

# Nicolas Dauphas

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## CONTACT INFORMATION

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## RESEARCH INTERESTS

Meteorites, isotope cosmochemistry, nuclear cosmochronology and nucleosynthesis, early Earth geochemistry and the origin of life, formation of the terrestrial atmosphere.

## EDUCATION

**2002** Ph.D. Institut National Polytechnique de Lorraine, Nancy, France.  
**1998** M.Sc. Institut National Polytechnique de Lorraine, Nancy, France.  
**1998** B.Sc. École Nationale Supérieure de Géologie, Nancy, France.

## EMPLOYMENT

**2016-Present** Louis Block Professor, Department of the Geophysical Sciences and Enrico Fermi Institute, The University of Chicago.  
**2012-2016** Professor, Department of the Geophysical Sciences and Enrico Fermi Institute, The University of Chicago.  
**2008-2012** Associate Professor, Department of the Geophysical Sciences and Enrico Fermi Institute, The University of Chicago.  
**2004-2008** Assistant Professor, Department of the Geophysical Sciences and Enrico Fermi Institute, The University of Chicago.  
**2002-** Research Associate, Field Museum.  
**2002-2004** Research Associate, Enrico Fermi Institute, The University of Chicago.

### Visiting scholar

Observatoire de Grenoble (Laboratoire de Planétologie), January 2011.  
Caltech (Division of Geological and Planetary Sciences), January-June 2009

## HONORS AND AWARDS

- Daly Lecture, AGU, 2018
- Blavatnik National Awards Finalist, 2017
- Fellow of the Meteoritical Society, 2016
- Prix Scientifique 2014, Société Française des IsotopeS (SFIS)
- Spitzer Lecturer, Dpt of Astrophysical Sciences, Princeton, 2015
- Fellow of the American Geophysical Union, 2011
- Macelwane Medal of the American Geophysical Union, 2011
- Moore Distinguished Scholar, Caltech, 2009
- Houtermans Medal of the European Association for Geochemistry, 2008
- David and Lucile Packard Foundation Fellowship, 2007.
- Nier Prize of the Meteoritical Society, 2005.
- Paul Pellas-Graham Ryder Award, 2002, Meteoritical Society and the Geological Society of America Division of Planetary Geology, for "Dauphas N., Marty B., and Reisberg L. (2002). Molybdenum evidence for inherited planetary scale isotope heterogeneity of the protosolar nebula. *Astrophys. J.* **565**, 640-644".
- *Geochemical Journal* best paper award, 2002, for "Dauphas N., Reisberg L., and Marty B. (2002).

An alternative explanation for the distribution of highly siderophile elements in the Earth. *Geochem. J.* **36**, 409-419”.

INTELLECTUAL  
PROPERTY

**2017** ”Fluoropolymer Pneumatically/Hydraulically Actuated Liquid Chromatographic System For Use With Harsh Reagents”, U.S. Patent Application #61843509 (OrLab Chromatography LLC).

FUNDING

**\$5,719,655 total**

- 2017-2020 NASA HW. (\$396,691). Biotic and photo-chemical pathways to the formation of ferrous acidic waters on Mars.
- 2017-2020 NASA EW. (\$565,000). Refractory lithophile element studies of the formation and early evolution of the solar system.
- 2017-2020 NASA LARS. (\$573,000). Development of a novel chromatography system for the analysis of returned samples.
- 2015-2018 NSF Petrology and High-Temperature Geochemistry. (308,835). Magma structure and anharmonicity controls on iron isotopic fractionation in igneous rocks.
- 2015-2018 NSF CSEDI. (236,344). CSEDI: Understanding Si and Fe differentiation in the Earths mantle and core through joint collaborative experimental and theoretical research in geochemistry and mineral physics.
- 2015-2017 NASA Cosmochemistry. (\$94,705 to UofC), co-I (PI, Michael Krawczynski). Experimental Investigations of Lunar Isotope Fractionation.
- 2014-2016 NASA Cosmochemistry. (\$118,356 to UofC), co-I (PI, Michael Savina). Search for live supernova material in lunar regolith.
- 2014-2017 NASA LARS. (\$472,571), Lead PI. Separation of rare earth elements by pneumatic teflon-HPLC (PT-HPLC)
- 2012-2014 ACS Petroleum Research Fund. <sup>238</sup>U/<sup>235</sup>U Ratio as Tracer of Paleoredox Conditions: Application to the Oxygenation of the Global Ocean throughout Earth History (\$100,000), Lead PI.
- 2012-2015 NASA Cosmochemistry. An Isotopic View of Early Solar System Processes and Timescales (\$615,000), Lead PI.
- 2012-2015 EAR-Petrology and Geochemistry. Redox and Structural Controls on Iron Isotopic Variations in Igneous Rocks (\$249,664), Lead PI.
- 2007-2011 FACCTS program (France and Chicago Collaborating in the Sciences). Five grants totaling (\$33,314), Lead PI.
- 2009-2010 NSF EAR-Geobiology & Low Temp Geochem, NASA Astrobiology Institute. Collaborative Research: Environmental and Biogeochemical Reorganization during the Rise of Atmospheric Oxygen (\$35,000), PI (with L.R. Kump, O. Rouxel, T.W. Lyons, J.L. Hannah, H.J. Stein).
- 2009-2012 NASA Cosmochemistry. Isotopic constraints on mixing and timescales in the early solar system (\$402,000), Lead PI.
- 2007-2012 David and Lucile Packard Foundation Fellowship (\$825,000).
- 2006-2009 NASA Cosmochemistry NNG06GG75G. Nuclear cosmochronology and solar system isotopic heterogeneities (\$210,000), Lead PI.
- 2006-2007 NASA Cosmochemistry NNG06GG75G. Acquisition of a MC-ICPMS instrument for isotope cosmochemistry (\$484,175), Lead PI.

STUDENTS AND  
POSTDOCTORATES

**Current**

- Sarah Aarons (postdoc; 2017-).
- James Zheng (graduate student, 2018-).
- Hao Zeng (graduate student; Chemistry, 2017-).
- Andrew Heard (graduate student, 2016-).

- Cindy Chen (graduate student, 2015-).
- Justin Hu (graduate student, 2014-).
- Nicole X. Nie (graduate student, 2013-).

## Past

- Matous Ptacek (MSc 2018). A statistical approach to the chemical evolution of continents.
- Nicolas Greber (postdoc, 2015-2017). Chemical evolution of the continental crust. Now postdoc at the University of Geneva.
- Christoph Burkhardt (postdoc, 2013-2014). Neodymium nucleosynthetic anomalies: troublemakers for early solar system chronology? Now postdoctoral researcher at the University of Munster.
- François L.H. Tissot (PhD, 2015). Uranium isotope cosmochemistry. Now Assistant Professor at Caltech
- Corliss K.I. Sio (PhD, 2014). Cooling and crystallization histories of magmatic bodies by in-situ Mg-Fe isotopic analysis in zoned olivines. Now postdoctoral fellow at Lawrence Livermore National Laboratory.
- Marc-Alban Millet (Postdoc, 2012-2013) Ti double spike and stable isotope fractionation. Now Lecturer at Cardiff University
- Haolan Tang (PhD, 2013)  $^{60}\text{Fe}$ - $^{60}\text{Ni}$  systematics in the solar protoplanetary disk. Now postdoctoral researcher at UCLA.
- Junjun Zhang (PhD, 2012, co-advised with A.M. Davis) Titanium isotope cosmochemistry. Now financial consultant for Prudential.
- Thomas Ireland (Postdoc, 2009-2012) Development of a Teflon-HPLC system for isotope geochemistry. Now lab manager at Boston University.
- Paul Craddock (Postdoc, 2008-2011) Iron isotope geochemistry of banded iron formations and lunar mare basalts. Now Research Scientist at the Schlumberger-Doll Research Center, Cambridge, MA.
- Ali Pourmand (Postdoc, 2006-2009) Actinide and lanthanide cosmochemistry. Now associate professor at the University of Miami, Rosenstiel School of Marine & Atmospheric Science, Miami.
- Fang-Zhen Teng (Postdoc, 2007-2008) Iron isotopic fractionation during magmatic differentiation. Now professor at the University of Washington, Seattle.
- Vincent Busigny (Postdoc, 2005-2006) Iron isotopic fractionation in terrestrial analogues of martian blueberries. Now associate professor at the Institut de Physique du Globe, Paris.
- Liping Qin (PhD, 2007) High precision tungsten isotope measurements of iron meteorites. Now professor at the University of Science and Technology of China, Hefei.

## SERVICE

- Board of Reviewing Editors, Science (2017-).
- Houtermans Medal Committee 2015, 2016.
- Editor (with Fang-Zhen Teng and James Watkins) of volume 82 of *Reviews in Mineralogy and Geochemistry* (2017): Non-Traditional Stable Isotopes.
- Referee: Astrophysical Journal, Chemical Geology, Chemie der Erde, Comptes Rendus Palevol, Contributions to Mineralogy and Petrology, Earth and Planetary Science Letters, Elements, Encyclopedia of Geochemistry, Geochemical Journal, Geochimica et Cosmochimica Acta, Geostandards Newsletter, Icarus, Journal of Geology, The Journal of Physical Chemistry, Meteorites and the Early Solar System II, NASA (Cosmochemistry, SRLIDAP), NSF (EAR Petrology and Geochemistry, Geobiology and low-temperature geochemistry, Instrumentation and Facilities), NERC (UK), and American Chemical Society (Petroleum Research Fund) proposals, Nature, Nature Physics, Nuclear Physics, Planetary and Space Science, PNAS, Science, Spectrochimica Acta Part B: Atomic Spectroscopy.
- Publications committee, Meteoritical Society (2007-).
- NASA SRLIDAP peer review panel 2008.

- NASA Cosmochemistry peer review panel 2009, 2010.
- McKay Award Committee 2010.
- Associate Editor, *Geochimica et Cosmochimica Acta*, 2012-.
- Ninger Meteorite Award Committee 2013.
- NSF CSEDI peer review panel, 2013.
- AGU Hess Medal Committee 2013.

TEACHING GEOS 21800: Intro to petrology.  
 GEOS 33400: Geochronology and cosmochronology.

PROFESSIONAL SOCIETIES Meteoritical Society, Geochemical Society, American Geophysical Union

PUBLICATIONS \*denotes student contribution; §denotes post-doctoral associate.  
 Google scholar total citations=6788; h-index=48.

### Submitted

Tissot F.L.H., Ibanez-Mejia M., Boehnke P., **Dauphas N.**, McGee P., Grove T.L., Harrison M.T. (2018) Variable  $^{238}\text{U}/^{235}\text{U}$  between single zircon grains. Submitted to *Nature Communications*.

\*Nie N.X., **Dauphas N.**, Morris R.V., Mertzman S.A. (2018) Iron isotopic and chemical tracing of basalt alteration and hematite spherule formation in Hawaii: a prospective study for Mars. *Earth and Planetary Science Letters*, submitted

Canup R.M., Righter K., Dauphas N., Pahlevan K., Cuk M., Lock S.J., Stewart S.T., Salmon J., Rufu R., Nakajima M., Magna T. (2018) Origin of the Earth and Moon, *Reviews in Mineralogy and Geochemistry; New Views of the Moon II*, submitted.

Yang H., Lin J.-F., Hu M.Y., Roskosz M., Bi W., Zhao J., Alp E.E., Liu J., Liu J., Okuchi T., **Dauphas N.** (2018) Iron isotopic fractionation between high-pressure mineral phases: Did terrestrial magma ocean crystallization and protracted core-mantle interactions fractionate iron isotopes? *Earth and Planetary Science Letters*, submitted.

### Accepted or published

120. Prissel K.B., Krawczynski M.J., \*Nie N.X., **Dauphas N.**, Couvy H., Hu M.Y., Alp E.E., Roskosz M. (2018) Experimentally determined effects of olivine crystallization and melt titanium content on iron isotopic fractionation in planetary basalts. *Geochimica et Cosmochimica Acta* bf 238, 580-598.

119. Trappitsch R., Boehnke P., Stephan T., Telus M., Savina M.R., Pardo O., Davis A.M., **Dauphas N.**, Pelin M.J., Huss G.R. (2018) New constraints for the abundance of  $^{60}\text{Fe}$  in the early solar system. *The Astrophysical Journal Letters* **857**, L15.

118. \*Tissot F.L.H., \*Chen C., \*Go B.M., \*Naziemiec M., \*Healy G., Bekker A., Swart P.K., **Dauphas N.** (2018) Control of eustasy and diagenesis on the  $^{238}\text{U}/^{235}\text{U}$  of carbonates and evolution of the seawater ( $^{234}\text{U}/^{238}\text{U}$ ) during the last 1.4 Myr. *Geochimica et Cosmochimica Acta* bf 242, 233-265.

117. Brasser R., **Dauphas N.**, Mojzsis S.J. (2018) Jupiter's influence on the building blocks of Mars and Earth. *Geophysical Research Letters* bf 45, 5908-5917.

116. Sio C.K.I., Roskosz M., **Dauphas N.**, Bennett N.R., Mock T., Shahar A. (2017) The isotope effect for Mg-Fe

interdiffusion in olivine and its dependence on crystal orientation, composition and temperature. *Geochimica et Cosmochimica Acta* **57**, 463-480.

115. **Dauphas N.**, Hu M.Y., Baker E.M., \*Hu J., \*Tissot F.L.H., Alp E.E., Roskosz M., Zhao J., Bi W., Liu J., Lin J.-F., \*Nie N.X., \*Heard A. (2018) SciPhon: a data analysis software for Nuclear Resonant Inelastic X-ray Scattering with application to Fe, Kr, Sn, Eu and Dy. *Journal of Synchrotron Radiation* **25**, 1581-1599.
114. Bindeman I.N., Zakharov D., Palandri J., Greber N.D., **Dauphas N.**, Retallack G.J., Hoffman A., Lackey J.S., Bekker A. (2018) Rapid growth of subaerial crust and the onset of a modern hydrologic cycle at the Archean/Proterozoic transition. *Nature* **557**, 545-548.
113. Greenwood R.C., Barrat J.-A., Miller M.F., Anand M., **Dauphas N.**, Franchi I.A., Sillard P., Starkey N.A. (2018) Oxygen isotopic evidence for accretion of Earth's water before a high-energy Moon-forming giant impact. *Science Advances* **4**, eaao5928.
112. Davis A.M., \*Zhang J, §Greber N., \*Hu J., \*Tissot F.L.H., **Dauphas N.** (2018) Titanium isotopes and rare earth patterns in CAIs: Evidence for thermal processing and gas-dust decoupling in the protoplanetary disk. *Geochim. Cosmochim. Acta* **221**, 275-295.
111. Stephan T., Trappitsch R., Davis A.M., Pellin M.J., Rost D., Savina M.R., Jadhav M., Kelly C.H., Gyngard F., Hoppe P., **Dauphas N.** (2018) Strontium and barium isotopes in presolar silicon carbide grains measured with CHILI- two types of X-grains. *Geochimica et Cosmochimica Acta* **221**, 109-126.
110. Trappitsch R., Stephan T., Savina M.R., Davis A.M., Pellin M.J., Rost D., Gyngard F., Gallino R., Bisterzo S., Cristallo S., **Dauphas N.** (2018) Simultaneous iron and nickel isotopic analyses of presolar silicon carbide grains. *Geochimica et Cosmochimica Acta* **221**, 87-108.
109. Dwarkadas V., **Dauphas N.**, Meyer B., Boyajian P., Bojazi M. (2017) Triggered star formation inside the shell of a Wolf-Rayet bubble as the origin of the solar system. *The Astrophysical Journal*, **851**, 147.
108. §Greber N.D., **Dauphas N.**, Bekker A., Ptacek M.P., Bindeman I.N., Hofmann A. (2017) Titanium isotopic evidence for a felsic emerged continental crust since 3.5 billion years ago. *Science* **357**, 1271-1274.
107. \*Hu J.H., **Dauphas N.** (2017) Double-spike data reduction in the presence of isotopic anomalies. *Journal of Analytical Atomic Spectrometry*, **32**, 2024-2033.
106. \*Tissot F.L.H., **Dauphas N.**, Grove T.L. (2017) Distinct  $^{238}\text{U}/^{235}\text{U}$  ratios and REE patterns in plutonic and volcanic angrites: geochronologic implications and evidence for U isotope fractionation during magmatic processes. *Geochimica et Cosmochimica Acta* **213**, 593-617.
105. §Greber N.D., **Dauphas N.**, Puchtel I.S., Hofmann B.A., Arndt N.T. (2017) Titanium stable isotope fractionation in chondrites, achondrites and lunar rocks. *Geochimica et Cosmochimica Acta* **213**, 534-552.
104. Tang H., Liu M.-C., McKeegan K.D., \*Tissot F.L.H., **Dauphas N.** (2017) *In situ* isotopic studies of the U-depleted Allende CAI *Curious Marie*: Pre-accretionary alteration and the co-existence of  $^{26}\text{Al}$  and  $^{36}\text{Cl}$  in the early solar nebula. *Geochimica et Cosmochimica Acta* **207**, 1-18.
103. §Burkhardt C., **Dauphas N.**, Tang H., Fischer-Godde M., Qin L., Chen J.H., Rout S.S., Pack A., Heck P.R., Papanastassiou D.A. (2017) In search of the Earth-forming reservoir: mineralogical, chemical, and isotopic characterizations of the ungrouped chondrite NWA 5363/5400 and selected chondrites. *Meteoritics and Planetary Science*, 10.1111/maps.12834.
102. Liu J., **Dauphas N.**, Roskosz M., Hu M.Y., Yang H., Bi W., Zhao J., Alp E.E., \*Hu J.Y., Lin J.-F. (2017)

Iron isotopic fractionation between silicate mantle and metallic core at high pressure. *Nature Communications* **8**, 14377.

101. Teng F.-Z., **Dauphas N.**, Watkins J.M. (2017) Non-traditional stable isotopes: retrospective and prospective. *Reviews in Mineralogy and Geochemistry* **82**, 1-26.
100. **Dauphas N.**, John S., Rouxel O. (2017) Iron isotope systematics. *Reviews in Mineralogy and Geochemistry* **82**, 415-510.
99. **Dauphas N.** (2017) The isotopic nature of the Earth's accreting material through time. *Nature* **541**, 521-524.
98. \*Nie N.X., **Dauphas N.**, Greenwood R.C. (2017) Iron and oxygen isotope fractionation during UV photo-oxidation: implications for early Earth and Mars. *Earth and Planetary Science Letters* **458**, 179-191.
97. \*Sio C.K.I., **Dauphas N.** (2016) Thermal and crystallization histories of magmatic bodies by Monte Carlo inversion of Mg-Fe isotopic profiles in olivine. *Geology* **G38056-1**.
96. §Burkhardt C., Borg L.E., Brennecka G.A., Shollenberger Q.R., **Dauphas N.**, Kleine T. (2016) A nucleosynthetic origin of the Earth's anomalous <sup>142</sup>Nd composition. *Nature* **537**, 394-398.
95. Konter J.G., Pietruszka A.J., Hanan B.B., Finlayson V.A., Craddock P.R., Jackson M.G., **Dauphas N.** (2016) Unusual  $\delta^{56}\text{Fe}$  values in Samoan rejuvenated lavas generated in the mantle. *Earth and Planetary Science Letters* **450**, 221-232.
94. **Dauphas N.**, Schauble E.A. (2016) Mass fractionation laws, mass-independent effects, and isotopic anomalies. *Annual Reviews of Earth and Planetary Sciences* **44**, 709-783.
93. §Millet M.A., **Dauphas N.**, §Greber N., §Greber N., Burton K.W., Dale C.W., Debret B., Nowell G.M., Williams H.M. (2016) Titanium stable isotope investigation of magmatic processes on the Earth and Moon. *Earth and Planetary Science Letters* **449**, 197-205.
92. \*Tissot F.L.H., **Dauphas N.**, Grossman L. (2016) Origin of uranium isotope variations in early solar nebula condensates. *Sciences Advances* **2**:21501400.
91. Barrat J.A., **Dauphas N.**, Gillet P., Bollinger C., Etoubleau J., Bischoff ., Yamaguchi A. (2016) Evidence from Tm anomalies for non-CI refractory lithophile element proportions in terrestrial planets and achondrites *Geochimica et Cosmochimica Acta*, **176**, 1-17.
90. Roskosz M., \*Sio C.K.I., **Dauphas N.**, Bi W., \*Tissot F.L.H., Hu M.Y., Zhao J., Alp E.E. (2015) Spinel-olivine-pyroxene equilibrium iron isotopic fractionation and applications to natural peridotites. *Geochimica et Cosmochimica Acta*, **176**, 1-17.
89. **Dauphas N.**, Poitrasson F., §Burkhardt C., Kobayashi H., Kurosawa K. (2015) Planetary and meteoritic Mg/Si and  $\delta^{30}\text{Si}$  variations inherited from solar nebula chemistry. *Earth Planet. Sci. Lett.*, **427**, 236, 248.
88. \*Tissot F.L.H., **Dauphas N.** (2014) Uranium isotopic compositions of the crust and ocean: constraints on the U budget and global extent of modern anoxia. *Geochimica et Cosmochimica Acta* **167**, 113-143.
87. Liu N., Davis A.M., Gallino R., Savina M.R., Bisterzo S., Gyngard F., Pellin M.J., **Dauphas N.** (2015) The <sup>13</sup>C-pockets in AGB stars and their fingerprints in mainstream SiC grains. *Proceedings of Science*, NIC XIII, 083.
86. Liu N., Savina M.R., Gallino R., Davis A.M., Bisterzo S., Gyngard F., Käppeler F., Cristallo S., **Dauphas N.**, Pellin M.J., Dillman I. (2015) Correlated strontium and barium isotopic compositions of acid-cleaned

single mainstream silicon carbides from Murchison. *The Astrophysical Journal* **803**, 12.

85. Dauphas N., Pourmand A. (2015) Thulium anomalies and rare earth element patterns in meteorites and Earth. *Geochimica et Cosmochimica Acta* **163**, 234-261.
84. \*Tang H., **Dauphas N.** (2015) Low  $^{60}\text{Fe}$  abundance in Semarkona and Sahara 99555. *The Astrophysical Journal* **802**, 22.
83. Qin L., **Dauphas N.**, Horan M.F., Leya I., Carlson R.W. (2015) Rapid accretion and differentiation of the parent-body of IID iron meteorites from correlated cosmogenic W and Os isotopic variations in Carbo. *Geochimica et Cosmochimica Acta* **153**, 91-104.
82. Blanchard M., **Dauphas N.**, Hu M.Y., Roskosz M., Alp E.E., Golden D.C., \*Sio C.K., \*Tissot F.L.H., Zhao J., Gao L., Morris R.V., \*Fornace M., Floris A., Lazzeri M., Balan E. (2015) Reduced partition function ratios of iron and oxygen in goethite. *Geochimica et Cosmochimica Acta* **151**, 19-33.
81. **Dauphas N.**, Chen J.H., \*Zhang J., Papanastassiou D.A., Davis A.M., Travaglio C. (2014) Calcium-48 isotopic anomalies in bulk chondrites and achondrites: evidence for a uniform isotopic reservoir in the inner protoplanetary disk. *Earth and Planetary Science Letters* **407**, 96-108.
80. Travaglio C., Gallino R., Rauscher T., **Dauphas N.**, Rjöke F.K., Hillebrandt W. (2014) Radiogenic  $p$ -isotopes from SNIa, nuclear physics uncertainties and Galactic chemical evolution compared with values in primitive meteorites. *The Astrophysical Journal* **795**, 141.
79. **Dauphas N.**, §Burkhardt C., Warren P.H., Teng F.-Z. (2014) Geochemical arguments for an Earth-like Moon-forming impactor. *Philosophical Transactions of the Royal Society A* **372**, 20130244.
78. §Millet M.-A., **Dauphas N.** (2014) Ultra-precise titanium stable isotope measurements by double-spike high resolution MC-ICP-MS. *Journal of Analytical Atomic Spectrometry* **29**, 1444-1458.
77. \*Zhang J., Huang S., Davis A.M., **Dauphas N.**, Jacobsen S.B., Hashimoto A. (2014) Calcium and titanium isotopic fractionations during evaporation. *Geochimica et Cosmochimica Acta* **140**, 365-380.
76. **Dauphas N.**, Roskosz M., Alp E.E., Neuville D., Hu M., \*Sio C.K., \*Tissot F.L.H., Zhao J., Tissandier L., Médard E., Cordier C. (2014) Magma redox and structural controls on iron isotope variations in Earth's mantle and crust. *Earth and Planetary Science Letters* **398**, 127-140.
75. Levin N.E., Raub T.D., **Dauphas N.**, Eiler, J. (2014) Triple-oxygen-isotope variations in sedimentary rocks. *Geochimica et Cosmochimica Acta* **139**, 173-189.
74. Liu N., Savina M.R., Davis A.M., Gallino R., Straniero O., Gyngard F., Pellin M.J., Willingham D.G., **Dauphas N.**, Pignatari M., Bisterzo S., Cristallo S., Herwig F. (2014) Barium isotopic composition of mainstream silicon carbides from Murchison: constraints for  $s$ -process nucleosynthesis in AGB stars. *The Astrophysical Journal* **786**, 66.
73. \*Tang H., **Dauphas N.** (2014).  $^{60}\text{Fe}$ - $^{60}\text{Ni}$  chronology of core formation in Mars. *Earth and Planetary Science Letters* **390**, 264-274.
72. **Dauphas N.**, Morbidelli A. (2014) Geochemical and planetary dynamical views on the origin of Earth's atmosphere and oceans. *Treatise on Geochemistry*, 2nd edition, Volume 13, Chapter 6.1, The atmosphere-History (Canfield D.E., Farquhar J., Kasting J.F., Eds).
71. Asael D., \*Tissot F.L.H., Reinhard C.T., Rouxel O., **Dauphas N.**, Lyons T.W., Ponzevera E., Liorzou C., Chéron S. (2013) Coupled molybdenum, iron and uranium stable isotopes as oceanic paleoredox

proxies during the Paleoproterozoic Shunga event. *Chemical Geology* **362**, 193-210.

70. <sup>3</sup>Ireland T.J., \*Tissot F.L.H., Yokochi R., **Dauphas N.** (2013) Teflon-HPLC: a novel chromatographic system for application to isotope geochemistry and other industries. *Chemical Geology* **357**, 203-214.
69. \*Sio C.K., **Dauphas N.**, Teng F.-Z., Chaussidon M., Helz R.T., Roskosz M. (2013) Discerning crystal growth from diffusion profiles in zoned olivine by *in-situ* Mg-Fe isotopic analyses. *Geochimica et Cosmochimica Acta* **123**, 302-321.
68. Rauscher T., **Dauphas N.**, Dillmann I., Fröhlich C., Fülöp Z., Gyürky G. (2013). Constraining the astrophysical origin of the p-nuclei through nuclear physics and meteoritic data. *Reports on Progress in Physics* **76**, 066201.
67. Kobayashi H., **Dauphas N.** (2013). Small planetesimals in a massive disk formed Mars. *Icarus* **225**, 122-130.
66. Hu M.Y., Toellner T.S., **Dauphas N.**, Alp E.E., Zhao J. (2013). Moments in nuclear resonant inelastic x-ray scattering and their applications. *Physical Review B* **87**, 064301.
65. <sup>3</sup>Teng F.-Z., **Dauphas N.** Huang S., Marty B. (2013) Iron isotope systematics of global oceanic basalts. *Geochimica et Cosmochimica Acta* **107**, 12-26.
64. <sup>3</sup>Craddock P.R., Warren J.M., **Dauphas N.** (2013) Abyssal peridotites reveal the near-chondritic Fe isotopic composition of the Earth. *Earth and Planetary Science Letters* **365**, 63-76.
63. Mloszewska A.M., Pecoits E., Mojzsis S.J., Papineau D., **Dauphas N.**, Konhauser K.O. (2013) Chemical sedimentary protoliths of the > 3.75 Ga Nuvvuagittuq Supracrustal Belt (Québec, Canada). *Gondwana Research* **23**, 574-594.
62. \*Tang H., **Dauphas N.** (2012). Abundance, distribution, and origin of <sup>60</sup>Fe in the solar protoplanetary disk. *Earth and Planetary Science Letters* **359-360**, 248-263.
62. Burkhardt C., Kleine T., Dauphas N., Wieler R. (2012) Origin of isotopic heterogeneity in the solar nebula by thermal processing and mixing of nebular dust. *Earth and Planetary Science Letters* **357-358**, 298-307.
61. \*Telus M., **Dauphas N.**, Moynier F., \*Tissot F.L.H., Teng F.-Z., Nabelek P.I., <sup>3</sup>Craddock P.R., Groat L.A. 2012. Iron, magnesium, zinc and uranium isotopic fractionation during continental crust differentiation: The tale from migmatites, granitoids, and pegmatites. *Geochimica et Cosmochimica Acta* **97**, 247-265.
60. Burkhardt C., Kleine T., **Dauphas N.**, Wieler R. (2012) Nucleosynthetic tungsten isotope anomalies in acid leachates of the Murchison chondrite: implications for hafnium-tungsten chronometry. *The Astrophysical Journal Letters* **753**, L6. Erratum **757**, L19.
59. **Dauphas N.**, Roskosz M., Alp E.E., Golden D.C., Sio C.K., Tissot F.L.H., Hu M., Zhao J., Gao L., Morris R.V. 2012. A general moment NRIXS approach to the determination of equilibrium Fe isotopic fractionation factors: application to goethite and jarosite. *Geochimica et Cosmochimica Acta* **94**, 254-275.
58. Wang K., Moynier F., **Dauphas N.**, Barrat J.-L., <sup>3</sup>Craddock P., \*Sio C. 2012. Iron isotope fractionation in planetary crusts. *Geochimica et Cosmochimica Acta* **89**, 31-45.
57. **Dauphas N.**, Morbidelli A. 2012. Geochemical and dynamical views on the origin of Earth's atmosphere and ocean. *Treatise on Geochemistry, Volume 13, The Atmosphere - History* (Canfield, D.E., Farquhar,

J., Kasting, J.F., Eds), in press.

56. \*Zhang J, **Dauphas N.**, Davis A.M., Leya I., Fedkin A. 2012. The proto-Earth as a significant source of lunar material. *Nature Geoscience* **5**, 251-255.
55. Reinhard C., Lyons T., Rouxel O., Asael D., **Dauphas N.**, Kump L. (2012). Iron speciation and isotope perspectives on paleoproterozoic water column chemistry. Chapter 7.10.4 in Reading the Archive of Earth's Oxygenation (Melezhik V., Prave A.R., Fallick A.E., Kump L.R., Strauss H., Lepland A., Hanski E.J., Eds), volume 3: Global Events in the Fennoscandian Arctic Russia-Drilling Early Earth Project, 1483-1492.
54. \*Tissot F., **Dauphas N.**, Reinhard C., Lyons T., Asael D., Rouxel O. (2012). Mo and U geochemistry and isotopes. Chapter 7.10.6 in Reading the Archive of Earth's Oxygenation (Melezhik V., Prave A.R., Fallick A.E., Kump L.R., Strauss H., Lepland A., Hanski E.J., Eds), volume 3: Global Events in the Fennoscandian Arctic Russia-Drilling Early Earth Project, 1500-1506.
53. Pourmand A., **Dauphas N.**, §Ireland T. (2012). A novel extraction chromatography and MC-ICPMS technique for rapid analysis of REE, Sc and Y: revising CI-chondrite and Post-Archean Australian Shale (PAAS) abundances. *Chemical Geology* **291**, 38-54.
52. \*Zhang J., **Dauphas N.**, Davis A.M., Pourmand A. (2011). A new method for MC-ICPMS measurement of Ti isotopic composition: identification of correlated isotope anomalies in meteorites. *JAAS* **26**, 2197-2205.
51. Teng F.-Z., **Dauphas N.**, Helz R.T., Gao S., Huang S. (2011) Diffusion-driven magnesium and iron isotope fractionation in Hawaiian olivine. *Earth and Planetary Science Letters* **308**, 317-324.
50. **Dauphas N.**, Kasting J.F. (2011) Low pCO<sub>2</sub> in the pore water, not in the Archean air. *Nature* **474**, E2-E3 (doi:10.1038/nature09960).
49. **Dauphas N.**, §Pourmand A. (2011) Hf-W-Th evidence for rapid growth of Mars and its status as a planetary embryo. *Nature* **473**, 489-492.
48. §Craddock P.R., **Dauphas N.** (2011) Iron and carbon isotope evidence for microbial iron respiration throughout the Archean. *Earth and Planetary Science Letters* **303**, 121-132.
47. **Dauphas N.**, Chaussidon M. (2011) A perspective from extinct radionuclides on a Young Stellar Object: the Sun and its accretion disk. *Annual Review of Earth and Planetary Sciences* **39**, 351-386.
46. Fujii T., Moynier F., **Dauphas N.**, Abe M. (2011) Theoretical and experimental investigation of nickel isotopic fractionation in species relevant to modern and ancient oceans. *Geochim. Cosmochim. Acta* **75**, 469-482.
45. §Craddock P.R., **Dauphas N.** (2011) Iron isotopic compositions of geological reference materials and chondrites. *Geostand. Geoanal. Res.* **35**, 101-123.
44. Liu Y., Spicuzza M.J., §Craddock P.R., Day J.M.D., Valley J.W., **Dauphas N.**, Taylor L.A. (2010) Oxygen and iron isotope constraints on near-surface fractionation effects and the composition of lunar mare basalt source regions. *Geochim. Cosmochim. Acta* **74**, 6249-6262.
43. **Dauphas N.**, Remusat L., Chen J.H., Roskosz M., Papanastassiou D.A., Stodolna J., Guan Y., Ma C., Eiler J.M. (2010) Neutron-rich chromium isotope anomalies in supernova nanoparticles. *Astrophys. J.* **720**, 1577-1591.

42. Teng F.-Z., Li W.-Y., Ke S., Marty B., **Dauphas N.**, Huang S., Wu F.-Y., Pourmand A. (2010) Magnesium isotopic composition of the Earth and chondrites. *Geochim. Cosmochim. Acta* **74**, 4150-4166.
41. **Dauphas N.**, Teng F.-Z., Arndt N. (2010) Magnesium and iron isotopes in a 2.7 Ga komatiite flow from Alexo: Mantle signatures, no evidence for Soret diffusion, and identification of diffusive transport in zoned olivine. *Geochim. Cosmochim. Acta* **74**, 3274-3291.
40. <sup>§</sup>Pourmand A. & **Dauphas N.** (2010) Distribution coefficients of 60 elements on TODGA resin: Application to Ca, Lu, Hf, U and Th isotope geochemistry. *Talanta* **81**, 741-753.
39. Levine J., Savina M.R., Stephan T., **Dauphas N.**, Davis A.M., Knight K.B., Pellin M.J. (2009) Resonance ionization mass spectrometry for precise measurements of isotope ratios. *Int. J. Mass Spectrom.* **288**, 36-43.
38. **Dauphas N.**, <sup>§</sup>Craddock P.R., Asimow P.D., Bennett V.C., Nutman A.P., Ohnenstetter D. (2009) Iron isotopes may reveal the redox conditions of mantle melting from Archean to present. *Earth Planet. Sci. Lett.* **288**, 255-267.
37. **Dauphas N.**, <sup>§</sup>Pourmand A., <sup>§</sup>Teng F.-Z. (2009) Routine isotopic analysis of iron by HR-MC-ICPMS: How precise and how accurate? *Chem. Geol.* **267**, 175-184.
36. Richter F.M., Watson, E.B., Mendybaev R., **Dauphas N.**, Georg B., Watkins J., Valley J. (2009) Isotopic fractionation of the major elements of molten basalt by chemical and thermal diffusion. *Geochim. Cosmochim. Acta* **73**, 4250-4263.
35. Moynier F., **Dauphas N.**, Podosek F.A. (2009) A search for <sup>70</sup>Zn anomalies in meteorites. *Astrophys. J. Lett.* **700**, L92-L95.
34. Reisberg L., **Dauphas N.**, Luguet A., Pearson D.G., Gallino R., Zimmermann C. (2009) Nucleosynthetic osmium isotope anomalies in acid leachates of the Murchison meteorite. *Earth Planet. Sci. Lett.*, **277**, 334-344.
33. Richter, F.M., **Dauphas, N.**, <sup>§</sup>Teng, F.-Z. (2009) Non-traditional fractionation of non-traditional isotopes: evaporation, chemical diffusion and Soret effect. *Chem. Geol.*, **258**, 92-103.
32. **Dauphas N.**, Cook D.L., \*Sacarabany A., Fröhlich C., Davis A.M., Wadhwa M., <sup>§</sup>Pourmand A., Rauscher T., Gallino R. (2008) Iron-60 evidence for early injection and efficient mixing of stellar debris in the protosolar nebula. *Astrophys. J.*, **686**, 560-569. *Erratum***691**, 1943.
31. \*Qin L., **Dauphas N.**, Wadhwa M., Masarik J., Janney P.E. (2008) Rapid accretion and differentiation of iron meteorite parent bodies inferred from <sup>182</sup>Hf-<sup>182</sup>W chronometry and thermal modeling. *Earth Planet. Sci. Lett.*, **273**, 94-104.
30. <sup>§</sup>Teng F.-Z., **Dauphas N.**, Helz R.T. (2008) Iron isotope fractionation during magmatic differentiation in Kilauea Iki lava lake. *Science*, **320**, 1620-1622.
29. \*Qin L., **Dauphas N.**, Wadhwa M., Markowski A., Gallino R., Janney P.E., Bouman C. (2008) Tungsten nuclear anomalies in planetesimal cores. *Astrophys. J.*, **674**, 1234-1241.
28. Cook D.L., Wadhwa M., Clayton R.N., **Dauphas N.**, Janney P.E., Davis A.M. (2007) Mass-dependent fractionation of nickel isotopes in meteoritic metal. *Meteoritics Planet. Sci.*, **42**, 2067-2077.
27. **Dauphas N.** (2007) Diffusion-driven kinetic isotope effect of Fe and Ni during formation of the Widmanstätten pattern. *Meteoritics Planet. Sci.*, **42**, 1597-1613.

26. **Dauphas N.**, van Zuilen M., Busigny V., Lepland A., Wadhwa M., Janney P.E. (2007) Iron isotope, major and trace element characterization of early Archean supracrustal rocks from SW Greenland: protolith identification and metamorphic overprint. *Geochim. Cosmochim. Acta* **71**, 4745-4770.
25. \*Qin L., **Dauphas N.**, Janney P.E., Wadhwa M. (2007) Analytical developments for high-precision measurements of W isotopes in iron meteorites. *Anal. Chem.* **79**, 3148-3154.
24. **Dauphas N.**, Cates N.L., Mojzsis S.J., §Busigny V. (2007) Identification of chemical sedimentary protoliths using iron isotopes in the > 3750 Ma Nuvvuagittuq supracrustal belt, Canada. *Earth Planet. Sci. Lett.* **254**, 358-376.
23. §Busigny V. & **Dauphas N.** (2007) Tracing paleofluid circulations using iron isotopes: A study of hematite and goethite concretions from the Navajo Sandstone (Utah, USA). *Earth Planet. Sci. Lett.* **254**, 272-287.
22. Cook D.L., Wadhwa M., Janney P.E., **Dauphas N.**, Clayton R.N., Davis A.M. (2006) High precision measurements of non-mass-dependent effects in nickel isotopes in meteoritic metal via multicollector ICPMS. *Anal. Chem.* **78**, 8477-8484.
21. **Dauphas N.** & Rouxel O. (2006) Mass spectrometry and natural variations of iron isotopes. *Mass Spectrom. Rev.*, **25**, 515-550. Erratum **25**, 831-832.
20. Nittler L.R. & **Dauphas N.** (2006) Meteorites and the chemical evolution of the Milky Way, in *Meteorites and the Early Solar System II*, D.S. Lauretta and H.Y. McSween Jr. Eds, *The University of Arizona Press*, Tucson, pp. 127-146.
19. **Dauphas N.** (2005) The U/Th production ratio and the age of the Milky Way from meteorites and Galactic halo stars. *Nature*, **435**, 1203-1205.
18. **Dauphas N.** (2005) Multiple sources or late injection of short-lived *r*-nuclides in the early solar system? *Nucl. Phys. A*, **758**, 757c-760c.
17. **Dauphas N.**, van Zuilen M., Wadhwa M., Davis A.M., Marty B., & Janney P.E. (2004) Clues from iron isotope variations on the origin of early Archaean banded iron formations from Greenland. *Science*, **306**, 2077-2080.
16. **Dauphas N.**, Davis, A.M., Marty, B., & Reisberg, L. (2004) The cosmic molybdenum-ruthenium isotope correlation. *Earth Planet. Sci. Lett.*, **226**, 465-475.
15. **Dauphas, N.**, & Marty, N. (2004). "A large secular variation in the nitrogen isotopic composition of the atmosphere since the Archaean?": response to a comment by R. Kerrich and Y. Jia. *Earth Planet. Sci. Lett.*, **225**, 441-450.
14. **Dauphas, N.**, Janney, P.E., Mendybaev, R.A., Wadhwa, M., Richter, F.M., Davis, A.M., Hines, R., & Foley C.N. (2004). Chromatographic separation and MC-ICPMS analysis of iron. Investigating mass-dependent and -independent isotope effects. *Anal. Chem.*, **76**, 5855-5863.
13. Marty, B., & **Dauphas, N.** (2003). "Nitrogen isotopic compositions of the present mantle and the Archaean biosphere": response to a comment by Pierre Cartigny and Magali Ader. *Earth Planet. Sci. Lett.*, **216**, 433-439.
12. **Dauphas, N.** (2003). The dual origin of the terrestrial atmosphere. *Icarus*, **165**, 326-339.
11. **Dauphas, N.**, Rauscher, T., Marty, B., & Reisberg, L. (2003). Short-lived *p*-nuclides in the early solar system

and implications on the nucleosynthetic role of X-ray binaries. *Nucl. Phys. A*, **719**, 287c-295c.

10. Marty, B., & **Dauphas, N.** (2003). The nitrogen record of crust-mantle interaction and mantle convection from Archean to Present. *Earth Planet. Sci. Lett.*, **206**, 397-410.
9. Marty, B., & **Dauphas, N.** (2002). Formation and early evolution of the atmosphere, in *The Early Earth, Physical, Chemical, and Biological Development* (Fowler C.M.R., Ebinger C.J., and Hawkesworth C.J., eds), *Geological Society, London, Special Publications*, **199**, 213-229.
8. **Dauphas, N.**, & Marty, B. (2002). Inference on the nature and the mass of Earth's late veneer from noble metals and gases. *J. Geophys. Res.*, **107(E12)**, 5129, doi: 10.1029/2001JE001617.
7. **Dauphas, N.**, Reisberg, L., & Marty, B. (2002). An alternative explanation for the distribution of highly siderophile elements in Earth. *Geochem. J.*, **36**, 409-419.
6. **Dauphas, N.**, Marty, B., & Reisberg, L. (2002). Inference on terrestrial genesis from molybdenum isotope systematics. *Geophys. Res. Lett.*, **29(6)**, 1084, doi:10.1029/2001GL014237.
5. **Dauphas, N.**, Marty, B., & Reisberg, L. (2002). Molybdenum nucleosynthetic dichotomy revealed in primitive meteorites. *Astrophys. J. Lett.* **569**, L139-L142.
4. **Dauphas, N.**, Marty, B., & Reisberg, L. (2002). Molybdenum evidence for inherited planetary scale isotope heterogeneity of the protosolar nebula. *Astrophys. J.* **565**, 640-644.
3. **Dauphas, N.**, Reisberg, L., & Marty, B. (2001). Solvent extraction, ion chromatography, and mass spectrometry of molybdenum isotopes. *Anal. Chem.* **73**, 2613-2616.
2. **Dauphas, N.**, Robert, F., & Marty, B. (2000). The late asteroidal and cometary bombardment of Earth as recorded in water deuterium to protium ratio. *Icarus* **148**, 508-512.
1. **Dauphas, N.**, & Marty, B. (1999). Heavy nitrogen in carbonatites of the Kola peninsula: a possible signature of the deep mantle. *Science* **286**, 2488-2490.

#### OTHER CONTRIBUTIONS

**Dauphas N.** (2013). Sulphur from heaven and hell (News and Views). *Nature* **501**, 175-176.

#### RUNNING PRS

Chicago Half-Marathon 2014: 1h28m38s

Chicago Marathon 2018: 2h59m07s

Chicago Run Mag Mile 10k 2017: 38m37

Chicago hot-chocolate 15K 2017: 58m46s