

Curriculum Vitae, Denton S. Ebel

Department of Earth and Planetary Science
 American Museum of Natural History
 Central Park West at 79th Street
 New York NY 10024

phone: (212) 769-5381
 fax: (212) 769-5533
 email: debel@amnh.org
 web: <http://research.amnh.org/~debel>

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 Full Professor, Dept. Earth & Environmental Sci. , Columbia U.
2015-present	Faculty, Master of Arts in Teaching , RGGS
2012-present	Chair, Division of Physical Sciences , AMNH.
2011-present	Curator, American Museum of Natural History , NY.
2011-present	Professor, Richard Gilder Graduate School (RGGS) , AMNH.
2007-present	Curator-in-Charge, Dept. of Earth and Planetary Sciences , AMNH.
2009-present	Adjunct Graduate Faculty, CUNY Graduate School and University Center, Ph.D. Program in Earth & Environmental Sciences .
2005-present	Director, OFM Research
2007-2011	Associate Professor, Richard Gilder Graduate School (RGGS), AMNH.
2006-2011	Associate Curator with tenure, AMNH.
2002-2015	Adjunct Associate Research Scientist, Lamont-Doherty Earth Observatory of Columbia University , New York.
2001-2006	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)

- (2016) **Microchondrules in 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) **Abundance, composition and size of inclusions and matrix in CV and CO 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 Extended supplement: <http://dx.doi.org/10.5531/sd.eps.2>
- (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
- (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
- (2014) **Nebular paleomagnetism.**
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) **An experimental point spread function for imaging samples in silica aerogel.**
White, A. J. and D. S. Ebel. *Microscopy and Microanalysis*. Published online: 17 December 2014. DOI: 10.1017/S1431927614013610
- (2014) **Chondrule size and density in all meteorite groups: A compilation and evaluation of current knowledge.** Friedrich, J. M., M. K. Weisberg, D. S. Ebel, A. E. Biltz, B. M. Corbett, I. V. Iotzov, W. S. Khan, and M. D. Wolman (invited review) *Chemie der Erde* (online Oct 2014). DOI: 10.1016/j.chemer.2014.08.003 or arXiv:1408.6581 [astro-ph.EP]
- (2014) **Experimental investigation of condensation predictions in dust-enriched systems.**
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
- (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
- (2014) **Mercury's weather-beaten surface: Understanding Mercury in the context of lunar and asteroid space weathering studies.** Domingue D. L., C. R. Chapman, R. M. Killen, T. H. Zurbuchen, J. A. Gilbert, M. Sarantos, M. Benna, J. A. Slavin, D. Schriver, P. M. Trávníček, T. M. Orlando, A. L. Sprague, D. T. Blewitt, J. J. Gillis-Davis, W. C. Feldman, D. J. Lawrence, G. C. Ho, D. S. Ebel, F. Vilas, C. M. Pieters, S. C. Solomon, W. E. McClintock, J. Helbert. *Space Science Reviews* **181**: 121-214. DOI: 10.1007/s11214-014-0039-5
- (2013) **Djerfisherite: Nebular source of refractory potassium.** Ebel, D. S. and R. O. Sack. *Contributions to Mineralogy and Petrology* **166**: 923-934. DOI: 10.1007/s00410-013-0898-x
- (2013) **Metal veins in the Kernouvé (H6 S1) chondrite: Evidence for pre- or syn-metamorphic shear deformation.** Friedrich J. M., A. Ruzicka, M. L. Rivers, D. S. Ebel, J. O. Thostenson, R. A. Rudolph. *Geochimica et Cosmochimica Acta* **116**: 71-83. ([dx.doi.org/10.1016/j.gca.2013.01.009](https://doi.org/10.1016/j.gca.2013.01.009))
- (2013) **Mineral processing by short circuits in protoplanetary disks.** McNally C.P., A. Hubbard, M-M. Mac Low, D.S. Ebel, and P. D'Alessio. *Astrophysical J Letters* **767**: L2-7. DOI:10.1088/2041-8205/767/1/L2 (arXiv:1301.1698)

- (2012) **Radar enabled recovery of the Sutter's Mill meteorite, a carbonaceous chondrite regolith breccia.** Jenniskens, P., D. S. Ebel, J. M. Friedrich and 67 other coauthors. *Science* 338: 1583-1587
DOI: 10.1126/science.1227163
Supplement: www.sciencemag.org/cgi/content/full/338/6114/1583/DC1
AMNH DSpace CT data supplement: digitallibrary.amnh.org/dspace/handle/2246/6408
- (2012) **Short-term survival of ammonites in New Jersey after the end-Cretaceous bolide impact.**
Landman, N. H., M. P. Garb, R. Rovelli, D. S. Ebel, and L. E. Edwards. *Acta Palaeontologica Polonica* 57: 703-715. DOI: <http://dx.doi.org/10.4202/app.2011.0068>
- (2012) **Laboratory far-infrared spectroscopy of terrestrial sulphides to support analysis of cosmic dust spectra.** Brusentsova T., R.E. Peale, D. Maukonen, P. Figueiredo, G.E. Harlow, D.S. Ebel, A. Nissinboim, K. Sherman, and C.M. Lisse. *Monthly Notices of the Royal Astronomical Society* 420: 2569-2579. DOI: 10.1111/j.1365-2966.2011.20228.x
- (2012) **Questions, questions: Can the contradictions between the petrologic, isotopic, thermodynamic, and astrophysical constraints on chondrule formation be resolved?**
Alexander, C. M. O'D. and D. S. Ebel. *Meteoritics and Planetary Science* 47: 1157-1175.
- (2012) **Properties of original impactors estimated from three-dimensional analysis of whole Stardust tracks.** Greenberg, M., and D. S. Ebel *Meteoritics and Planetary Science* 47: 634-648.
- (2012) **Thermochemical stability of low-iron, manganese-enriched olivine in astrophysical environments.** Ebel, D.S., M. K. Weisberg and J. R. Beckett. *Meteoritics and Planetary Science* 47: 585-593.
- (2012) **Petrology and oxygen isotopes of NWA 5492, a new metal-rich chondrite.**
Weisberg, M. K., T. E. Bunch, J. H. Wittke, D. Rumble III, and D. S. Ebel.
Meteoritics and Planetary Science 47: 363-373.
- (2011) **Petrology and oxygen isotopic compositions of chondrules in E3 chondrites.**
Weisberg, M. K., D. S. Ebel, H. C. Connolly Jr., N. Kita and T. Ushikubo
Geochimica et Cosmochimica Acta 75: 6556-6569.
- (2011) **Radioactive elements on Mercury's surface from MESSENGER: Implications for the planet's formation and evolution.** Peplowski, P. N., L. G. Evans, S. A. Hauck II, T. J. McCoy, W.V. Boynton, J. Gillis-Davis, D. S. Ebel, J. O. Goldsten, D. K. Hamara, D. J. Lawrence, R. L. McNutt Jr., L. R. Nittler, S. C. Solomon, E. A. Rhodes, A.L. Sprague, R. D. Starr, and K. R. Stockstill-Cahill.
Science 333: 1850-1852.
- (2011) **The major-element composition of Mercury's surface from MESSENGER x-ray spectrometry.** Nittler, L. R., R. D. Starr, S. Z. Weider, T. J. McCoy, W. V. Boynton, D. S. Ebel, C. M. Ernst, L. G. Evans, J. O. Goldsten, D. K. Hamara, D. J. Lawrence, R. L. McNutt Jr., C. E. Schlemm II, S. C. Solomon, and A. L. Sprague. *Science* 333: 1847-1850.
- (2011) **Laboratory experiments bearing on the origin and evolution of olivine-rich chondrules.**
Richter, F. M., R. A. Mendybaev, J. N. Christensen, D. S. Ebel, and A. Gaffney.
Meteoritics and Planetary Science 46: 1152-1178.
- (2011) **Equilibrium condensation from chondritic porous IDP enriched vapor: Implications for Mercury and enstatite chondrite origins.** Ebel, D. S., and C. M. O'D. Alexander
Planetary and Space Sciences 59: 1888-1894. doi:10.1016/j.pss.2011.07.017.
- (2011) **Sulfur in extraterrestrial bodies and the deep Earth.** Ebel, D.S. In *Sulfur in Magmas and Melts: Its Importance for Natural and Technical Processes*, ed. H. Behrens, J. D. Webster.

- Reviews in Mineralogy & Geochemistry* **73** Mineralogical Society of America, pp. 315-336.
- (2011) **Magnetic evidence for a partially differentiated carbonaceous chondrite parent body.** Carporzen, L., B. P. Weiss, L. Elkins-Tanton, D. L. Schuster, Ebel, D., and J. Gattacceca. *Proceedings of the National Academy of Sciences* **108**: 6386-6389.
- (2010) **The solar system primordial lead.** Blichert-Toft, J., B. Zanda, D.S. Ebel, and F. Albarède. *Earth and Planetary Science Letters* **300**: 152-163.
- (2010) **Far infrared spectroscopy of the carbonate minerals.** Brusentsova, T. N., R. E. Peale, D. Maukonen, G. E. Harlow, J. S. Boesenberg, and D. S. Ebel. *American Mineralogist* **95**: 1515-1522.
- (2010) **Laser scanning confocal microscopy of comet material in aerogel.** Greenberg, M. and D. S. Ebel. *Geosphere* **6**: 515-523.
- (2009) **Incompletely compacted equilibrated ordinary chondrites.** Sasso, M.R., R.J. Macke, J.S. Boesenberg, D.T. Britt, M.L. Rivers, D.S. Ebel and J.M. Friedrich. *Meteoritics and Planetary Science* **44**: 1743-1753.
- (2009) **3-dimensional textural and compositional analysis of particle tracks and fragmentation history in aerogel.** Ebel D.S., M. Greenberg, M.L. Rivers and M. Newville. *Meteoritics and Planetary Science* **44**: 1445-1463.
- (2009) **Laser ablation - inductively coupled plasma - mass spectrometry and its application in geochemistry, cosmochemistry and environmental research.** Jochum, K.P., B. Stoll, J.M. Friedrich, A. Marghaleray, S. Becker, M. Dücking, D.S. Ebel, J. Enzweiler, H. Ming-yue, D. Kuzmin, R. Mertz-kraus, W.E.G. Müller, J. Regnery, A. Sobolev, X-h. Wang, and X. Zhan. *Rock and Mineral Analysis* **28**: 53-68.
- (2009) **The Fountain Hills impact modified CB chondrite and thermal history of the CB asteroid.** Weisberg, M.K., and D.S. Ebel. *Meteoritics and Planetary Science* **44**: 201-210.
- (2008) **Three-dimensional petrography of metal phases in equilibrated L chondrites – effects of shock loading and dynamic compaction.** Friedrich, J.M., D.P. Wignarajah, S. Chaudhary, M.L. Rivers, C.E. Nehru and D.S. Ebel. *Earth and Planetary Science Letters* **275**: 172-180.
- (2008) **Hf-W mineral isochron for Ca-Al-rich inclusions: Age of the solar system and the timing of core formation in planetesimals.** Burkhardt C., T. Kleine, B. Bourdon, H. Palme, J. Zipfel, J.M. Friedrich, and D.S. Ebel. *Geochimica et Cosmochimica Acta* **72**: 6177-6197.
- (2008) **Shape, metal abundance, chemistry and origin of chondrules in the Renazzo (CR) chondrite.** Ebel, D.S., M.K. Weisberg, J. Hertz, and A.J. Campbell. *Meteor. Planet. Sci.* **43**: 1725-1740.
- (2008) **The formation conditions of chondrules and chondrites.** Alexander, C.M.O'D., J.N. Grossman, D.S. Ebel and F.J. Ciesla. *Science* **320**: 1617-1619.
- (2008) **Pore size distribution in an uncompact equilibrated ordinary chondrite.** Friedrich J.M., R.J. Macke, D.P. Wignarajah, M.L. Rivers, D.T. Britt, and D.S. Ebel. *Planetary and Space Science*. 56: 895-900. (doi:10.1016/j.pss.2008.02.002)
- (2007) **Meteorite 3-dimensional synchrotron micro-tomography: Methods and applications.** Ebel, D.S. and M.L. Rivers. *Meteoritics and Planetary Science* **42**: 1627-1646.
- (2007) **Micromagnetic coercivity distributions and interactions in chondrules with implications for paleointensities of the early solar system.** Acton, G., Q.-Z. Yin, K. L. Verosub, L. Jovane, A. Roth, B. Jacobsen, and D. S. Ebel. *Journal of Geophysical Research* **112**, B03S90, doi: 10.1029/2006JB004655.

- (2007) **The origin of non-porphyrific pyroxene chondrules in UOCs: Liquid solar nebula condensates?** Engler, A., M.E. Varela, G. Kurat, D. Ebel, P. Sylvester. *Icarus* **192**: 248-286.
- (2006) **Comet 81P/Wild 2 under a microscope.** Brownlee, D. *et al. Science* **314**: 1711-1717.
- (2006) **Mineralogy and petrology of comet Wild 2 nucleus samples.** Zolensky, M.E. *et al.* (Stardust Mineralogy/Petrology Preliminary Examination Team) *Science* **314**: 1735-1739.
- (2006) **Thermochemistry of sulfide mineral solutions.** Sack, R. O., and D. S. Ebel. In *Sulfides*, ed. D. Vaughan, *Reviews in Mineralogy* **60**: 265-364. Mineralogical Society of America.
- (2006) **Chemical processes in CAIs: A mostly CMAS view of melting and crystallization.** Beckett, J., H.C. Connolly, and D.S. Ebel. In *Meteorites and the Early Solar System II*, (D. Lauretta et al., eds.) University of Arizona, Tucson. p. 399-429.
- (2006) **Condensation of rocky material in astrophysical environments.** Ebel, D.S. In *Meteorites and the Early Solar System II*, (D. Lauretta et al., eds.) University Arizona, Tucson. p. 253-277.
- (2005) **Model evaporation of FeO-bearing liquids: Application to chondrules**
Ebel, D.S. *Geochimica et Cosmochimica Acta* **69**: 3183-3193.
- (2005) **Spinel-bearing spherules condensed from the Chicxulub impact-vapor plume.**
Ebel, D.S. and L. Grossman. *Geology* **33**: 293-296.
- (2005) **Origin of high-Ag fahlores from the Galena Mine, Wallace, Idaho, USA.** Sack, R.O., R. Fredericks, L.S. Hardy, and D.S. Ebel. *American Mineralogist* **90**: 1000-1007.
- (2004) **Petrology and origin of amoeboid olivine aggregates in CR chondrites.** Weisberg, M.K., H.C. Connolly, Jr., and D.S. Ebel. *Meteoritics and Planetary Science*, **39**: 1741-1753.
- (2004) **Chondrule formation and protoplanetary disk heating by current sheets in non-ideal magnetohydrodynamic turbulence.** Joung, M.K.R., M-M. Mac Low, and D.S. Ebel. *Astrophysical Journal*, **606**: 532-541.
- (2004) **Cosmic rays, carbon dioxide and climate.** Rahmstorf, S., D. Archer, D.S. Ebel, O. Eugster, J. Jouzel, D. Maraun, Urs Neu, G.A. Schmidt, J. Severinghaus, A.J. Weaver, and J. Zachos. *EOS*, **85**: 38-41. (see also, response and reply, *EOS*, 48: 510-511).
- (2002) **Elemental and isotopic fractionation of Type B CAIs: Experiments, theoretical considerations, and constraints on their thermal evolution.** Richter, F.M., A.M. Davis, D.S. Ebel, and A. Hashimoto. *Geochimica et Cosmochimica Acta*, **66**: 521-540.
- (2002) **Formation of refractory inclusions by evaporation of condensate precursors.**
Grossman, L., D.S. Ebel, and S.B. Simon. *Geochimica et Cosmochimica Acta* **66**: 145-161.
- (2001a) **Condensation from supernova gas made of free atoms.**
Ebel, D.S. and L. Grossman. *Geochimica et Cosmochimica Acta* **65**: 469-477.
- (2000) **Major element chemical and isotopic compositions of refractory inclusions in C3 chondrites: The separate roles of condensation and evaporation.**
Grossman, L., D.S. Ebel, S.B. Simon, A.M. Davis, F.M. Richter, and N.M. Parsad. *Geochimica et Cosmochimica Acta*, **64**: 2879-2894.
- (2000) **Condensation in dust-enriched systems.**
Ebel, D.S. and L. Grossman. *Geochimica et Cosmochimica Acta* **64**: 339-366.
- (2000) **Variations on solar condensation: Sources of interstellar dust nuclei.**

Ebel, D.S. *J. Geophysical Res. (Space Physics)* **105**: 10363-10370, part of a special section on *Interstellar Dust and the Heliosphere*.

(2000) **Gibbs energy minimization in gas + liquid + solid systems.**

Ebel, D.S., Mark S. Ghiorso, R.O. Sack, and L. Grossman. *J. Computational Chem.* **21**: 247-256.

(2000) **Complexly zoned Cr-Al spinel found *in situ* in the Allende meteorite.**

S.B. Simon, K.D. McKeegan, D.S. Ebel, and L. Grossman. *Meteor. Planet. Sci.*, **35**: 215-227.

(1997) **Fractional crystallization of sulfide melts as illustrated at Noril'sk and Sudbury.**

Naldrett, A.J., D.S. Ebel, M. Asif, G. Morrison, and C. Moore. *European J. Mineralogy* **9**: 365-377.

(1997) **Crystallization of sulfide liquids and the interpretation of ore composition.**

Ebel, D.S. and A.J. Naldrett. *Canadian Journal of Earth Sciences* **34**: 352-365.

(1996) **Fractional crystallization of sulfide ore liquids at high temperatures.**

Ebel, D.S. and A.J. Naldrett. *Economic Geology* **91**: 607-621.

(1996) **Petrogenesis of the flood-basalt sequence at Noril'sk, north central Siberia.**

Fedorenko, V.A., P.C. Lightfoot, A.J. Naldrett, G.K. Czamanske, C.J. Hawkesworth, J.L. Wooden, and D.S. Ebel. *International Geology Review* **38**: 99-135.

(1994) **Experimental determination of the free energy of formation of freibergite fahlore.**

Ebel, D.S. and R.O. Sack. *Geochimica et Cosmochimica Acta* **58**: 1237-1242.

(1993) **As-Sb exchange energies in tetrahedrite-tennantite fahlores and bournonite-seligmannite solid solutions.** Sack, R.O. and D.S. Ebel. *Mineralogical Magazine* **57**: 635-642.

(1993) **Thermodynamics of Fahlore (Tetrahedrite) and Biotite Mineral Solutions.**

Ebel, D.S. Ph.D. Dissertation, Purdue University.

(1991) **Arsenic-silver incompatibility in fahlore.**

Ebel, D.S. and R.O. Sack. *Mineralogical Magazine* **55**, 521-528.

(1989) **Ag-Cu and As-Sb exchange energies in tetrahedrite-tennantite fahlores.**

Ebel, D.S. and R.O. Sack. *Geochimica et Cosmochimica Acta* **53**: 2301-2309.

(1988) **Argentinian Zinc-iron Tetrahedrite-tennantite Thermochemistry.**

Ebel, D.S. M.S. Thesis (unpublished), Purdue University.

(1987) **Tennahedrite thermochemistry and metal zoning.**

Sack, R.O., D.S. Ebel, and M.J. O'Leary. In *Chemical Transport in Metasomatic Processes*. Ed. H.C. Helgeson. *D. Reidel*, Dordrecht, Holland, p. 701-731.

EXTENDED ABSTRACTS

(two pages; find at, e.g., <http://www.hou.usra.edu/meetings/lpsc20xx/pdf/abs#.pdf> for 2014 and after, and 2000-2013 at <http://www.lpi.usra.edu/meetings/lpsc20xx/pdf/abs#.pdf>)

(2016) **Micro-inclusions in a layered clast in Semarkona.** Ebel D. S., M. K. Weisberg, and E. Dobrica. *Lunar and Planetary Science XLVII*, Abs. #1779 (poster)

(2016) **A highly unusual clast in Semarkona with a complex evolutionary history: Further evidence of the diversity of solar nebula materials and processes.** Dobrica E., A. J. Brearley, D. S. Ebel, M. K. Weisberg, and K. Ziegler. *Lunar and Planetary Science XLVII*, Abs. #2317 (poster)

- (2016) **Molecular constituents of the Moss (CO3.6) chondrite via micro-Raman spectroscopic imaging.** Yesiltas M., T. D. Glotch, and D. S. Ebel. *Lunar and Planetary Science XLVII*, Abs. #2507 (oral)
- (2016) **Possible GEMS and ultra-fine grained polyphase units in comet Wild 2.** Gainsforth Z., A. L. Butterworth, C. E. Jilly-Rehak, W. J. Westphal, 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. *Lunar and Planetary Science XLVII*, Abs. #2366 (oral)
- (2016) **Calcium-aluminum-rich (CAI) and sodium-aluminum-rich (NAI) inclusions in the PAT 91546 CH chondrite.** Weisberg M. K., J. Bigolski, D. S. Ebel, and D. Walker. *Lunar and Planetary Science XLVII*, Abs. #2152 (oral)
- (2016) **Temperature and compositional controls on trace and REE partitioning between CAI-type melts and grossite, melilite, hibonite, and olivine: Insights from isothermal crystallization experiments.** Ustunisik G., D. S. Ebel, and D. Walker. *Lunar and Planetary Science XLVII*, Abs. #2406 (oral)
- (2015) **Complementary rare earth element abundances in enstatite and oldhamite in EH3 chondrites.** Ebel D. S., M. Boyet, T. Hammouda, A. Gannoun, M. K. Weisberg, and A. El Goresy. *Lunar and Planetary Science XLVI*, Abs. #2619 (poster)
- (2015) **Metal-centric perspective of a layered chondrule in the CR chondrite Acfer 139: Insights from electron backscattered diffraction.** Crapster-Pregont E. J., and D. S. Ebel. *Lunar and Planetary Science XLVI*, Abs. #1561 (poster)
- (2015) **Decoding the history of a layered chondrule through olivine grain orientation measurements using EBSD.** Hobart K. K., E. J. Crapster-Pregont, and D. S. Ebel. *Lunar and Planetary Science XLVI*, Abs. #1978 (poster)
- (2015) **An experimental study of trace and rare earth element (REE) partitioning between CAI-type melts and grossite: Implications for processing during CAI formation.** Ustunisik G., D. S. Ebel, and D. Walker. *Lunar and Planetary Science XLVI*, Abs. #2051 (poster)
- (2015) **Metal-sulfide nodules in the ALH 81189 highly primitive EH3 chondrite and the origin of enstatite chondrite components.** Weisberg M. K. and D. S. Ebel. *Lunar and Planetary Science XLVI*, Abs. #2133 (print)
- (2015) **Size-frequency distributions and physical properties of chondrules from x-ray microtomography and digital data extraction.** Friedrich J. M., S. A. Giordano, K. A. Tamucci, D. S. Ebel, M. L. Rivers, and S. W. Wallace. *Lunar and Planetary Science XLVI*, Abs. #1937 (poster)
- (2015) **Explaining Earth's missing moderate volatiles.** Hubbard A. and D. S. Ebel. *Lunar and Planetary Science XLVI*, Abs. #2677 (poster)
- (2015) **Semarkona: Constraining chondrule and chondrite formation.** Hubbard A. and D. S. Ebel. *Lunar and Planetary Science XLVI*, Abs. #2695 (poster)
- (2015) **Spectral properties of Phobos from the Mars Global Surveyor thermal emission spectrometer: Evidence for water and carbonate.** Glotch, T. D., C. S. Edwards, and D. S. Ebel. *Lunar and Planetary Science XLVI*, Abs. #2587 (poster)
- (2014) **Maximizing chemical and textural data with minimal sample destruction: Computed tomography, wire saws, and electron beams; 'Oh, my'.** Crapster-Pregont, E. J. and D. S. Ebel. *Microscopy & Microanalysis* **20** (Suppl 3) 1688-9 (invited talk, doi:10.1017/S1431927614010174)

- (2014) **Image analysis of 2D x-ray intensity maps: Element abundances, mineralogy, and modal analysis of meteorites.** Ebel, D. S., E. J. Crapster-Pregont, and J. M. Friedrich. *Microscopy & Microanalysis* **20** (Suppl 3) 752 (poster, doi:10.1017/S1431927614005480)
- (2014) **A potential method for identifying minerals in comet samples using Raman spectroscopy with laser scanning confocal microscope.** White, A. J., and D. S. Ebel. *Microscopy & Microanalysis* **20** (Suppl 3) 1702 (poster, doi:10.1017/S1431927614010241)
- (2014) **Primordial ice abundance in CV chondrites.** Ebel, D. S., M. K. Weisberg, J. M. Friedrich. *Lunar and Planetary Science XLV*, Abs. #1207 (oral)
- (2014) **Element redistribution in metamorphism of CO chondrites: Implications for emerging worlds.** Ebel, D. S., M. K. Weisberg, E. J. Crapster-Pregont. *Lunar and Planetary Science XLV*, Abs. #1206 (poster)
- (2014) **Nebular magnetism recorded in the Semarkona meteorite.** Fu, R. R., E. A. Lima, B. P. Weiss, R. J. Harrison, D. S. Ebel, and S. J. Desch. *Lunar and Planetary Science XLV*, Abs. #1420 (oral)
- (2014) **Experimental investigation of condensation predictions for dust-enriched systems.** Ustunisik, G., D. S. Ebel, D. Walker, J. S. Boesenberg. *Lunar and Planetary Science XLV*, Abs. #1212 (oral)
- (2014) **Nondestructive three-dimensional confocal imaging and SXRF of whole stardust tracks in aerogel.** White, A. J., D. S. Ebel, M. Greenberg. *Lunar and Planetary Science XLV*, Abs. #2292 (poster)
- (2014) **Primitive fine-grained matrix in the unequilibrated enstatite chondrites.** Weisberg, M. K., M. E. Zolensky, M. Kimura and D. S. Ebel. *Lunar and Planetary Science XLV*, Abs. #1551 (oral)
- (2014) **An unusual dark inclusion from the Bencubbin breccia and deformation in an asteroid regolith.** Nehru, C. M., M. K. Weisberg, K. Howard, D. S. Ebel, H. C. Connolly Jr, J. F. Friedrich. *Lunar and Planetary Science XLV*, Abs. #1437 (poster)
- (2014) **Vapor phase evolution during degassing of alkalis in Cl-free and Cl-bearing melts: Experimental insights into chondrule formation.** Ustunisik, G., D. S. Ebel, and H. Nekvasil. *Lunar and Planetary Science XLV*, Abs. #2171 (poster)
- (2014) **Microchondrules: Records of multiple heating events in the solar nebula and implications for type II chondrule formation.** Bigolski, J. N., M. K. Weisberg, D. S. Ebel, H. C. Connolly Jr. *Lunar and Planetary Science XLV*, Abs. #1879 (oral)
- (2014) **Complementarity of rare earth elements in CO chondrites.** Crapster-Pregont, E. J. and D. S. Ebel. *Lunar and Planetary Science XLV*, Abs. #1379 (poster)
- (2014) **Comparison of chondrule and CAI size measured by electron microprobe (2D) and computed tomography (3D).** Goldman, R. T., E. J. Crapster-Pregont, and D. S. Ebel. *Lunar and Planetary Science XLV*, Abs. #2263 (poster)
- (2014) **Modal abundances, chemistry, and sizes of clasts in the Semarkona (LL3.0) chondrite by x-ray map analysis.** Lobo, A., S. Wallace, D. S. Ebel. *Lunar and Planetary Science XLV*, Abs. #1423 (poster)
- (2014) **Modal abundances and chemistry of clasts in the Renazzo (CR2) chondrite by x-ray map analysis.** Bayron, J. M., I. R. Erb, D. S. Ebel, S. Wallace, H. C. Connolly Jr. *Lunar and Planetary Science XLV*, Abs. #1225 (poster)

- (2014) **Renewed search for FUN based on Al-Mg systematics in CAIs with LA-MC-ICP-MS.** Wimpenny, J. B., Q.-Z. Yin, J. Zipfel, G. MacPherson, D. S. Ebel, and P. R. Heck. *Lunar and Planetary Science XLV*, Abs. #2235 (oral)
- (2014) **Chlorine on the surface of Mercury: Implications for Mercury's surface evolution.** Evans, Larry G., Patrick N. Peplowski, Denton S. Ebel, Timothy J. McCoy, Richard D. Starr, Shoshana Z. Weider, and Sean C. Solomon. *Lunar and Planetary Science XLV*, Abs. #1794 (oral)
- (2014) **A Search for Regional Signatures of Space Weathering on Mercury.** Deborah L. Domingue, Peplowski, Patrick N., Larry R. Nittler, Mario D'Amore, Jörn Helbert, David Schriver, Pavel M. Trávníček, Scott L. Murchie, Brett W. Denevi, Faith Vilas, Shoshana Z. Weider, Richard D. Starr, Ellen J. Crapster-Pregont and Denton S. Ebel. *Lunar and Planetary Science XLV*, Abs. #1363 (poster)
- (2014) **Unsupervised classification of Mercury's visible-near-infrared reflectance spectra: Comparison with major element compositions.** D'Amore, Mario, Jörn Helbert, Sabrina Ferrari, Alessandro Maturilli, Larry R. Nittler, Deborah L. Domingue, Shoshana Z. Weider, Richard D. Starr, Ellen J. Crapster-Pregont, Denton S. Ebel, Sean C. Solomon. *Lunar and Planetary Science XLV*, Abs. #1073 (poster)
- (2013) **Synergistic 3D and 2D imaging of unique extraterrestrial samples for curation, sectioning, and analysis.** Ebel, D. S., J. M. Friedrich, S. W. Wallace, E. J. Crapster-Pregont, and A. J. White. *Microscopy and Microanalysis* (Supplement S2) **19**: 632-633. (invited talk)
- (2013) **Absence of shocked quartz at Cretaceous/Paleogene (K/Pg) sites in the New Jersey Coastal Plain.** Aldoroty, R.J., J.N. Bigolski, D.S. Ebel, and N.H. Landman. *Lunar and Planetary Science XLIV*, Abs. #1703 (poster)
- (2013) **Microchondrules in unequilibrated ordinary chondrites: Insights into chondrule formation environments.** Bigolski, J.N., M.K. Weisberg, H.C. Connolly Jr., and D.S. Ebel. *Lunar and Planetary Science XLIV*, Abs. #2239 (oral)
- (2013) **Fractional condensation: Evidence from chemical variations in Ca, Al-rich inclusions in CO chondrites.** Crapster-Pregont, E.J., and D.S. Ebel. *Lunar & Planet. Science XLIV*, Abs. #2112 (oral)
- (2013) **Mineral processing by short circuits in protoplanetary disks.** McNally, C.P., A. Hubbard, M.M. Mac Low, D.S. Ebel, and P. D'Alessio. *Lunar and Planetary Science XLIV*, Abs. #2844 (oral)
- (2013) **Mapping major element abundances on Mercury's surface with MESSENGER x-ray spectrometer data.** Nittler, L.R., S.Z. Weider, R.D. Starr, E.J. Crapster-Pregont, D.S. Ebel, and S. Solomon. *Lunar and Planetary Science XLIV*, Abs. #2458 (oral)
- (2013) **Exploring the role of chlorine on the degassing of alkalis (Na and K): Implications for chondrule formation.** Ustunisik, G., D.S. Ebel, and H. Nekvasil. *Lunar and Planetary Science XLIV*, Abs. #2145 (poster)
- (2013) **Experimental confirmation of predicted condensed phase assemblages in dust-enriched systems.** Ustunisik, G., D.S. Ebel, and J.S. Boesenberg. *Lunar Planet. Sci. XLIV*, Abs. #2260 (poster)
- (2013) **Sutter's Mill: Using computed tomography to curate scientifically important meteorites.** Wallace, S.W., D.S. Ebel, and M.G. Hill. *Lunar & Planetary Science XLIV*, Abs. #2297 (poster)
- (2013) **EL3 chondrites: Primitive nebular materials, not products of asteroidal processing.** Weisberg, M.K., D.S. Ebel, and H.C. Connolly Jr. *Lunar Planetary Sci. XLIV*, Abs. #2871 (oral)

- (2013) **An improved experimental deconvolution technique for 3-dimensional laser confocal microscopy of particles in aerogel.** White, A.J., D.S. Ebel, and M. Greenberg. *Lunar Planetary Sci. XLIV*, Abs. #1630 (poster)
- (2012) **Particle trajectories during FU Orionis outbursts by the protosun.** Boss, A.P., C.M.O'D. Alexander, M. Podolak, and D.S. Ebel. *Lunar and Planetary Science XLIII*, Abs. #1249 (oral).
- (2012) **A new deconvolution technique for 3-dimensional laser confocal microscopy of Stardust tracks in aerogel.** White A.J., D.S. Ebel, and M. Greenberg. *Lunar and Planetary Science XLIII*, Abs. #1542 (poster).
- (2012) **Three dimensional petrography of Kernouve: A story of vein formation, compaction, and metamorphism.** Friedrich, J.M., A. Ruzicka, D.S. Ebel, J. Thostenson, R.A. Rudolph, M.L. Rivers, R.J. Macke, and D.T. Britt. *Lunar and Planetary Science XLIII*, Abs. #1197 (oral).
- (2012) **Microchondrule-bearing, iron-rich chondrule rims in Northwest Africa 5717.** Bigolski, J.N., M.K. Weisberg, H.C. Connolly Jr., and D.S. Ebel. *Lunar Planetary Sci. XLIII*, Abs. #2426 (poster).
- (2012) **Petrology and oxygen isotopes of chondrules in NWA 5492 and GRO 95551: A new type of metal-rich chondrite.** Weisberg, M.K., D.S. Ebel, N.T. Kita, and D. Nakashima. *Lunar and Planetary Science XLIII*, Abs. #1463 (oral).
- (2011) **Laboratory far-IR spectroscopy of minerals: Providing the data for IR missions analysis.** Brusentsova, T., R.E. Peale, D. Maukonen, P. Figueiredo, G. Harlow, D. Ebel, C.M. Lisse. *Lunar and Planetary Science XLII*, Abs. #1457 (poster).
- (2011) **Diffusion within the CAI bocce ball 1: The redistribution of $^{26}\text{Mg}^*$ correlated with variations in Al/Mg within a Type B2 inclusion from Allende.** Connolly, H.C. Jr., G.R. Huss, A. Shahr, K. Nagashima, E.D. Young, D.S. Ebel, M.K. Weisberg, J.R. Beckett, J.M. Paque, C. Ma, and G.R. Rossman. *Lunar and Planetary Science XLII*, Abs. #1858 (oral).
- (2011) **CAI precursor compositions computed from Si and Mg isotope measurements.** Ebel, D.S., F.M. Richter, and E.D. Young. *Lunar and Planetary Science XLII*, Abs. #2787 (oral).
- (2011) **3D fluorescent and reflective imaging of whole Stardust tracks in aerogel.** Greenberg, M., and D.S. Ebel. *Lunar and Planetary Science XLII*, Abs. #2640 (oral).
- (2011) **Refractory inclusions in MET 00426, a CR3 chondrite.** Lin, B.E., M.K. Weisberg, and D.S. Ebel. *Lunar and Planetary Science XLII*, Abs. #1297 (poster).
- (2011) **Renewed search for FUN (fractionated and unidentified nuclear effects) in primitive chondrites.** Tollstrup D.L., J.B. Wimpenny, Q.-Z. Yin, D.S. Ebel, B. Jacobsen, I.D. Hutcheon. *Lunar and Planetary Science XLII*, Abs. # 2216 (poster).
- (2011) **Petrology and oxygen isotopes of NWA 5492, a new metal-rich chondrite.** Weisberg M.K., T.E. Bunch, D. Rumble III, and D.S. Ebel. *Lunar and Planetary Science XLII*, Abs. #1198 (oral).
- (2010) **Nondestructive XRF and quantitative volumetric image analysis of Stardust tracks 140, 151 & 152.** Greenberg, M. and D.S. Ebel. *Lunar and Planetary Science XLI*, Abs. #2346 (poster).
- (2010) **X-ray image analysis of clast size and abundance in Acfer 094.** Konrad, K., S.V. McKnight, and D.S. Ebel. *Lunar and Planetary Science XLI*, Abs. #1447 (poster).
- (2010) **Near-far IR spectra of sulfide minerals relevant to comets.** Moriarty, D., C.A. Hibbitts, C.M. Lisse, M.D. Dyar, G. Harlow, D. Ebel, and R. Peale. *Lunar and Planetary Science XLI*, Abs. #2447.

- (2010) **The American Museum of Natural History mineral library for spectroscopic standards.** Nissinboim, A., D.S. Ebel, G.E. Harlow, J.S. Boesenberg, K.M. Sherman, E.R. Lewis, T.N. Brusentsova, R.E. Peale, C.M. Lisse, C.A. Hibbitts. *Lunar and Planetary Science XLI*, Abs. #2518 (poster).
- (2010) **Methods for direct measurement of chondrule size, morphology and density.** Sherman, K.M., J.M. Friedrich, D.S. Ebel, and M.S. Rivers. *Lunar and Planetary Science XLI*, Abs. #2313 (poster).
- (2010) **Laboratory experiments bearing on the evolution of Type IA and IIA chondrules.** Richter, F.M., R.A. Mendybaev, J. Christensen, and D. Ebel. *Lunar and Planetary Science XLI*, Abs. #2562.
- (2010) **Initial analysis of a refractory inclusion rich in CaAl_2O_4 from NWA 1934: Cracked egg.** Sweeney Smith, S.A., H.C. Connolly Jr., C. Ma, G.R. Rossman, J.R. Beckett, D.S. Ebel, D.L. Schrader. *Lunar and Planetary Science XLI*, Abs. #1877.
- (2010) **Petrology and oxygen isotopes of chondrules in the Kota Kota EH3 chondrite.** Weisberg, M.K., D.S. Ebel, M. Kimura, N.T. Kita and D. Nakashima. *Lunar Planet. Sci. XLI*, Abs. #1735 (oral).
- (2010) **A partially differentiated parent body for CV chondrites?** Weiss, B.P., L. Carporzen, L.T. Elkins-Tanton, D.L. Schuster, D.S. Ebel, J. Gattacceca, M.T. Zuber, J.H. Chen, D.A. Papanastassiou, R.P. Binzel, D. Rumble, and A.J. Irving. *Lunar and Planetary Science XLI*, Abs. #1688 (oral).
- (2010) **Magnetic tests for partially differentiated chondrite parent bodies.** Weiss, B.P., L. Carporzen, L.T. Elkins-Tanton, M.T. Zuber, D.L. Schuster, D.S. Ebel, and J. Gattacceca. *Chondrules: Their Role in Early Solar System History*, Abs. #8010.
- (2009) **Oxygen isotopic compositions of chondrules in E3 chondrites.** Weisberg, M.K., D.S. Ebel, H.C. Connolly Jr., N.T. Kita and T. Ushikubo. Workshop on Antarctic Meteorites, National Inst. Polar Research, Japan. in press (Abstract).
- (2009) **Abundance and size distribution of inclusions in CV3 chondrites by x-ray image analysis.** Ebel, D. S., K. Leftwich, C. E. Brunner, and M. K. Weisberg. *Lunar Planet. Sci. XL*, Abs. #2065.
- (2009) **Evidence for internally generated magnetic fields on the CV chondrite parent planetesimal.** Weiss, B. P., L. Carporzen, L. T. Elkins-Tanton, and D. S. Ebel. *Lunar Planet. Sci. XL*, Abs. #2237.
- (2009) **Experiments to confirm condensed phase assemblages predicted by equilibrium thermodynamic calculations in dust-enriched systems: Preliminary results.** Boesenberg, J. S., and D. S. Ebel. *Lunar Planet. Sci. XL*, Abs. #2125 (poster).
- (2009) **Petrologic - geochemical study of chondrules in enstatite chondrites.** Weisberg, M. K., D. S. Ebel, H. C. Connolly Jr., N. T. Kita and T. Ushikubo. *Lunar Planet. Sci. XL*, Abs. #1886 (oral).
- (2009) **^{53}Mn - ^{53}Cr systematics of Allende chondrules and $\epsilon^{54}\text{Cr}$ - $\Delta^{17}\text{O}$ correlation in bulk carbonaceous chondrites.** Yin, Q-Z., K. Yamashita, A. Yamakawa, R. Tanaka, B. Jacobsen, D. S. Ebel, I. D. Hutcheon, and E. Nakamura. *Lunar Planet. Sci. XL*, Abs. #2006 (oral).
- (2009) **Physical properties of incompletely compacted equilibrated ordinary chondrites: Implications for asteroidal structure and impact processing.** Sasso, M. R., R. J. Macke, D. T. Britt, M. L. Rivers, D. S. Ebel, and J. M. Friedrich. *Lunar Planet. Sci. XL*, Abs. #1670 (poster).
- (2009) **Status of a program monitoring optical lunar surface transients.** Crotts, A.P.S., A. Berger, G. Cecil, P. Cseresnjcs, D. Ebel, P. Hickon, M. Joner, T. Pfrommer, S. Marka, R. Morehead, J. Radebaugh and P. Schultz. *Lunar Planet. Sci. XL*, Abs. #2373 (poster).

- (2009) **Elemental and isotope fractionation of chondrule-like liquids by evaporation into vacuum.** Richter F. M., R. A. Mendybaev, J. Christensen, A. Gaffney, and D. S. Ebel. *Lunar Planet. Sci. XL*, Abs. #2321 (oral).
- (2009) **Nondestructive 3D confocal laser imaging with deconvolution of seven whole stardust tracks with complementary XRF and quantitative analysis.** M. Greenberg and D. S. Ebel. *Lunar Planet. Sci. XL*, Abs. #2124.
- (2008) **Paleontological and mineralogical evidence for a single K/T extinction impact at Chicxulub.** Ebel, D. S., M-M. Mac Low, and N. H. Landman. *Lunar Planetary Science XXXIX*, Abs. #1454.
- (2008) **Multiscale abundance and size distribution of inclusions in the Allende CV3 meteorite by x-ray image analysis of slabs.** Ebel, D. S., C. E. Brunner, and M. K. Weisberg. *Lunar Planetary Science XXXIX*, Abs. #2121.
- (2008) **Nondestructive 3D confocal laser imaging of stardust tracks in aerogel and deconvolution techniques.** Greenberg, M. and D. S. Ebel. *Lunar Planetary Science XXXIX*, Abs. #1800.
- (2008) **Origin of Na-, Al-, glass-rich chondrules in H, L, and LL chondrites.** Nehru, C. E., M. K. Weisberg, and D. S. Ebel. *Lunar Planetary Science XXXIX*, Abs. #1697.
- (2008) **Ultra-refractory attogram inclusions in comet dust - First condensates?** Brownlee D.E., D.J. Joswiak, G. Matrajt, J.P. Bradley, and D.S. Ebel. *Lunar Planetary Science XXXIX*, Abs. #1978.
- (2008) **Oxygen isotopes and the nature and origins of Type-II chondrules in CR2 chondrites.** Connolly, H. C. Jr., G. R. Huss, K. Nagashima, M. K. Weisberg, R. D. Ash, D. S. Ebel, D. L. Schrader and D. S. Lauretta. *Lunar Planetary Science XXXIX*, Abs. #1675.
- (2008) **Reassessing the conditions of chondrule formation.** Alexander, C. M. O'D., D. S. Ebel, F. Ciesla, and J. N. Grossman. *Lunar Planetary Science XXXIX*, Abs. #2440.
- (2007) **Microtomographic, petrologic and isotopic observations of the accretion histories of chondrules.** Ebel, D.S. N. Kita, T. Ushikubo, and M.K. Weisberg. *Antarctic Meteorites XXXI*, 13-14. (Symposium on Antarctic Meteorites, National Institute of Polar Research, Japan)
- (2007) **Magnetic fields of the early solar system recorded in chondrules and meteorites: Insights from magnetic remanence and first-order reversal curve (FORC) measurements.** Acton, G., Q.-Z. Yin, K. L. Verosub, and D. S. Ebel. *Lunar Planetary Science XXXVIII*, Abstract #1711.
- (2007) **Do we need to reassess the formation conditions of chondrules?** Alexander C.M.O'D., J. N. Grossman, and D. Ebel. *Lunar Planetary Science XXXVIII*, Abstract #2012.
- (2007) **Olivine and the onset of thermal metamorphism in EH3 chondrites.** Bendersky, C., M. K. Weisberg, H. C. Connolly, Jr, and D. S. Ebel. *Lunar Planetary Science XXXVIII*, Abs. #2077.
- (2007) **Probing lunar volatiles: Initial ground-based results.** Crotts, A., D. Austin, A. Barclay, A. Bergier, A Chutjian, P. Cseresnjcs, M. Darrach, D. Ebel, S. Gorevan, J. Radebaugh, D.W. Savin, C. Scharf, and E. Spiegel. *Lunar Planetary Science XXXVIII*, Abs. #2294.
- (2007) **On the nature and origins of Type II chondrules in CR2 chondrites.** Connolly, H. C., Jr., M. K. Weisberg, G. R. Huss, K. Nagashima, D. S. Ebel, D. L. Schrader and D. S. Lauretta. *Lunar Planetary Science XXXVIII*, Abstract #1571.
- (2007) **Nondestructive laser confocal scanning microscopy and synchrotron microtomography of single stardust and analog tracks in aerogel keystones.** Ebel, D. S., J. L. Mey, and M. L. Rivers. *Lunar Planetary Science XXXVIII*, Abstract #1977.

- (2007) **Infrared spectroscopy of eucrite Juvinas under vacuum: IR absorption of water and organic species.** McFadden, L. A., D. S. Ebel, M. J. Loeffler, J. Boesenberg, R. A. Baragiola. *Lunar Planetary Science XXXVIII*, Abstract #2390.
- (2007) **Melilite from synthetic and natural type B CAIs: Similarities and differences.** Mendybaev, R. A., A. M. Davis, F. M. Richter, and D. S. Ebel. *Lunar Planetary Sci. XXXVIII*, Abstract #2329.
- (2007) **Characterization of opaque phases in Type-II chondrules from CR2 chondrites.** Schrader, D. L., H. C. Connolly, Jr., D. S. Lauretta, M. K. Weisberg, and D. S. Ebel. *Lunar Planetary Science XXXVIII*, Abstract #1368.
- (2007) **Petrologic-isotopic study of amoeboid olivine aggregates in CR chondrites.** Weisberg, M. K., N. T. Kita, T. Ushikubo, H. C. Connolly, Jr., D. S. Ebel, M. J. Spicuzza, and J. W. Valley. *Lunar Planetary Science XXXVIII*, Abstract #1588.
- (2006) **The petrography and geochemistry of an Allende Type B CAI: V depletion, relict regions and remelting.** Connolly H.C. Jr., D.S. Ebel, M.K. Weisberg, J.R. Beckett, and J.M. Paque. *Lunar Planetary Science XXXVII*, Abstract #1521, LPI.
- (2006) **Petrologic and trace element study of seven Type A inclusions from Lancé (CO3).** Nehru C.E., D.S. Ebel, J.M. Friedrich, and M.K. Weisberg. *Lunar Planet. Sci. XXXVII*, Abs. #1505.
- (2005) **Tomographic location of potential melt-bearing phenocrysts in lunar glass spherules.** Ebel, D.S., R.A. Fogel, and M.L. Rivers. *Lunar Planetary Science XXXVI*, Abstract #1505, LPI.
- (2005) **Condensation from cluster-idp enriched vapor inside the snow line: Implications for Mercury, asteroids, and enstatite chondrites.** Ebel, D.S. and C.M.O'D. Alexander. *Lunar and Planetary Science XXXVI*, Abstract #1797, LPI.
- (2005) **The crucible: An unusual matrix-enclosing igneous cai in NWA 2364 (CV3).** Friedrich, J.M., D.S. Ebel, M.K. Weisberg, and J. Birdsell. *Lunar Planet. Sci. XXXVI*, Abs. #1756.
- (2005) **First results of a physicochemical survey of CV3 calcium-aluminum-rich inclusions: The refractory trace elements Sr, Y, Zr, Nb, Ba, Hf, Ta.** Friedrich, J.M., K.P. Jochum, and D.S. Ebel. *Lunar Planetary Science XXXVI*, Abstract #1985, LPI.
- (2004) **Chondrule melting by current sheets in protoplanetary disks.** Ebel, D.S., M.K.R. Joug, and M.-M. Mac Low. *Lunar Planet. Sci. XXXV*, Abstract #1971, LPI.
- (2004) **An experimental study of phosphoran olivine and its significance in Main Group pallasites.** Boesenberg, J.S., D.S. Ebel, and R.H. Hewins. *Lunar Planet. Sci. XXXV*, #1366.
- (2004) **Meteoritic constraints on temperatures, pressures, cooling rates, chemical compositions, and modes of condensation in the solar nebula.** Petaev, M.I., D.S. Ebel, and J.A. Wood. *Workshop on Chondrites and the Protoplanetary Disk*, Abstract #9075 (LPI).
- (2004) **Are pristine nebular condensates present in the meteorite record?** Weisberg, M.K., D.S. Ebel. *Workshop on Chondrules and the Protoplanetary Disk*, Abstract #9096 (LPI).
- (2003) **Amoeboid olivine aggregates in CR chondrites.** Weisberg, M.K., H.C. Connolly, Jr., and D.S. Ebel. *Lunar Planet. Sci. XXXIV*, Abstract #1513, LPI.
- (2003) **Pyroxene chondrules from olivine-depleted, dust-enriched systems.** Ebel, D.S., A. Engler, and G. Kurat. *Lunar and Planetary Science XXXIV*, Abstract #2059, LPI.
- (2003) **Tomographic study of shapes and metal abundances of Renazzo chondrules.**

- Hertz, J., D.S. Ebel, and M.K. Weisberg *Lunar and Planetary Science XXXIV*, Abs. #1059, LPI.
- (2003) **Unambiguous voids in Allende chondrules and refractory inclusions.**
Murray, J., J.S. Boesenberg, and D.S. Ebel *Lunar and Planetary Science XXXIV*, Abs. #1999, LPI.
- (2002) **Gujba and origin of Bencubbin-like (CB) chondrites.**
Weisberg, M.K., J.S. Boesenberg, and D.S. Ebel *Lunar Planet. Sci. XXXIII*, Abstract #1551, LPI.
- (2001b) **Single stage evaporation of solar condensate dust to make CAIs.**
Ebel, D.S. and L. Grossman. *Lunar and Planetary Science XXXII*, Abstract #2008, LPI.
- (2000) **Evaporation and the isotopic composition of Type A and B refractory inclusions.**
Ebel, D.S., L. Grossman, S.B. Simon, A.M. Davis, F.M. Richter, and N.M. Parsad.
Lunar and Planetary Science XXXI, Abstract # 1077, Lunar and Planetary Institute, Houston.
- (2000) **Coarse-grained refractory inclusions: Condensates, evaporation residues, or both? Evidence from major element bulk compositions.**
Simon, S.B., D.S. Ebel, and L. Grossman. *Lunar and Planetary Science XXXI*, Abstract # 1076.
- (1999) **Condensation in a model Chicxulub fireball.**
Ebel, D.S. and L. Grossman. *Lunar and Planetary Science XXX*, Abstract # 1906, LPI.
- (1998) **Effect of dust enrichment on solid and liquid compositions in equilibrium with cosmic gases.**
Ebel, D.S. and L. Grossman. *Lunar and Planetary Science XXIX*, Abstract #1421, LPI.
- (1998) **Large, relict, chromian spinels in Allende: A link to Murchison?**
Simon, S.B., L. Grossman, D.S. Ebel, and C. Palenik. *Lunar Planet. Science XXIX*, Abs. #1640.
- (1997) **Direct condensation of ferromagnesian liquids from cosmic gases.**
Ebel, D.S. and L. Grossman. *Lunar and Planetary Science XXVIII*, 317-318.

SHORT ABSTRACTS (one page or less)

- (2015) **Stardust under a microscope - 3D maps of Wild 2/81P cometary samples in aerogel.** White, A. J. and D. S. Ebel. *AAS Meeting January 2016*. #141.21 (poster)
- (2015) **New Jersey, a most habitable place during an asteroid strike: Shocked quartz and iridium spike co-occur below a Maastrichtian mollusk community on the NJ coastal plain.** Ebel, D. S., S.J. Jaret, J.N. Bigolski, R.J. Aldoroty, J.A. Sessa and J.H. Landman. *GSA Abstracts with Program 47*: 0 (oral, invited)
- (2015) **Geoscience, education and unpublished research data.** Harlow, G.E., J.D. Webster and D.S. Ebel. *GSA Abstracts with Program 47*: 0 (oral)
- (2015) **Field and lab practicum provides tools to inspire geoscience classroom learning.** Ebel, D. S., R.J. Kinzler, G.E. Harlow, J.D. Webster, J.A. Sessa, P.A. Nadeau and G. Ustunisik. *GSA Abstracts with Program 47*: 0 (oral)
- (2015) **Laboratory far-ir spectroscopy of various mineral groups.** Brusentsova, T., R.E. Peale, D. Maukonen, P. Figueiredo, G.E. Harlow, D.S. Ebel and C.M. Lisse. *GSA Abstracts with Program 47*: 0 (poster)
- (2015) **Insights on chondrule formation from electron backscattered diffraction of chondrule metal layers in Acfer 139.** Crapster-Pregont, E.J., W.H. Towbin, and D.S. Ebel. *Meteoritics & Planetary Sci Suppl.* **50** (Abs. #5129, oral)

- (2015) **Hierarchical accretion: Evidence from compositional diversity of CO and ordinary chondrite inclusions.** Ebel, D.S., E.J. Crapster-Pregont, and A. Lobo. *Meteoritics & Planetary Sci Suppl.* **50** (Abs. #5155, oral)
- (2015) **On the photophoretic force exerted on mm- and sub-mm-sized particles.** Loesche, C., G. Wurm, J. Teiser, J.M. Friedrich, A. Bischoff, T. Kelling, M.-M Mac Low, C.P. McNally, A. Hubbard, and D.S. Ebel. *Meteoritics & Planetary Sci Suppl.* **50** (Abs. #5137, poster)
- (2015) **Presence of shocked quartz at two Cretaceous/Paleogene (K/Pg) sites in the New Jersey coastal plain.** Mahmood, S.S., S.J. Jaret, J.A. Sessa, J.N. Bigolski, R.J. Aldoroty, D.S. Ebel, and J.H. Landman. *Meteoritics & Planetary Sci Suppl.* **50** (Abs. #5329, poster)
- (2015) **X-ray computed tomography and the radiation history of meteorites.** Sears, D.W.G., D.S. Ebel, S. Wallace, and J.M. Friedrich. *Meteoritics & Planetary Sci Suppl.* **50** (Abs. #5156, oral)
- (2015) **Metal-rich nodules in EL3 chondrites and Almahata Sitta EL3 clast MS-177.** Weisberg, M.K., D.S. Ebel, and M. Kimura. *Meteoritics & Planetary Sci Suppl.* **50** (Abs. #5312, oral)
- (2015) **Raman spectroscopy of whole samples in aerogel using a laser scanning confocal microscope.** White, A.J., D.S. Ebel and M.J. Burchell. *Meteoritics & Planetary Sci Suppl.* **50** (Abs. #5065, poster)
- (2014) **Place-based teaching and learning in an urban residency earth science teacher preparation program.** Kinzler, R., D.S. Ebel, G.E. Harlow, N.H. Landman, M. Macdonald, M-M. Maac Low, E.A. Mathez, M. Shara, J.D. Webster. *GSA Abstracts with Program* **46**: 188 (oral)
- (2014) **Predicted non-stability of Al-rich spinel in the early solar system.** Ebel, D. S., E. J. Crapster-Pregont, and R. O. Sack. *Meteoritics & Planetary Sci Suppl.* **49** (Abs. #5268, oral)
- (2014) **Rare earth element complementarity in carbonaceous chondrites.** Crapster-Pregont, E. J., J. M. Friedrich, and D. S. Ebel. *Meteoritics & Planetary Sci Suppl.* **49** (Abs. #5361, oral)
- (2014) **The highly primitive ALH 81189 EH3 chondrite.** Weisberg, M. K., M. E. Zolensky, M. Kimura, and D. S. Ebel. *Meteoritics & Planetary Sci Suppl.* **49** (Abs. #5357, oral)
- (2014) **Strong temperature fluctuations driven by magnetorotational instability in protoplanetary disks.** McNally, C. P., A. Hubbard, C.-C. Yang, M.-M. Mac Low, and D. S. Ebel. *Meteoritics & Planetary Sci Suppl.* **49** (Abs. #5396, oral)
- (2014) **Hierarchical accretion, melting by short circuits, and the origin of chondritic planetesimals.** Ebel, D. S., M. K. Weisberg, A. Hubbard, E. J. Crapster-Pregont, C. P. McNally and M-M. Mac Low. *Goldschmidt Conference.* (Abs #2689, invited keynote)
- (2014) **Constraining K depletion in magnetorotationally unstable protoplanetary disks.** Ansari, A., D. S. Ebel, A. Hubbard and C. P. McNally. *Goldschmidt Conference.* (Abs #2864, oral)
- (2014) **Geochemistry of related inner solar system chondrites.** Weisberg, M. K., D. S. Ebel, H. C. Connolly Jr. and N. T. Kita. *Goldschmidt Conference.* (Abs #2630, oral)
- (2014) **The role of chlorine in the degassing of alkalis during flash melting of chondrules.** Ustunisk, G., D. S. Ebel and H. Nekvasil. *Goldschmidt Conference.* (Abs #3481, poster)
- (2014) **Collaboration between research scientists and educators to prepare new Earth Science teachers.** Pagnotta, A., J. Grcevich, M. Shara, M-M. Mac Low, K. Flores, P. A. Nadeau, J. Sessa, G. Ustunisk, N. Zirakparvar, and D. Ebel. *American Astronomical Society Meeting 223* (Jan 2014), presentation #449.04

- (2013) **Early solar system fractionation of metal and silicate revealed in CR chondrites.**
Ebel, D. S., M. K. Weisberg, R. A. Rudolph, M. R. Downen.
GSA Abstracts with Program **45**: 140 (oral).
- (2013) **The distribution of magnesium on Mercury's surface as measured by the MESSENGER x-ray spectrometer.** Nittler, L. R., S. Z. Weider, B. W. Denevi, R. D. Starr, E. Crapster-Pregont, P. K. Byrne, D. T. Blewett, D. S. Ebel, S. C. Solomon. *GSA Abstracts with Program* **45**: 849 (oral).
- (2013) **Cosmochemical constraints on asteroid accretion.**
Ebel, D. S., M. K. Weisberg, E. Crapster-Pregont. *Goldschmidt Conference* (Abs. #5909, oral).
- (2013) **Experimental test of predicted condensed assemblages in dust enriched systems.**
Ustunisik, G., D. S. Ebel, D. Walker, and J. S. Boesenberg.
Meteoritics & Planetary Sci Suppl. **48** (Abs. #5343, oral).
- (2013) **A microanalytical (TEM) study of fine-grained chondrule rims in NWA 5717.**
Bigolski, J. N., D. R. Frank, M. E. Zolensky, M. K. Weisberg, D. S. Ebel, and Z. Rahman.
Meteoritics & Planetary Sci Suppl. **48** (Abs. #5227, oral).
- (2012) **Chondrule formation, complementarity, and pervasive, highly local heating by current sheets.** Ebel, D. S., A. Hubbard, C. McNally, M-M. Mac Low, J. Oishi, and J. Maron.
Meteoritics & Planetary Sci Suppl. **47** (Abs. #5387, oral).
- (2012) **Short circuits in magnetic reconnection: A route to chondrule formation.**
Hubbard, A., C. McNally, M-M. Mac Low, Ebel D. S., J. Oishi, and J. Maron.
Meteoritics & Planetary Sci. Suppl. **47** (Abs. #5395, poster).
- (2012) **Laboratory far-infrared spectroscopy of terrestrial phyllosilicates to support analysis of cosmic dust spectra.** Yesiltas, M., T. Brusentsova, R. E. Peale, D. Maukonen, P. Figueiredo, G. E. Harlow, D. S. Ebel, A. Nissinboim, K. Sherman and C. M. Lisse. *Monthly Notices of the Royal Astronomical Society* 420(3) (AAS Meeting #219, #238.05)
- (2012) **X-ray tomographic study of the Sutter's Mill CM chondrite breccia.**
Ebel, D. S., Q-Z. Yin, J. M. Friedrich, P. Jenniskens, M. Fries, M. G. Hill.
Meteoritics & Planetary Sci Suppl. **47** (Abs. #5380, oral).
- (2012) **Primordial delivery of potassium to Mercury and enstatite chondrites.** Ebel D.S., C.M.O'D. Alexander, and R.O. Sack. *Goldschmidt Conference* (Abs., oral).
- (2012) **Early microstructures of asteroidal building blocks from 3D petrography: A compaction and porosity perspective.** Friedrich J.M., A. Ruzicka, D.S. Ebel, J.O. Thostenson, R.A. Rudolph, and M.L. Rivers. *Conference: 'Asteroids, Comets, Meteorites'* (Abstract).
- (2011) **MESSENGER: Implications for Mercury formation hypotheses.** Ebel, D.S., S.A. Hauck II, D.J. Lawrence, L.R. Nittler, P. Peplowski, S.C. Solomon, A.L. Sprague, R.D. Starr, and S.T. Stewart.
GSA Abstracts with Program **42**: 358 (oral).
- (2011) **Mercury and enstatite chondrite origins by equilibrium condensation from chondritic-IDP enriched vapor.** Ebel, D.S., and C.M.O'D. Alexander. *2011 Goldschmidt Conference* (Abs. #3666, oral).
- (2011) **Sequential accretion and annealing of separate silicate and metal layers in a CR chondrite chondrule.** Ebel, D.S., and M.R. Downen. *Meteoritics Planet. Sci Suppl.* **46**: A62 (Abs. #5359, oral).
- (2011) **Thermodynamic stability of low-iron manganese-enriched olivine in the solar nebula.** Ebel, D.S., and M.K. Weisberg. *Meteoritics Planet. Sci Suppl.* **46**: A62 (Abs. #5500, poster).

- (2010) **Temperature-dependent far-IR spectroscopy of various mineral groups: providing laboratory data for Herschel.** Brusentsova, T.N., R.E. Peale, D. Maukonen, P. Figueiredo, G. Harlow, D. Ebel, C.M. Lisse. *Stormy Cosmos: The Evolving ISM from Spitzer to Herschel and Beyond*, Pasadena CA, Nov. 2010 (poster).
- (2010) **X-Ray Tomography of sulfide/silicate interface subjected to an electric field at 20 kbar/1400C.** Ebel, D.S., D. Walker, and A. Kavner. *GSA Abstracts with Program 42*: 342 (oral).
- (2010) **The formation history of layered chondrules in Acfer-139 (CR).** Downen, M.R. and D.S. Ebel. *GSA Abstracts with Program 42*: 601 (poster).
- (2010) **Ni and Co in pyrite framboids from Agony Creek section, K/Pg boundary in the New Jersey coastal plain.** Bigolski, J.N., D.S. Ebel, N.H. Landman, J.S. Boesenberg, and C-T. Hsieh. *GSA Abstracts with Program 42*: 305 (poster).
- (2010) **Ni and Co in pyrite mark the K/Pg boundary in Crosswicks Creek section, New Jersey coastal plain.** Ebel, D.S., C-T. Hsieh, N.H. Landman, and J.S. Boesenberg. *GSA Abstracts with Program 42*: 305 (poster).
- (2010) **Another stab at primordial Pb.** Albarède, F., J. Blichert-Toft, D.S. Ebel, and B. Zanda. *Meteoritics Planet. Sci. Suppl. 45*: A6 (Abs. #5039).
- (2010) **Three-dimensional imaging of ordinary chondrite microporosity.** Friedrich J.M., M.L. Rivers, and D.S. Ebel. *Meteoritics & Planetary Sci. Suppl. 45*: A57 (Abs. #5233, oral).
- (2010) **Original impactor modeling from whole stardust track data.** Greenberg, M. and D.S. Ebel. *Meteoritics & Planetary Sci. Suppl. 45*: A67 (Abs. #5399, oral).
- (2010) **Ni and Co in pyrite mark the K/T boundary in the Manasquan River basin, New Jersey, USA.** Hsieh, C-T., D.S. Ebel, N.H. Landman, and J.S. Boesenberg. *Meteoritics & Planetary Sci. Suppl. 45*: A85 (Abs. #5321, poster).
- (2010) **A 500 micron zoned chromian spinel with aluminian enstatite from Allende (CV3).** Lewis, E.R., J. Ehman, and D.S. Ebel. *Meteoritics Planet. Sci. Suppl. 45*: A117 (Abs. #5307, poster).
- (2010) **The Tafassasset primitive achondrite, its origin and relationship to chondrites.** Nehru, C.E., J.S. Boesenberg, D.S. Ebel, and M.K. Weisberg. *Meteoritics & Planetary Sci. Suppl. 45*: A150 (Abs. #5305, oral).
- (2010) **3-Dimensional chondrule size measurement.** Sherman, K.M., D.S. Ebel, M.D. Greenberg and M.L. Rivers. *Meteoritics & Planetary Sci. Suppl. 45*: A188 (Abs. #5431, poster).
- (2010) **NWA 5717, an unusual new chondrite with sulfide-rich chondrule rims.** Weisberg, M.K., and D.S. Ebel. *Meteoritics & Planetary Sci. Suppl. 45*: A213 (Abs. #5402, oral).
- (2010) **Laboratory spectroscopy in Herschel/PACS range of astrophysically important minerals.** Peale R., T. Brusentsova, D. Maukonen, G.E. Harlow, D. Ebel, J.S. Boesenberg, K. Sherman, K. Hibbitts, C.M. Lisse. *American Astronomical Soc. annual meeting* Jan. 2010 (Abstract #2157, oral).
- (2009) **Modeling solids in astrophysical gaseous (fluid) disks as cosmochemical indicators.** Ebel, D.S. C.M.O'D. Alexander, F.J. Ciesla, A.M. Davis, M-M. Mac Low, J. Maron, and E.D. Young. *GSA Abstracts with Program 41*: 608 (oral).
- (2009) **Non-destructive 3D imaging of extraterrestrial materials by synchrotron x-ray microtomography (XR-CMT) and laser confocal scanning microscopy (LCSM): Beyond pretty pictures.** Ebel, D.S. and M. Greenberg. *Eos Trans. AGU 90(22)*, Jt. Assem. Suppl., Abs. V74A-08.

- (2009) **CAI and chondrule sizes and abundances in the CO3 chondrites Kainsaz and Colony.** Ebel D.S., M. Lu, I.R. Erb, and M.K. Weisberg. *Meteoritics Planet. Sci Suppl.* **44**: A66 (Abs. #5306, oral)
- (2009) **Nondestructive quantitative analysis of Stardust tracks from 3-dimensional confocal laser microscopy and XRF mapping.** Greenberg, M. and D. S. Ebel. *Meteoritics Planet. Sci Suppl.* **44**: A80 (Abs. #5400, oral)
- (2009) **Elemental analysis of X-ray tomographed serial Allende sections.** Friedrich J.M., S. F. Wolf, R. Halabi, and D. S. Ebel. *Meteoritics & Planetary Sci. Suppl.* **44**: A72 (Abs. #5362)
- (2009) **^{53}Mn - ^{53}Cr evidence for Allende chondrule formation at 4567.6 Ma.** Yin, Q-Z., K. Yamashita, A. Yamakawa, B. Jacobsen, D. S. Ebel, I. D. Hutcheon, and E. Nakamura. *Geochimica et Cosmochimica Acta Suppl.*, **73**: A1484 (Abs. #1891).
- (2008) **Evidence for internally generated magnetic fields on the CV chondrite parent planetesimal.** Carporzen L., B.P. Weiss, D.S.Ebel, and L.T. Elkins-Tanton. *JGR* (AGU Abstract, December)
- (2008) **Pre- and post-accretionary carbonates in the Renazzo CR chondrite.** DeGregorio B.T., R.M. Stroud, and D.S. Ebel. *Geochimica et Cosmochimica Acta* **72**: A208. (Abstract #1887)
- (2008) **Metal-rich olivine aggregates in the Renazzo chondrite.** Weisberg M.K., D.S. Ebel, H.C. Connolly Jr, N.T. Kita, and T. Ushikubo. *Meteoritics & Planet. Sci. Suppl.* **43**: A168 (Abs. #5125).
- (2008) **Why do chondrules with volumetric metal/silicate ratios of 1 to 37% aggregate to solar Fe/Si in the Renazzo CR chondrite?**
Ebel D.S. and M.K. Weisberg. *Meteoritics and Planetary Sci. Suppl.* **43**: A40 (Abs. #5118, oral).
- (2008) **Abundances and sizes of clast types in the Allende CV3 meteorite: New results from mapping analysis.** Brunner C.E., D.S. Ebel and M.K. Weisberg. *Meteor. Planet. Sci Suppl.* **43**: A28 (Abs. #5303, poster).
- (2008) **Nondestructive 3D confocal laser imaging and analysis of stardust track #82 and deconvolution techniques.** Greenberg M. and D.S. Ebel. *Meteor. Planet. Sci Suppl.* **43**: A49 (Abs. #5300).
- (2008) **Impact-related preferred 3d orientation of metal grains in L chondrites.** Friedrich J.M., D.P. Wignarajah, S. Chaudhary, M.L. Rivers, C.E. Nehru, and D.S. Ebel. *Meteoritics Planet. Sci Suppl.* **43**: A45 (Abs. #5091).
- (2008) **Dynamic compaction of asteroids: Impact-induced preferred 3D orientation of metal grains in L chondrites.** Friedrich, J.M., D.P. Wignarajah, S. Chaudhary, M.L. Rivers, C.E. Nehru, and D.S. Ebel. *Conference: 'Asteroids, Comets, Meteorites'*, Abstract #8242.
- (2007) **Solid and liquid stability in C-IDP-enriched vapor inside the snow line: Implications for Mercury.** Ebel, D.S. and C.M.O'D. Alexander. *AAS Bulletin* **39**: 412 (DPS Abstract #3.08)
- (2007) **A traveling exhibit of Cassini image science.** Burns J.A., M.M. Hedman, M.S. Tiscareno, D. Ebel, M. Mac Low, L.E. Lovett, J.K. Burns, N. Schaff, and E.M. Bilson. *AAS Bulletin* **39**: 464 (DPS Abstract 27.07)
- (2007) **Paleomagnetic evidence for localized chondrule formation and rapid parent body accretion in the protoplanetary disk.** Ebel, D.S. *Meteoritics Planet. Sci Suppl.* **42**: A38 (Abs. #5326).
- (2007) **Petrology of matrix in the Semarkona ordinary chondrite.** Weisberg M.K., D.S. Ebel and H.C. Connolly Jr. *Meteoritics Planet. Sci Suppl.* **42**: A162 (Abs. #5288).

- (2007) **Quantitative petrography of L chondrites: 3D morphologic variations with degree of equilibration and shock loading.** Friedrich J.M., M.L. Rivers, C.E. Nehru, and D.S. Ebel *Meteoritics Planet. Sci Suppl.* **42**: A51 (Abs. #5271).
- (2007) **Did chondrules form in the nebula?** Alexander C.M.O'D., J.N. Grossman and D.S. Ebel. *Meteoritics Planet. Sci Suppl.* **42**: A12 (Abs. #5134).
- (2007) **^{182}Hf - ^{182}W chronometry of CAIs and the age of the solar system.** Burkhardt C., T. Kleine, H. Palme, B. Bourdon, J. Zipfel, J. Friedrich and D. Ebel. *Meteoritics Planet. Sci Suppl.* **42**: A27 (Abs. #5189).
- (2006) **Stardust (Comet 81P/Wild-2) Samples and early solar system processes.** Ebel, D.S. M.K. Weisberg, H.C. Connolly Jr., M. Zolensky, and the Stardust Mineralogy/Petrology Preliminary Examination Subteam. Division of Planetary Sciences of the American Astronomical Society, 2006 meeting, Abstract #888.
- (2006) **Meteorite research collaboration, curation, and education in New York City.** Ebel, D.S. and J.S. Boesenberg. *Meteoritics Planet. Sci Suppl.* **41**: A204 (Abs. #9028, 1st Desert Meteorite Workshop, Morocco).
- (2006) **Layered chondrules in carbonaceous and ordinary chondrites.** Ebel, D.S. and M.K. Weisberg *Meteoritics Planet. Sci Suppl.* **41**: A48 (Abs. #5352).
- (2006) **Variations in lunar opaque phase and grain size: Implications for remote sensing of TiO_2 .** Riner, M. A., M. S. Robinson, P. G. Lucey, and D. S. Ebel. *Meteoritics Planet. Sci Suppl.* **41**: A149 (Abs. #5339).
- (2006) **Sulfide-metal nodules in EH3 chondrites.** Weisberg, M.K., H.C. Connolly, D.S. Ebel, and M. Kimura. *Meteoritics Planet. Sci Suppl.* **41**: A186 (Abs. #5317).
- (2006) **Layered matrix in the CV3 NWA 2364 chondrite.** Friedrich, J.M., M.K. Weisberg, D.S. Ebel, and K.P. Jochum. *Meteoritics Planet. Sci Suppl.* **41**: A57 (Abs. #5298).
- (2006) **Synchrotron X-ray microtomography of extraterrestrial samples.** Ebel, D.S. and M.L. Rivers American Geophysical Union spring 2006 meeting (invited).
- (2006) **High spatial resolution 3D local lambda-tomography of particle tracks and fragmentation in whole aerogel tiles.** Ebel, D.S. and M.L. Rivers. August meeting of SPIE, The International Society for Optical Engineering.
- (2006) **Mineralogy and petrology of comet Wild 2 nucleus samples - final results of the preliminary examination team.** Zolensky et al. (45 authors). *Meteor. Planet. Sci Suppl.* **41**. (Abs. #5344).
- (2005) **High spatial resolution 3d local tomography of particle tracks and fragmentation in aerogel.** Ebel, D.S. and M.L. Rivers *Meteor. Planet. Sci. Suppl.* **40**: A42 (Abs. #5299).
- (2005) **Elemental signatures of nebular and alteration processes in CV, CO, and CR CAIs.** Friedrich, J.M., K.P. Jochum, and D.S. Ebel. *Meteor. Planet. Sci. Suppl.* **40**: A51 (Abs. #5112).
- (2005) **Fountain Hills impact melted CB chondrite and thermal history of the CB parent body.** Weisberg, M.K. and D.S. Ebel (Abstract 5228) *Meteor. Planet. Sci. Suppl.* **40**: A167.
- (2005) **A 3-d tomographic survey of compound chondrules in CR chondrites.** Hylton, S.N., D.S. Ebel, and M.K. Weisberg. *Meteor. Planet. Sci. Suppl.* **40**: A71 (Abs. #5305).

- (2005) **Heterogeneous Th-U-Pb isotope and elemental systematics in calcium-aluminum-rich inclusions determined by LA-ICPMS.** Jochum, K.P., J.M. Friedrich, D.S. Ebel, and S.J.G. Galer. *Meteor. Planet. Sci. Suppl.* 40: A76 (Abs. #5108).
- (2005) **Ti, Al-Rich Ca-pyroxene assemblages in CAIs.** Nehru, C.M., M.K. Weisberg, and D.S. Ebel. *Meteor. Planet. Sci. Suppl.* 40: A111 (Abs. #5296)..
- (2005) **Refractory trace elements in the solar system's first condensates: Analysis and implications of Zr/Hf and Nb/Ta in CAIs.** Friedrich, J.M., D.S. Ebel, and K.P. Jochum. *230th Annual Meeting of the American Chemical Society* (Abs. #895089).
- (2004) **3D tomographic measurements on Allende volumes - Constraints on the formation and accretion of chondrules and matrix.** Ebel, D.S., T.W. Schoenbeck, and H. Palme. *Meteoritics Planet. Sci. Suppl.* 39: A33 (Abs. #5153).
- (2004) **3D-microtomographic determination of chondrule/matrix ratios in carbonaceous chondrites.** Schoenbeck, T.W. and D.S. Ebel. *Geochim. Cosmochim. Acta Suppl.*, 68: A765.
- (2002) **Origin of enstatite chondrites and implications for the inner planets.** Ebel, D.S. and C.M.O'D. Alexander *12th Ann. Goldschmidt Conf.* (invited), *Geochimica et Cosmochimica Acta Suppl.*, 66: A205 (Abs. #2335).
- (2002) **Model evaporation of FeO-bearing liquids.** Ebel, D.S. *Meteoritics Planet. Sci. Suppl.* 37: A43 (Abs. #5269).
- (2002) **Petrologic-tomographic study of metal in the CR chondrites.** Weisberg, M.K., D.S. Ebel, H.C. Connolly, Jr., J.S. Boesenberg, and D. Castellano. *Meteoritics Planet. Sci. Suppl.* 37: A149 (Abs. #5254).
- (2001) **Vapor/liquid/solid equilibria when chondrites collide.** Ebel, D.S. *Meteoritics Planet. Sci. Suppl.* 36: A52-A53 (Abs. #5427).
- (2001) **Condensation from the plume of an oblique Chicxulub impact.** Ebel, D.S., and L. Grossman. *Meteoritics Planet. Sci. Suppl.* 36: A53 (Abs. #5404).
- (2001) **Melilite: A petrogenetic indicator in refractory inclusions.** Ebel, D.S., and L. Grossman. In *Eleventh Annual V.M. Goldschmidt Conference*, Abstract #3299. LPI Contribution No. 1088, Lunar Planet. Institute, Houston (CD-ROM). (Invited)
- (2000) **Melilite zoning during partial evaporation of calcium-aluminum-rich inclusion droplets.** Ebel, D.S., L. Grossman. *Meteoritics Planet. Sci. Suppl.* 35: A49-50 (Abs. #5254).
- (1998) **Rhodium and palladium partitioning between copper-nickel-pyrrhotite and sulfide liquid.** Ebel, D. S., and A. J. Campbell. *Geol. Soc. Am. Abstracts with Program*, 30A: 318.
- (1998) **Condensation from cosmic gas made of free atoms.** Ebel, D.S. and L. Grossman. *Meteoritics Planet. Sci. Suppl.* 33: A43-44.
- (1997) **Effects of pressure and dust enrichment on silicate-liquid stability.** Ebel, D.S. and L. Grossman. *Meteoritics Planet. Sci. Suppl.* 32: A37.
- (1996) **Limiting conditions for silicate liquid stability in cosmic gases.** Ebel, D.S. and L. Grossman. *Meteoritics Planet. Sci. Suppl.*, 31: A40-A41.
- (1996) **Fractional crystallization of sulfide melts.** Naldrett, A.J. and D.S. Ebel. In *Sixth international symposium on experimental mineralogy, petrology and geochemistry*, *Terra Abstracts* 8: 47.

- (1994) **Experimental Ni-pyrrhotite and (Fe, Ni, S)-liquid equilibria above 1000°C.**
Ebel, D.S. and A.J. Naldrett. *American Geophysical Union, EOS* **75**: 719-720.
- (1993) **Experimental determination of the free energy of formation of freibergite fahlore.**
Ebel, D.S. and R.O. Sack. *Geological Society of America Abstracts with Program*, **25A**: 96.
- (1991) **Ore reserve estimation from tetrahedrite composition.**
Ebel, D.S. and R.O. Sack. *Geological Society of America Abs. with Program*, **23A**: 417.
- (1988) **Ag-Cu and Sb-As exchange energies in (Ag,Cu)₁₀(Fe,Zn)₂(As,Sb)₂S₁₃ sulfosalts.**
Ebel, D.S. and R.O. Sack. *EOS* **69**: 528.

OTHER PUBLICATIONS

- (2013) Review of book, **Practical Chemical Thermodynamics, for Geoscientists**, by B. Fegley, Jr.
Ebel, D.S. *Meteoritics and Planetary Science* **48**: 712-713.
- (2007) Review of book, **Planet Formation**, ed. by H. Klahr and W. Brandner
Ebel, D.S. *Meteoritics and Planetary Science* **42**: 467-468.
- (2006) **History of the American Museum of Natural History meteorite collection**
Ebel, D.S. In: McCall G.J.H., Bowden A.J., and Howarth R.J. (eds) *The History of Meteoritics and Key Meteorite Collections: Fireballs, Falls and Finds*. Geological Society, London, Special Publications **256**: 267-289 (peer reviewed).
- (2006) **Stunt double.** Ebel, D.S. *Natural History*, February 2006, p. 64 (endpaper)
(how AMNH meteorite was used to test Rover tool, aiding decision not to grind meteorite on Mars)
- (2004) **New Arthur Ross Hall of Meteorites at the American Museum of Natural History**
Ebel, D.S. and J.S. Boesenberg. *Meteoritics and Planetary Science* **39**: 1761-1762.
- (1998) **Meteorite.**
Ebel, D.S. In *McGraw-Hill Encyclopedia of Science and Technology Yearbook*, p. 247-249.

MULTIMEDIA and ON-LINE AUTHORSHIP

- (2008) On-line course 'The Solar System', offered by AMNH Seminars in Science. Co-author with Dr. Neil D. Tyson. (<http://www.amnh.org/learn/courses/solarsystem.php>)

GRANTS

- 2016 Principal Investigator, NASA Emerging Worlds program (# NNX16AI32G)
"Non-destructive Analysis of Comet Grains and Tracks: Minerals and Original grain Properties" (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.)
- 2015 Co-Investigator, NASA SMD Science Education CAN
"OpenSpace: An Engine for Dynamic Visualization of Earth and Space Science for Informal Education and Beyond" (5 yr.)
- 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.)

- 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 Diffraction 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"

- 2001-2010 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

- 2014 Elected Fellow, Mineralogical Society of America
- 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

- 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)
- The Geochemical Society, since 1992
- American Geophysical Union (AGU), since 1987
- Geological Society of America (GSA), since 1986
- Mineralogical Society of America (MSA), since 1985 (elected **fellow**, 2014)
- American Association for the Advancement of Science (AAAS), since 1985

INVITED SCIENTIFIC PRESENTATIONS (selected)

- 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)

- 14 Jan 2016 *SeismoDome 3: The Sights and Sounds of Earthquakes*. Hayden Planetarium. (now including analysis of microseismic data)
- 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)
- 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 14-Dec 16	Publications Committee, The Meteoritical Society (Chair since Jan 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.whoj.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
Mar 12-present	Curation Informatics subcommittee of NASA CAPTEM. (Curation and Analysis Planning Team for Extraterrestrial Materials)
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 - present	Participant (E/PO, Geochemistry Team), MESSENGER Science Team meetings.
2003 - present	NASA review panel member and chair service not disclosed (confidentiality agreements).
2002 - present	NSF and NASA proposal review (external).
2003 - present	proposal review, PSC-CUNY grant program.
Aug. 2000	Program committee, 63rd Annual Meteoritical Society Meeting, Chicago.
2000 - present	manuscript review for <i>Geochimica et Cosmochimica Acta</i> , <i>Computers and Geosciences</i> , <i>Mineralogical Magazine</i> , <i>Meteoritics and Planetary Science</i> , <i>American Mineralogist</i> , <i>National Academies Press</i> , <i>Canadian J. Earth Sci.</i> , <i>S. African J. Geology</i> , <i>PNAS</i> , <i>Chemie der Erde</i> , and other journals.

EDUCATIONAL SERVICE (selected items, through May, 2016)

summer 2016	Mentor, REU K. Greeley (Bridgewater State; trace elements in inclusions in chondrites)
spring 2016	Mentor, SSERVI research trainee M. Gemma (planetary lab spectroscopy)
fall 2015	Mentor, research trainee M. Gemma (modeling condensation in disks)
July 14, 2015	Co-presenter, "Breakfast at Pluto" event, AMNH (New Horizons mission) (http://www.amnh.org/calendar/breakfast-at-pluto)
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)
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)
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)

- 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).
- Oct 2013 - 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)
- Apr - Jun 2013 Mentor, Annette-Kade graduate fellow C. Loesche (U. Duisburg-Essen; photophoresis)
- 13 Jun 2012 *Meteorites, Solar System Chemistry, and MESSENGER at Mercury: An Extended Discussion.*
Evening class for the Amateur Astronomers Association of New York.
- Aug 2012 - Principal advisor, AMNH MAT post-doctoral fellow Dr. Gokce Ustunisik (exp. petrology)
- Jun 2012 - Principal advisor, **Ph.D. student** A. Ansari, Columbia U. (Earth & Environ. Sci.).
- summer 2011 Mentor, summer research intern T. Tielebein, LCSM image analysis for Stardust samples.
- 22 Feb 2012 *First Solids in the Solar System.* Lecture to Fordham chemistry research class.
- Dec 11 - present Mentor, research volunteer R. Aldoroty, K/Pg boundary geochem. in NJ coastal plain..
- 2011 - present Advisor, Ph.D. student J. Bigolski, CUNY (Earth & Environ. Sci.).
- Jul 11- present 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, petrology of CR chondrites (St. John's).
- Mar 17, 2011 Organizer and host of MESSENGER orbital insertion public event, AMNH.
- 2010 - present Principal advisor, **Ph.D. student** E. Crapster-Pregont, Columbia U. (Earth & Environ. Sci.).
- Sep 08-Aug 11 Mentor, pre-doc intern M. Greenberg (B.S., Brandeis), LCSM imaging of Stardust tracks.
- 2008 - 2012 Ph.D. committee member for C. McNally, Columbia U. (Astronomy).
- 2006 - 2011 Ph.D. committee member for A. Buono, Columbia U. (Earth & Environmental Sci.).
- Sep 05-present AMNH Education/Public Outreach representative, MESSENGER science team.
- 2001 - present Many TV, radio and newspaper interviews on meteorites, NASA missions, etc.
- Sep 09-Sep 10 Co-mentor, student intern A. Nissinboim (Brooklyn Coll.), astrophys. lab spectroscopy.
- Aug 2010 Lecture/tour for teacher training program, AMNH (TRUST successor).
- 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.
- Dec 08-July 10 Mentor, pre-doc intern K. Sherman (Barnard), cosmochemistry sample analysis (U. CO).
- Aug 07-Aug 10 Instructor of Record, AMNH teaching program with Lehman College (TRUST successor).
- 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.

July 2008 Lectures/tours (4) for 'TRUST' teacher training program, AMNH.
 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' K. Leftwich (W. KY U.)
 summer 2008 Co-mentor, student intern A. Nissinboim (Brooklyn Coll.), astrophys. lab spectroscopy.
 26 May 2008 Mars Phoenix Lander public Q&A event in Rose Center
 May 08-Aug 09 **Co-curator, AMNH/Cornell exhibition, *Saturn: Images from the Cassini Mission.***
 February 2009 Co-author with N. deG. Tyson 'Solar System' on-line Seminars in Science course
<http://www.amnh.org/learn/solar>
 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.
 2002 - 2007 Ph.D. committee member for J. Boesenberg, Rutgers U. (Geology).
 August 2006 Lectures/tours (3) for 'TRUST' teacher training program, AMNH.
 Nov 04-Aug 06 Mentor, AMNH **post-doctoral Kalbfleisch fellow**, Dr. Jon Friedrich
 (now Assoc. Professor of Chemistry, Fordham University, New York)
 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.
 summer 2006 Mentor, summer interns J. Wittenzellner (Wells College), J. Oram (Oberlin)
 summer 2006 Mentor, 'Research Experience for Undergraduates' H. Rodriguez (U. TX El Paso)
 July 2005 Lectures/tours (3) for 'TRUST' teacher training program, AMNH.
 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 (currently at SUNY Stony Brook)
 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.
 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)
 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
 2002 - 2003 **Lead Curator, new Arthur Ross Hall of Meteorites, AMNH.**
 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)

TEACHING

- spring 2016 "Chemical Geology" (W4009), Dept. Earth & Environmental Sci., Columbia.
spring 2015 Co-teaching "Extinction Science" (RGGS660), Richard Gilder Graduate School, AMNH.
2011 - present Co-teaching "Research Practicum", AMNH Master of Arts in Teaching Earth Sciences
<http://www.amnh.org/education/mat/>

COLUMBIA COMMITTEES

- Sep 15 - present Curriculum and Teaching Committee

AMNH COMMITTEES

- Sep 15 - Sep 17 MAT Academic Affairs and Program Committee
Sep 14 - Aug 16 Chair, Senate of the Scientific Staff of the AMNH
Sep 12 - present Scientific Staff Steering Committee, AMNH
Sep 12 - present AAFC Working Group for Postdoctoral Fellows
Sep 10 - present Finance and Compensation Committee of the Senate of the Scientific Staff, AMNH
Sep 10 - present Science Support Committee of the Senate of the Scientific Staff, AMNH
Sep 12 - Aug 14 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, AMNH
Sep 11 - Aug 13 Academic Affairs and Fellowships Committee of the RGGS
Sep 10 - present Executive Committee of the Senate of the Scientific Staff, AMNH
Sep 10 - Sep 14 Chair, Science Support Committee of the Senate of the Scientific Staff, AMNH
Sep 08 - Aug 10 Appointments and Promotions Committee of the Senate of the Scientific Staff, AMNH
Sep 07 - Aug 10 Microscopy & Imaging Facility Committee of the Senate of the Scientific Staff, AMNH
Sep 07 - Aug 10 Exhibitions Review Committee of the Senate of the Scientific Staff, AMNH
Sep 04 - Aug 10 Information Technology Committee of the Senate of the Scientific Staff, AMNH
Spring 2004 Astrophysics Curatorial Search Committee, AMNH
Jan 02 - Aug 08 Chair, Shop Advisory Committee of the Senate of the Scientific Staff, AMNH
Sep 01 - Jan 02 Shop Advisory Committee of the Senate of the Scientific Staff, AMNH

- *finis* -