)

AWARDS

- 2026 Distinguished Science Alumnus, College of Science, Purdue University
- 2024 Elected Fellow, American Association for the Advancement of Science (AAAS)
- 2021 Mineralogical Society of America, Distinguished Public Service Award
- 2018 NASA Group Achievement Award, MESSENGER Project Team
- 2014 Elected Fellow, Mineralogical Society of America (MSA)
- 2010 Elected Fellow, The Meteoritical Society
- 1992 Outstanding Graduate Student Award, Dept. of Earth and Atmospheric Sciences, Purdue
- 1988-1990 David Ross Graduate Fellowship, Purdue University Research Foundation
- 1982 Dedicated and Faithful Service Award, Dudley House, Harvard College

MEMBERSHIPS

- Society of Mineral Museum Professionals (SMMP), since 2022
- National Association of Geoscience Teachers (NAGT), since 2019
- Microanalysis Society (MAS), since 2013
- European Association of Geochemistry (EAG), since 2011
- Division of Planetary Sciences (DPS), American Astronomical Society (AAS), since 2006
- Amateur Astronomers Association of New York, since 2002
- National Space Society (NSS), since 2001
- The Planetary Society, since 2001
- New York Academy of Sciences (NYAS), since 2001
- The Meteoritical Society, since 1998 (elected **fellow**, 2010), life member 2012
- The Geochemical Society, since 1992, life member 2021
- American Geophysical Union (AGU), since 1987, life member 2012
- Geological Society of America (GSA), since 1986, life member 2022
- Mineralogical Society of America (MSA), since 1985 (elected **fellow**, 2014)
- American Association for the Advancement of Science (AAAS), since 1985

AMNH EXHIBITIONS

- 11/2023-11/2025 Co-curator, *Impact: The End of the Age of the Dinosaurs*, lead: R. Benson, AMNH

- 8/2021-3/2022 Lead Curator, *New York Rocks*, Collections Core, Gilder Center, AMNH
 5/2021-5/2022 Lead Curator, *Drill Core Samples*, Collections Core, Gilder Center, AMNH
 2018 – 2/2020 Lead Curator, Space Show VI "[Worlds Beyond Earth](#)", AMNH
 2019 Consulting Curator, *Mineral Evolution*, Mignone Halls of Gems & Minerals, AMNH
 Jul 18 - Jul 19 Lead Curator, revitalization of Arthur Ross Hall of Meteorites, AMNH
 May 08-Aug 09 Co-curator, AMNH/Cornell exhibition, *Saturn: Images from the Cassini-Huygens Mission*.
 2001 - 2003 Lead Curator, new Arthur Ross Hall of Meteorites (permanent), AMNH.

COURSES

- spring 2026 Co-teaching lead, "Extinction Science" (RGGS 660), Richard Gilder Graduate School, AMNH.
 spring 2023 Co-teaching lead, "Extinction Science" (RGGS 660), Richard Gilder Graduate School, AMNH.
 fall 2022 Instructor, "Microscopy and Imaging Methods", RGGS
 fall 2019 Instructor, "Microscopy and Imaging Methods for Comparative Biology", RGGS
 fall 2018 Co-teaching "Extinction Science" (RGGS 660), Richard Gilder Graduate School, AMNH.
 spring 2018 "Chemical Geology" (W4009), Dept. Earth & Environmental Sci., Columbia.
 fall 2017 Instructor, "Microscopy and Imaging Methods for Comparative Biology", RGGS
 spring 2016 "Chemical Geology" (W4009), Dept. Earth & Environmental Sci., Columbia.
 spring 2015 Co-teaching "Extinction Science" (RGGS 660), Richard Gilder Graduate School, AMNH.
 fall 2014 Instructor, "Microscopy and Imaging Methods for Comparative Biology", RGGS
 2011 - present Co-teaching "Research Practicum" (SCI 680), second summer field/lab residency, AMNH Master of Arts in Teaching Earth Sciences <http://www.amnh.org/education/mat/>

MENTORSHIP: Postdoctoral and PhD Students

- May 23 - Aug 25 Principal advisor, AMNH MAT post-doctoral fellow Dr. Samantha Tramontano
 Sep 21 - present Principal advisor, **PhD candidate** J. Gonzales, Columbia U. (Earth & Environ. Sci.)
 Sep 21 - present Advisory Committee, Ph.D. student H. J. Lee, Columbia U. (Earth & Environ. Sci.)
 Sep 20 – Jun 25 Advisor, Ph.D. student M. Gray, CUNY (Earth & Environ. Sci.)
 Sep 18 - Sep 22 Principal advisor, AMNH MAT post-doctoral fellow Dr. Steven Jaret (impact studies)
 fall 2018 Mentor, Kade graduate fellow J. Barosch (U. Köln; meteorite cosmochemistry)
 Sep 17 - Jun 24 Principal advisor, **Ph.D. student** S. Alpert, CUNY (Earth & Environ. Sci.).
 Aug 16 - Dec 22 Principal advisor, **Ph.D. student** M. Gemma, Columbia U. (Earth & Environ. Sci.)
Asteroid Compositions and Planet-Forming Environments: Insights from Spectral and Geochemical Characterization of Chondritic Meteorites
 Sep 15 - Mar 21 Principal Advisor, **Ph.D. student** J. Bayron, CUNY (Earth & Environ. Sci.)
Frozen in Time: A Numerical Modeling Approach to the Study of Ice Bearing Planetesimals through Carbonaceous Chondrites
 Mar - May 2014 Mentor, Kade graduate fellow G. Budde (U. Münster; CAI isotope chemistry)
 Nov 13 - Jan 15 Principal advisor, post-doctoral researcher A. Vorburger (MESSENGER data analysis).
 Apr - Jun 2013 Mentor, Kade graduate fellow C. Loesche (U. Duisburg-Essen; photophoresis)
 Aug 12 - Jul 16 Principal advisor, AMNH MAT post-doctoral fellow Dr. Gokce Ustunisik (exp. petrology)
 Jun 12 - Aug 14 Principal advisor, **M. S. student** A. Ansari, Columbia U. (Earth & Environ. Sci.).
 2011 - 2017 Advisor, Ph.D. student J. Anton, CUNY (Earth & Environ. Sci.; defense 19-Dec-2017).
 2010 - 2017 Principal advisor, **Ph.D.** E. Crapster-Pregont, Columbia (Earth & Env. Sci. defense 28-Mar)
Constraining the Chemical Environment and Processes in the Protoplanetary Disk: Perspective from Populations of Calcium- and Aluminum-rich Inclusions in Ornans-group and Metal-rich Chondrules in Renazzo-group Carbonaceous Chondrites

- 2008 - 2012 Advisor, Ph.D. student C. McNally, Columbia U. (Astronomy, defense 2012).
 2006 - 2011 Advisor, Ph.D. student A. Buono, Columbia U. (Earth & Environmental Sci., defense 2011).
 2002 - 2007 Ph.D. committee member for J. Boesenberg, Rutgers U. (Geology).
 Nov 04-Aug 06 Mentor, AMNH **post-doctoral Kalbfleisch fellow**, Dr. Jon Friedrich
 (now Professor of Chemistry, Fordham University, New York)

MENTORSHIP: Undergraduate and High School

- summer 2025 Co-mentor, REU student G. Montes (Wellesley College) geostatistics of zircon dating
 Jan 1-31 2024 Co-mentor, collections intern E. Goldbaum (Oberlin College)
 summer 2023 Co-mentor, summer research intern K. Garner (Colby College) Craftsbury orbicular granite
 Jan-Mar 2021 Co-mentor, research intern J. Gonzales (REE in C chondrites)
 summer 2020 Co-mentor, summer research intern M. Osmun (Rowan U.) opaque nodules in UOCs
 spring 2020 Mentor, post-bac S. Cancel Vasquez (U Puerto Rico) meteorite fusion crusts
 summer 2019 Mentor, REU student S. Cancel Vasquez (U Puerto Rico) meteorite fusion crusts
 summer 2019 Co-mentor, summer research intern C. Cohn (NYU, computational mineralogy)
 summer 2019 Co-mentor, summer research intern J. Gonzales (UCLA, REE in C chondrites)
 summer 2019 Co-mentor, HS student J. North.
 summer 2018 Mentor, intern H. Hatch (Tufts; collection management and meteorite research)
 summer 2018 Mentor, REU student A. Kling (Stony Brook) petrology of enstatite chondrites
 summer 2017 Co-mentor, intern H. Hatch (Tufts) collection inventory & management
 summer 2017 Mentor, REU D. DeFelice (Juniata College) trace elements in inclusions in H chondrites
 Jul 11- Jul 16 Mentor, pre-doc intern A. White (B.S., Drexel) LCSM imaging of Stardust samples
 summer 2016 Mentor, REU K. Greeley (Bridgewater State) trace elements in inclusions in LL chondrites
 spring 2016 Mentor, SSERVI research trainee M. Gemma (planetary lab spectroscopy)
 fall 2015 Mentor, research intern M. Gemma (modeling condensation in disks)
 summer 2015 Co-mentor, REU J. Christoph (William & Mary) REE of inclusions in CV chondrites
 summer 2015 Co-mentor, summer research intern M. Gemma (REE of inclusions in CR chondrites)
 summer 2015 Mentor, SSERVI research trainee S. Mahmood (astronomical spectroscopy of minerals)
 spring 2015 Mentor, research intern S. Mahmood (shocked quartz at K-Pg sites in NJ)
 summer 2014 Mentor, summer research intern A. Lobo (image analysis of ordinary chondrites)
 summer 2014 Co-mentor, REU K. Hobart (Oberlin; EBSD/SEM/EPMA of inclusions in chondrites)
 summer 2014 Co-mentor, SSERVI research trainee L. Neil (spectroscopy and mineralogy of chondrites)
 Oct 13 - Sep 15 Mentor, research student A. Lobo (Columbia U.) image analysis of ordinary chondrites
 summer 2013 Co-mentor, summer research intern A. Lobo (image analysis of ordinary chondrites)
 summer 2013 Co-mentor, REU intern J. Bayron (Hunter College) image analysis of CR chondrites
 summer 2013 Co-mentor, summer research intern I. Erb (image analysis of CR chondrites)
 summer 2013 Co-mentor, REU intern R. Goldman (Pomona College) CT of CAIs in CO chondrites
 Dec 11 - Jun 13 Mentor, research volunteer R. Aldoroty (K/Pg boundary geochem. in NJ coastal plain)
 summer 2011 Mentor, summer research intern T. Tielebein, LCSM image analysis for Stardust samples
 Jul 11- Jul 16 Mentor, pre-doc intern A. White (B.S., Drexel) LCSM imaging of Stardust samples
 summer 2011 Mentor, summer research intern M. Hill, CT and SEM analysis of CO chondrites
 summer 2011 Mentor, summer research intern J. Bigolski, K/Pg boundary geochem. in NJ coastal plain
 summer 2011 Mentor, summer research intern J. Schoaf (St. John's) petrology of CR chondrites
 Jul 10-Sep 2010 Mentor, pre-doc research, E. Crapster-Pregont, petrology/cosmochemistry (Columbia)
 Jun 10-Sep 10 Mentor, intern J. Bigolski (MS), NJ K/T sequence strat. (Lecturer, CUNY Kingsborough)
 summer 2010 Mentor, summer research intern I. Erb, petrology of CR chondrites (Wellesley)

summer 2010 Mentor, 'Research Experience for Undergraduates', M. Downen (W. KY U.)
 summer 2010 Mentor, summer research intern R. Roberts, mapping chondrites by SEM (CUNY)
 May 10-Aug 10 Mentor, pre-doc intern K. Konrad (B.A.), cosmochemistry sample analysis (U. Oregon)
 Feb 10-Aug 10 Mentor, intern C-T. Hsieh (M.S., Oregon), chemical sedimentary history of NJ K/T
 Sep 09-Sep 10 Mentor, undergrad intern E. Lewis (U. Chicago), meteorite/mineral spectra web database
 Sep 09-Sep 10 Co-mentor, student intern A. Nissinboim (Brooklyn Coll.), astrophys. lab spectroscopy
 summer 2009 Mentor, student intern S. McKnight (Mt. Holyoke), cosmochemistry sample analysis
 summer 2009 Mentor, high-school intern P. Hein (Manhattan), cosmochemistry sample preparation.
 summer 2009 Co-mentor, student intern A. Nissinboim (Brooklyn Coll.), astrophys. lab spectroscopy
 summer 2009 Mentor, student intern S. Ramcharan (Columbia), Stardust sample imaging and S-XRF
 summer 2009 Mentor, 'Research Experience for Undergraduates', K. Konrad (CUNY-Queens)
 Sep 08-Jun 09 Mentor, AMNH H.S. Science Research program, M. Lu (Stuyvesant), meteorite petrology
 Sep 08-Jun 09 Mentor, H.S. Science Research program, I. Erb (home school), meteorite petrology
 Dec 08-July 10 Mentor, pre-doc intern K. Sherman (Barnard), cosmochemistry sample analysis (U. CO)
 Sep 08-Aug 11 Mentor, pre-doc intern M. Greenberg (B.S., Brandeis), LCSM imaging of Stardust tracks
 summer 2008 Mentor, high-school interns C. O'Rourke and M. Leventhal
 summer 2008 Mentor, student intern M. Greenberg (Brandeis U.), imaging of Stardust samples
 summer 2008 Mentor, 'Research Experience for Undergraduates' Kriss Leftwich (W. KY U.)
 2024: Collection Manager, Mineral Sciences, at LA County Museum of Natural History
 summer 2008 Co-mentor, student intern A. Nissinboim (Brooklyn Coll.), astrophys. lab spectroscopy.
 summer 2007 Mentor, intern M. Greenberg (Brandeis U.), imaging of Stardust samples
 summer 2007 Mentor, 'Research Experience for Undergraduates' C. Brunner (W. KY U.)
 summer 2007 Mentor, high-school interns G. Lutzky and J. Finkelstein.
 summer 2006 Mentor, summer interns J. Witzenzellner (Wells College), J. Oram (Oberlin)
 summer 2006 Mentor, 'Research Experience for Undergraduates' H. Rodriguez (U. TX El Paso)
 summer 2005 Mentor, summer H.S. intern A. Bergin
 summer 2005 Mentor, 'Research Experience for Undergraduates' J. Bigolski
 summer 2005 Mentor, summer student S. Hylton
 summer 2004 Mentor, 'Research Experience for Undergraduates' S. Baughman and S. Hylton
 Oct 03 - Jun 04 Mentor, AMNH 'Inside View' high school intern J. Laverde
 Jan - Mar 2004 Mentor, Annette-Kade graduate fellow T. Shoenbeck (U. Cologne)
 summer 2003 Mentor, 'Research Experience for Undergraduates' student N. Costello
 Sep-Oct 2003 Mentor, Ph.D. visiting scholar A. Engler, U. Vienna
 summer 2002 Mentor, CUNY student in "Precollege Science Collaborative Program"
 summer 2002 Mentor, college intern J. Murray (Colgate U.)
 2001 - 2003 Mentor, high school intern J. Hertz (Columbia Prep., Columbia '07)

EDUCATIONAL SERVICE (selected items)

Mar 13, 2020 - Numerous online presentations/participation during the pandemic
 Feb 10, 2020 Academy for Teachers event, Ross Hall of Meteorites & Space Show & behind scenes
 Feb 7, 2020 Presenter, Space Show VI "Worlds Beyond Earth" event, ~450 educators, AMNH
 Nov 15, 2019 Behind the scenes, Hall of Meteorites and EPS, Math for America teachers
 Feb 8-10 2019 Curator, [AMNH Hackathon "Hack the Solar System"](#)
 fall 2018 Presenter, AMNH Shelf-Life, [Space Volcanoes in 360](#).
 July 14, 2015 Co-presenter, "Breakfast at Pluto" event, AMNH (New Horizons mission)
<http://www.amnh.org/calendar/breakfast-at-pluto>

- fall 2014 Instructor "Microscopy and Imaging Methods", Richard Gilder Graduate School, AMNH.
- fall term 2014 Research course (1 credit), A. Lobo (Columbia DEES, B.S. 2015)
- 13 Jun 2012 *Meteorites, Solar System Chemistry, and MESSENGER at Mercury: An Extended Discussion.*
Evening class for the Amateur Astronomers Association of New York.
- 22 Feb 2012 *First Solids in the Solar System.* Lecture to Fordham chemistry research class.
- 2011 - 2017 Advisor, Ph.D. student J. Bigolski, CUNY (Earth & Environ. Sci.; defense 9-Aug-2017).
- Mar 17, 2011 Organizer and host of MESSENGER orbital insertion public event, AMNH.
- Sep 05- Mar 15 AMNH Education/Public Outreach representative, MESSENGER science team.
- 2001 - present Many TV, radio and newspaper interviews on meteorites, NASA missions, etc.
- Aug 2010 Lecture/tour for teacher training program, AMNH (TRUST successor).
- Aug 07-Aug 10 Instructor of Record, AMNH teaching program with Lehman College (TRUST successor).
- July 2008 Lectures/tours (4) for 'TRUST' teacher training program, AMNH.
- 26 May 2008 Mars Phoenix Lander public Q&A event in Rose Center
- February 2009 Co-author with N. deG. Tyson 'Solar System' on-line Seminars in Science course
<http://www.amnh.org/learn/solar>
- August 2006 Lectures/tours (3) for 'TRUST' teacher training program, AMNH.
- 7-9 July 2006 Invited guest and speaker, First Annual Meteorite Festival, Haviland, Kansas.
- July 2006 Lectures/tours (3) for 'TRUST' teacher training program, AMNH.
- July 2005 Lectures/tours (3) for 'TRUST' teacher training program, AMNH.
- April 2005 Appearance in History Channel special, *Meteors: Fire from the Sky.*
- 31 Mar 2005 Tour and presentations to 'Members Open House', AMNH.
- 3 Jan 2005 Tour and presentation to AMNH Urban Advantage student group.
- 2 Nov 2004 Tour and presentation for teacher development workshops (2 groups of 15)
- Oct 04-Jun 05 Senior thesis advisor, S. Hylton, MIT (with Dr. T. Grove, Geology)
- Aug 2004 Presentation to NASA - SHARP program student group.
- July 2004 Lectures/tours (3) for 'TRUST' teacher training program, AMNH.
- 2 July 2004 Tour and presentation for Grand Ronde student interns.
- 1 July 2004 Tour and presentation for summer Saltz cart student intern hall explainers.
- 4-6 Apr 2004 K-6, Middle, High School, and public lectures, Barrow AK.
- Jan 24-25 2004 Conducted institute for ~40 teachers at AMNH (see grants, above)
- 9 Jan. 2004 Lecture, Westchester Amateur Astronomers Assoc.
- 3 Oct. 2003 Lecture, Amateur Astronomers Assoc. of New York

AMNH COMMITTEES

- Sep 26 - Aug 28 Elected Chair, Senate of the Scientific Staff of the AMNH
- Feb 26 - present Dean of Collections Curatorial Search Committee
- Jun 25 - Jul 25 Curatorial Performance Review Committee
- Sep 24 - present Science Support Committee of the Senate of the Scientific Staff
- Sep 23 - Nov 23 Provost's Ad Hoc Committee on Recruitment Procedures
- Sep 22 - Apr 23 Chair, EPS Curatorial Search Committee, Mineralogy
- Sep 22 - Sep 24 **Secretary**, Senate of the Scientific Staff (elected)
- Sep 22 - Sep 24 Appointments and Promotions Committee of the Senate (A+P, elected)
- Sep 21 - Jun 24 Niarchos & Explore21 Internal Grant Selection Committee
- Oct 21 - May 22 Paleontology Dinosaur Curatorial Search Committee
- May 20 - May 22 Re-opening Task Force Sub-Group for Science
- Aug 19 - Aug 22 Museum-wide Climate Programming Committee

Sep 18 - Sep 19 Niarchos & Explore21 internal grant Selection Committee
 Sep 18 - Sep 20 Appointments and Promotions Committee of the Senate (A+P, elected)
 Sep 18 - Sep 20 **Secretary**, Senate of the Scientific Staff (elected)
 Oct 18 - Mar 19 Chair, EPS Research Scientist (EPMA & FTIR Lab Manager) Search Committee
 May 18 - Jun 18 Chair, Nominating Committee, Senate of the Scientific Staff
 Sep 17 - Sep 19 Academic Affairs and Fellowships Committee of the RGGGS (AAFC)
 Sep 17 - Jun 18 Astrophysics Curatorial Search Committee
 Jul 16 - Dec 17 Chair, EPS Curatorial Search Committee
 Sep 16 - Sep 24 Chair, Science Support Committee of the Senate of the Scientific Staff
 Sep 15 - present MAT Academic Affairs and Program Committee (MAAPC)
 Oct 14 - Jun 15 Chair, EPS Research Scientist (EPMA & FTIR Lab Manager) Search Committee
 Sep 14 - Aug 16 Elected Chair, Senate of the Scientific Staff of the AMNH
 Sep 12 - Jun 24 Scientific Staff Steering Committee (Division Chairs)
 Sep 12 - Aug 14 AAFC Working Group for Postdoctoral Fellows
 Sep 12 - Aug 14 Elected Vice-chair, Senate of the Scientific Staff of the AMNH
 Sep 12 - Aug 14 Appointments and Promotions Committee of the Senate of the Scientific Staff (A+P)
 Sep 11 - Aug 13 Academic Affairs and Fellowships Committee of the RGGGS (AAFC)
 Jun 11 - Sep 11 Chair, EPS Research Scientist (EPMA & FTIR Lab Manager) Search Committee
 Sep 10 - Sep 20 Executive Committee of the Senate of the Scientific Staff
 Sep 10 - Sep 16 Finance and Compensation Committee of the Senate of the Scientific Staff
 Sep 10 - Sep 14 Chair, Science Support Committee of the Senate of the Scientific Staff
 Sep 10 - Sep 16 Science Support Committee of the Senate of the Scientific Staff
 Sep 08 - Aug 10 Appointments and Promotions Committee of the Senate of the Scientific Staff (A+P)
 Sep 07 - Aug 10 Microscopy & Imaging Facility Committee of the Senate of the Scientific Staff
 Sep 07 - Aug 10 Exhibitions Review Committee of the Senate of the Scientific Staff
 Sep 04 - Aug 10 Information Technology Committee of the Senate of the Scientific Staff
 Spring 2004 Astrophysics Curatorial Search Committee
 Jan 02 - Aug 08 Chair, Shop Advisory Committee of the Senate of the Scientific Staff
 Sep 01 - Jan 02 Shop Advisory Committee of the Senate of the Scientific Staff

OTHER AMNH SERVICE

Jul 21 - Nov 23 Acting Curator of Minerals and Gems, EPS
 Dec 18 - present Acting Curator of Ore Deposits, EPS

COLUMBIA DEES COMMITTEES

Oct 25 - present Nominating Committee, Dept. Earth and Environmental Sciences
 Jan 23 - present Diversity, Equity & Inclusion Committee, Dept. Earth and Environmental Sciences
 Sep 15 - present Curriculum and Teaching Committee, Dept. Earth and Environmental Sciences
 Oct 17 - Sep 18 Search Committee, Experimentalist, Dept. Earth and Environmental Sciences

INVITED SCIENTIFIC PRESENTATIONS (selected)

17 Apr 2026 *How to Become a Meteorite Cosmochemist*, Purdue Dept. Earth, Atmospheric & Planetary Science
 Distinguished Science Alumni lecture
 4 Mar 2026 *The Persistence and Importance of Spinel: An Extraterrestrial Perspective*, LDEO/DEES
 Geochemistry Seminar
 3 May 2024 *Meteoritic Evidence: Origins of Planets*, Center for Computational Astrophysics, Planet

- Formation Group
- 22 Feb 2024 *Refractory Materials in Meteorites*, Duke University AFLOW seminar (materials science)
- 1 Oct 2021 *Meteoritic Evidence: Origins of Planets and their Oceans*.
U. NC. Chapel Hill, EMES Colloquium.
- 27 Sep 2021 *Meteorites: Evidence for Planetary Origins..*
Appalachian State U., Boone, NC., Astro. Colloquium
- 9 June 2017 *The Complementary Nature of Chondrite Components*
“theme-inar”, Observatoire de la Côte d'Azur, France.
- 24 May 2017 *Mercury's Enigmatic Origin: Results from the MESSENGER Mission*
Colloquium, Institute de Physique du Globe de Paris.
- 9 Mar 2016 *New Jersey! A Habitable Place During an Asteroid Strike ...*
Colloquium, Dept. of Earth & Planetary Sci., Rutgers University.
- 31 Oct 2014 *Constraints on Astrophysical Disk Models from Chondritic Meteorites*.
Colloquium, Dept. of Earth & Planetary Sci., U. New Mexico.
- June 2014 *Hierarchical Accretion, Melting by Short Circuits, and the Origin of Chondritic Planetesimals*. **Keynote**, cosmochemistry, 2014 Goldschmidt Conference.
- 6 March 2014 *Mercury Dome*, participatory data exploration for MESSENGER Science Team
in the Hayden Planetarium.
- 26 Aug 2013 *Constraints on Astrophysical Disk Models from Chondritic Meteorites*.
Stearns Colloquium, Earth & Environmental Sci. Dept., Wesleyan University, CT.
- 3 May 2012 *Mercury: Formation Hypotheses and MESSENGER Evidence*. University of Washington.
- 19 Apr 2012 *Interplanetary Dust, Meteorites, and Planets*. Lyceum Society of NYAS.
- 17 Mar 2012 Keynote, Brown-Vernadsky Symposium (before LPSC).
- 23 Jan 2012 *The First Solids of the Solar System: Phenomenology and Dynamics*,
Dept. of Physics and Astronomy, University of Rochester.
- 9 Nov 2011 *MESSENGER: Constraints on Mercury's Origin*, 24th MESSENGER Science Team Mtg.
- 25 Feb 2011 *Gas-Liquid-Solid Equilibria in Protoplanetary Disks: From Primitive Materials to Mercury's Origin*, Dept. of Geosciences, Princeton University.
- 19 Nov 2009 *Physical Processes in the Early Solar System: Evidence from Space Rocks*, NYU Physics.
- 7 July 2009 *Constraints on Dust Processing and Accretion from Comet and Meteorite Petrology*,
Gordon Research Conference: Origins of Solar Systems, invited speaker.
- 1 April 2009 *Comet & Meteorite Constraints on Astrophysical Disk Models*, NASA Ames Research Lab.
- 31 Mar 2009 *Meteorite Constraints on Solar System Models*, U. California, Berkeley.
- 2 Feb 2009 *Chemical & Isotopic Histories of the Earliest Igneous Rocks*, U. Wisconsin, Madison.
- 26 Feb 2008 *Meteorites: Entry point for Chemistry at AMNH*,
Scientific Literacy /Scientific Frontiers Seminar group, Columbia U.
- 20 Oct 2007 *Questions Raised by Stardust Mission Results*, Astronomical Society of New York.
- 19 Oct 2007 *Meteorites: Evidence of Early Solar System Accretion*, American Physical Soc. NY sec.
- 7 June 2007 *Microtomographic, Petrologic and Isotopic Observations of the Accretion Histories of Chondrules*, Invited speaker, Symposium on Antarctic Meteorites, NIPR, Japan.
- 10 Nov. 2006 *New Discoveries from Microtomography of Meteorites*, U. Chicago.
- 28 May. 2005 Invited speaker, Symposium for John Wood, Harvard.
- 23 Feb. 2005 *Spinel Condensates from the Chicxulub Impact Plume*, Arizona State U.
- 22 Feb. 2005 *Condensation Chemistry of Protoplanetary Disks*, U. Arizona; Lunar Planet. Lab.
- 28 Feb. 2003 *Tomography of Meteorites*, Advanced Photon Source, Argonne National Lab
- 20 Nov. 2002 *First Rocks in the Solar System*, Rutgers University.
- 19 Aug. 2002 Invited talk, 12th Annual V.M. Goldschmidt Conference.

- 15 Aug. 2002 Lecture, Institut für Mineralogie und Geochemie, Universität zu Köln.
- 16 Jan. 2002 *Condensation, Crystallization, and Evaporation of Rocks in Astrophysical Environments*, Carnegie Institution of Washington.
- May 2001 Invited talk, 11th Annual V.M. Goldschmidt Conference.
- June 1999 Co-convenor, AGU session, *Magmatic Sulfide in the Crust, Mantle, Core*.
- Feb. 1999 *Spinel in Spherules at the K/T Boundary*, Geochem. Seminar, U. Chicago
- Oct. 1998 Invited talk, International Space Science Institute workshop, "Dust in the Local Interstellar Medium", Bern, Switzerland.

INVITED PUBLIC PRESENTATIONS (selected)

- 4 Mar 2026 *The Persistence and Importance of Spinel: An Extraterrestrial Perspective*, LDEO/DEES Geochemistry Seminar
- 2 Apr 2024 *Essential Diagrams for Early Solar System Chemistry*, AMNH Science Speaker Series for teachers (Gottesman Center)
- 17 Jan 2023 *Sampling an Asteroid*, Hayden Planetarium Frontiers (co-presenter)
- May 7, 2021 Presenter, *Space Volcanoes* AMNH astronomy live event, online.
- 22 Sep 2021 *Dust to Planets: Clues from Meteorites*. NC Mueseum of Nature & Science, SciCafe.
- Mar 20 - Mar 22 Live chat on numerous AMNH public programs offered remotely during the pandemic.
- 4 Dec 2018 *Probing Asteroids in Space*. Hayden Planetarium (co-presenter)
- 11 Jun 2018 *Mercury Rising*. Hayden Planetarium (co-presenter)
- 19 Nov 2016 *SeismoDome 4: The Sights and Sounds of Earthquakes*. Hayden Planetarium
- 12 Sep 2016 *Sampling an Asteroid: NASA's OSIRIS-REx Mission*. Hayden Planetarium (co-presenter)
- 14 Jan 2016 *SeismoDome 3: The Sights and Sounds of Earthquakes*. Hayden Planetarium (now including analysis of microseismic data)
- 15 Jul 2015 Co-presenter, *Breakfast at Pluto*, AMNH
<http://www.amnh.org/calendar/breakfast-at-pluto>
- 20 Dec 2014 *Astronomy Night: Orion!* Intrepid Sea, Air & Space Museum Complex, NY.
- 3 Dec 2014 AMNH Sci-Cafe: *Imaging Space Rocks* (with A. White and E. Crapster-Pregont)
<https://www.amnh.org/explore/news-blogs/podcasts/scicafe-imaging-space-rocks>
- 17 Nov 2014 *SeismoDome 2: The Sights and Sounds of Earthquakes*. Hayden Planetarium.
- 25 Jan 2014 *SeismoDome 1: The Sights and Sounds of Earthquakes*. Hayden Planetarium.
(NSF EarthScope funded group presentation with B. Holtzman and J. Candler)
- 11 Oct 2013 *Asteroids: Science, Resources, Security*. Scarsdale High School, Galaxy Forum Lecture.
- 14 Aug 2010 *Earth, Meteorites, and the Dynamic Solar System*, Montauk Observatory, New York.
- 9 June 2009 *Meteorites & Comets: Chemical Tracers of the Birth of the Solar System*,
LI-American Chemical Society 19th High School Awards Dinner, St. Johns U.
- 1 May 2009 *Science Return from Stardust and Genesis Missions*, Amateur Astronomers Assoc. of NY.
- 23 Oct. 2003 *Science of the Arthur Ross Hall of Meteorites*, Curator Lecture, AMNH.

PROFESSIONAL SERVICE

- Jan 21 – Jan 25 Councilor, The Meteoritical Society (elected)
- Jan 21 - Jan 23 Audit Committee, The Meteoritical Society.
- 2003 - present **NASA review panel member or chair service not disclosed** (confidentiality agreements).
- 2002 - present NSF and NASA proposal review (external).
- 2003 - present proposal review, PSC-CUNY grant program.
- Mar 12-Jun 18 **Curation Informatics subcommittee of NASA CAPTEM.**

(Curation and Analysis Planning Team for Extraterrestrial Materials)

Aug 16-Jun 18 **NASA Planetary Data System [Roadmap](#) Study Team**

Jan 14-Dec 16 Publications Committee, The Meteoritical Society (Chair since Jan-Dec 2016)

2015 Local Organizing Committee, 78th Meteoritical Society mtg., Berkeley CA 2015.

2014 Program Committee, 77th Meteoritical Society mtg., Casablanca, Morocco 2014.

Sep 12-present External Advisory Committee, North East National Ion Microprobe Facility (Woods Hole)
(<http://www.who.edu/page.do?pid=18655>)

Nov 2012 Local Organizer, 4th Joint MESSENGER-BepiColombo Meeting, New York 2012.
(this meeting was rescheduled to Chicago, April 2013 due to hurricane Sandy)

Mar 12-Mar 14 Nominating Committee, The Meteoritical Society

Jan 12-Apr 13 Program committee, 4th Joint MESSENGER-BepiColombo Science Team Meeting.

2011 - 2013 Co-chair, theme team "Cosmochemistry and Planetary Science", 2013 Goldschmidt Conf.

January 2011 Program committee, 42nd Lunar and Planetary Science Conference, Houston.

2010-2011 Local Organizing Committee, 74th Meteoritical Society mtg., Greenwich, UK 2011.

2009-2010 **Chair, Local Organizing Committee, 73rd Meteoritical Society mtg., New York 2010.**

May 2010 Program committee, 73rd Annual Meteoritical Society Meeting, New York.

January 2010 Program committee, 41st Lunar and Planetary Science Conference, Houston.

January 2009 Program committee, 40th Lunar and Planetary Science Conference, Houston.

2008, 2009 Judge, Nininger Award for best student paper, The Meteoritical Society (2 years).

2007 - 2009 Chair, Audit Committee, The Meteoritical Society.

2006 - 2017 Participant (E/PO, Geochemistry Team), MESSENGER Science Team meetings.

Aug. 2000 Program committee, 63rd Annual Meteoritical Society Meeting, Chicago.

2000 - present manuscript review for *Geochimica et Cosmochimica Acta*, *Computers and Geosciences*, *Mineralogical Magazine*, *Meteoritics and Planetary Science*, *American Mineralogist*, *National Academies Press*, *Canadian J. Earth Sci.*, *S. African J. Geology*, *PNAS*, *Chemie der Erde*, and other journals.

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