

# Nicolas Dauphas

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Last updated July 28, 2023

Born on December 10, 1975  
French-American citizenship

## CONTACT INFORMATION

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## RESEARCH INTERESTS

Planetary exploration, continental crust formation and evolution, meteoritics, isotopic cosmochemistry, nuclear cosmochemistry and nucleosynthesis, early Earth geochemistry and the origin of life, formation of the terrestrial atmosphere, NRIXS spectroscopy, theory of equilibrium and kinetic isotopic fractionation, REE geochemistry.

## 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

**2012-Present** Professor, The University of Chicago.  
**2008-2012** Associate Professor, The University of Chicago.  
**2004-2008** Assistant Professor, The University of Chicago.  
**2002-** Research Associate, The Field Museum.  
**2002-2004** Research Associate, The University of Chicago.

### Visiting scholar

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

## INTELLECTUAL PROPERTY

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

## FUNDING

**\$9,901,889 total**

- 2023-2025 NASA LARS. (*\$1,160,972*) Acquisition of a LA-MC-ICP-MS/MS for dating and establishing the isotopic parentage of returned samples.
- 2023-2031 NASA MMX-PSP. (*\$671,557*) Nucleosynthetic heritage, depletion in moderately volatile elements, and  $^{87}\text{Rb}$ - $^{87}\text{Sr}$  dating of returned samples from Phobos by the MMX mission.
- 2022-2025 DOE. (*\$750,000*) Tracing the Cycling of Rare Earth Elements on Earth using Combined Isotopic and Vibrational Spectroscopic Approaches.
- 2021-2024 NASA EW. (*\$745,051*) Rubidium and potassium isotopic studies of volatile element depletion in the early solar system.
- 2020-2023 NASA SSW. (*\$245,636*) Oceanographic considerations for the oxygenation of habitable worlds: Lessons from early Earth.

- 2020-2022 NASA EW. (*\$255,380*) High precision chronology of the oldest Apollo zircons: deciphering the meaning of the 4.3 Ga peak in lunar ages.
- 2020-2023 NSF CSEDI. (*\$362,638*). Collaborative Research: Experimental partitioning of highly siderophile elements at ultra trace level for understanding the conditions of core formation.
- 2017-2020 NASA HW. (*\$396,691*). Biotic and photo-chemical pathways to the formation of ferruginous 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 Earth's 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.  $^{238}\text{U}/^{235}\text{U}$  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**

- Eric Siciliano Rego (postdoc; 2022-).
- Debarun Mukherjee (graduate student, 2023-).
- Camilla Liu (graduate student, 2019-).
- Andrew Regula (graduate student, 2019-).
- James Zheng (graduate student, 2018-).

**Past**

- Aleisha Johnson (postdoc; 2020-2022). Titanium and iron isotopic variations during magmatic differentiation. Now at the University of Arizona
- Timo Hopp (postdoc; 2019-2022). Iron nucleosynthetic anomalies in meteorites and Ryugu returned samples. Now researcher at the MPI in Göttingen

- Cindy Chen (PhD, 2022). U, Zr, and Hf isotopic variations as tracers of past oceanic anoxia and planetary differentiation processes. Now Research Scientist at Drumetix Laboratories.
- Justin Hu (PhD, 2021). Rare earth isotope variations and implications for the evolution of the early solar system. Now postdoc at Cambridge University.
- Andrew Heard (PhD, 2021). The role of iron in the surface redox evolution of early Earth and Mars. Now postdoc at WHOI.
- Hao Zeng (MSc; Chemistry, 2019). Ab initio calculation of equilibrium isotopic fractionations of potassium and rubidium in minerals and water. Now with Shopify.
- Nicole X. Nie (PhD, 2019). Iron isotope tracing of planetary surface processes and rubidium isotope tracing of volatile element depletion processes. Now assistant professor at MIT.
- Sarah Aarons (postdoc, 2017-2019). Titanium isotope geochemistry. Now Assistant Professor at Scripps Institution of Oceanography, UCSD
- Matous Ptacek (MSc 2018). A statistical approach to the chemical evolution of continents. Now with Radix Trading LLC.
- Nicolas Greber (postdoc, 2015-2017). Chemical evolution of the continental crust. Now researcher at the Natural History Museum of Geneva.
- Christoph Burkhardt (postdoc, 2013-2014). Neodymium nucleosynthetic anomalies: troublemakers for early solar system chronology? Now researcher at the Max Planck Institute, Göttingen.
- 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 assistant professor at the University of Toronto.
- Marc-Alban Millet (Postdoc, 2012-2013) Ti double spike and stable isotope fractionation. Now Senior Lecturer at Cardiff University
- Haolan Tang (PhD, 2013)  $^{60}\text{Fe}$ - $^{60}\text{Ni}$  systematics in the solar protoplanetary disk. Now professor at the University of Science and Technology of China, Hefei.
- 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 senior QC analyst at Cambridge Isotope Laboratories Inc.
- Paul Craddock (Postdoc, 2008-2011) Iron isotope geochemistry of banded iron formations and lunar mare basalts. Now Senior 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 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

- Member of the Mars Sample Return Campaign Science Group (MCSG) (2022-).
- 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 (2007-2009).
- NASA SRLIDAP peer review panel 2008.
- NASA Cosmochemistry peer review panel 2009, 2010.
- McKay Award Committee 2010.
- Associate Editor, Geochimica et Cosmochimica Acta, 2012-2018.
- Ninninger 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.

#### ACCOLADES

I would like to express my deepest gratitude for the recognitions I have received throughout my academic career. While these accolades are deeply appreciated, they are not listed here, not out of disregard, but rather to reflect my core belief that the true reward lies not in the recognition, but in the day-to-day interactions and collaborations with my students and colleagues. It is these experiences and the constant pursuit of knowledge that fuel my passion and bring me the most fulfillment. Therefore, in this document, I have chosen to focus on my experience, skills, and contributions.

## PUBLICATIONS

\*denotes student contribution; §denotes post-doctoral associate.  
Google scholar total citations=14,723; h-index=68.

**Submitted**

186. Yokoyama et al. (including **Dauphas N.**) (2023) . Water circulation in Ryugu asteroid affected the distribution of nucleosynthetic isotope anomalies in returned sample. *Science Advances*, submitted.
185. \*Hu J.Y., Leya I., **Dauphas N.** Rae A.S.P., Williams H.M. (2023) Constraints on lunar regolith resurfacing from coupled modeling of stochastic gardening and neutron capture effects. *Geochimica et Cosmochimica Acta*, submitted.
184. Kita N.T. et al. (including **Dauphas N.**) (2023) Disequilibrium oxygen isotope distribution among aqueously altered minerals in Ryugu asteroid returned samples. *Meteoritics and Planetary Science*, submitted.
183. \*Hu J.Y., **Dauphas N.**, \*Tissot F.L.H., Yokochi R., §Ireland T.J., Williams H.M. (2023) Determination of rare earth element isotopes using sample standard bracketing and interference corrected double-spike approaches. *ACS Earth and Space Chemistry*, submitted.
182. Nesvorný D., **Dauphas N.**, Vokrouhlický D., Deienno R., §Hopp T. (2023) Trichotomy of main belt asteroids from implantation of outer solar system planetesimals. *Earth and Planetary Science Letters*, submitted.
181. **Dauphas N.**, §Hopp T., Nesvorný D. (2023) Bayesian inference on the isotopic building blocks of Mars and Earth. *Icarus*, submitted.
180. \*Liu C.X., Olson S.L., Jansen M.F., Capirala A., **Dauphas N.** (2023) Ocean mixing timescale through geological eons. *Geochemical Perspectives Letters*, submitted.
179. \*Zhang Z.J., **Dauphas N.**, §Johnson A.C., Aarons S.M., Bennett V.C., Nutman A.P., MacLennan S., Schoene B. (2023) Titanium and iron isotopic records of granitoid crust production in diverse Archean cratons. *Earth and Planetary Science Letters*, submitted.
178. \*Chen X., **Dauphas N.**, \*Zhang Z., Schoene B., Barboni M., Leya I., \*Zhang J., Szymanowski D., McKeegan K. (2023) Methodologies for  $^{176}\text{Lu}$ - $^{176}\text{Hf}$  analysis of small extraterrestrial zircon grains. *ACS Earth and Space Chemistry*. Submitted.
177. Torrano Z. et al. (including **Dauphas N.**) (2023) Neodymium-142 deficits and samarium neutron stratigraphy of C-type asteroid (162173) Ryugu. *Meteoritics and Planetary Science*, submitted.
176. Prissel K.B., Krawczynski M.J., \*Nie N.X., **Dauphas N.**, §Aarons S.M., \*Heard A.W. , Hu M.Y., Alp E.E, Zhao (2023) Iron, titanium, and magnesium isotopic evidence for diffusion-limited reaction of lunar magma ocean cumulates in mare basalt source regions. *Geochimica et Cosmochimica Acta*, submitted.

**Accepted or published**

175. 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. (2022) Origin of the Earth and Moon. *Reviews in Mineralogy and Geochemistry; New Views of the Moon II*, in press.
174. Tang H. et al. (including **Dauphas N.**) (2023) The oxygen isotopic composition of samples from asteroid Ryugu with implications for the nature of the parent planetesimals. *Planetary Science Journal*, in press.

173. Fujiya W. et al. (including **Dauphas N.**) (2023) Carbonate record of the change in oxygen fugacity and gaseous species in asteroid Ryugu. *Nature Geoscience*, in press.
172. Nguyen A. et al. (including **Dauphas N.**) (2023) Abundant presolar grains and primordial organics preserved in exogenous clasts in asteroid Ryugu. *Science Advances* **9** (28), eadh1003.
171. §Aarons S.M., **Dauphas N.**, Greber N.D., Roskosz M., Bouchez J., Carley T., Liu X.-M., Rudnick R.L., Gaillardet J. (2023) Titanium transport and isotopic fractionation in the critical zone. *Geochimica et Cosmochimica Acta* **352**, 175-193.
170. §Johnson A., \*Zhang Z.J., **Dauphas N.**, Rudnick R.L., Foden J.D., Toc M. (2023) Redox and mineral controls on Fe and Ti isotopic fractionations in the Rindjani calc-alkaline differentiation suite. *Geochimica et Cosmochimica Acta* **355**, 1-12.
169. Czaja A.D., Zorzano M.-P., Kminek G., Meyer M.A., Beaty D.W., Sefton-Nash E., Carrier B.L., Thiessen F., Haltigin T., Bouvier A., **Dauphas N.**, French K.L., Hallis L.J., Harris R.L., Hauber E., Rodriguez L.E., Schwenzer S.P., Steele, A., Tait K.T., Thorpe M.T., Usui T., Vanhomwegan J., Velbel M.A., Edwin S., Farley K.A., Glavin D.P., Harrington A.D., Hays L.E., Hutzler A., Wadhwa M. (2023) Report of the science community workshop on the proposed first sample depot for the Mars Sample Return Campaign. *Meteoritics and Planetary Science* **58**, 885-896.
168. \*Heard A.W., **Dauphas N.**, Hinz I.L., Johnson J.E., Blanchard M., Alp E.E., Hu M.Y., Zhao J., Lavina B., \*Fornace M.E., \*Hu J.Y., Roskosz M., \*Sio C.K.I., \*Nie N.X., Baptiste B. (2023) Isotopic constraints on the nature of primary precipitates in Archean-Early Paleoproterozoic iron formations from determinations of the iron phonon density of states of greenalite and 2L and 6L-ferrihydrite. *ACS Earth and Space Chemistry* **7**, 712-727.
167. \*Nie N.X., Chen X.-Y., Zhang Z.J., \*Hu J.Y., Liu W., Tissot F.L.H., Teng F.-Z., Shahar A., **Dauphas N.** (2023) Rubidium and potassium isotopic variations in chondrites and Mars: Accretion signatures and planetary overprints. *Geochimica et Cosmochimica Acta* **344**, 207-229.
166. Piani L. et al. (including **Dauphas N.**) (2023) Hydrogen isotopic composition of hydrous minerals in asteroid Ryugu. *Astrophysical Journal Letters* **946**, L43.
165. \*Hu J.Y., **Dauphas N.**, \*Nie N.X., Roskosz M., \*Chen X., \*Heard A.W., \*Zhang Z.J., Alp E.E., Hu M.Y., Zhao J. (2023) Equilibrium fractionation of REE isotopes in nature: insights from NRIXS and DFT studies of Eu and Dy phonon density of states. *Geochimica et Cosmochimica Acta* **348**, 323-339.
164. Paquet M., et al. (including **Dauphas N.**) (2023) Copper and zinc isotopic fingerprints of the contribution of Ryugu-like materials to Earth's volatile inventory. *Nature Astronomy* **7**, 182-189.
163. Kawasaki N. et al. (including **Dauphas N.**) (2022) Oxygen isotopes show kinship between asteroid Ryugu and comet 81P/Wild2. *Science Advances* **8**, eade2067.
162. Moynier F., et al. (including **Dauphas N.**) (2022) The solar system calcium isotopic composition inferred from Ryugu samples. *Geochemical Perspectives Letters* **24**, 1-6.
161. §Hopp T., **Dauphas N.**, and 91 co-authors (2022) Ryugu's nucleosynthetic heritage from the outskirts of the solar system. *Science Advances* **8**, eadd8141.
160. **Dauphas N.**, §Hopp T., Craig G., Zhang Z.J.\*, Valdes M.C., Heck P.R., Chaliier B.L.A., Bell A.E., Harrison T.M., Davis A.M., Dussubieux L., Williams P.R., Krawczynski M.J., Bouman C., Lloyd N.S., Tollstrup D., Schwieters J.B. (2022) In situ <sup>87</sup>Rb-<sup>87</sup>Sr analyses of terrestrial and extraterrestrial samples by LA-MC-ICPMS/MS with double Wien filter and collision cell technologies. *Journal of Analytical*

159. Barosch J. and 124 authors (including **Dauphas N.**) (2022) Presolar stardust in asteroid Ryugu. *The Astrophysical Journal Letters* **935** 1, L3.
158. Yokoyama T. and 148 authors (including **Dauphas N.**) (2022) Samples returned from the asteroid Ryugu are similar to Ivuna-type carbonaceous meteorites. *Science* eabn7850.
157. \*Heard A.W., Bekker A., Tsikos H., Ireland T., **Dauphas N.** (2022) Oxygen production and rapid iron oxidation in stromatolites immediately predating the Great Oxidation Event. *Earth and Planetary Science Letters* **582**, 117416.
156. Liu N., **Dauphas N.**, Cristallo S., Oglione R.C. (2022) Oxygen and aluminum-magnesium isotopic systematics of presolar nanospinel grains from CI chondrite Orgueil. Submitted to *Geochimica et Cosmochimica Acta* **319**, 296-317.
155. Roskosz M., **Dauphas N.**, \*Hu J., Neuville D.R., Brown D., Bi W., \*Nie N.X., Zhao J., Alp E.E. (2022) Structural, redox and isotopic behaviors of iron in geological silicate glasses: a NRIXS study of Lamb-Mössbauer factors and force constants. *Geochimica et Cosmochimica Acta* **321**, 184-205.
154. §Hopp T., **Dauphas N.**, Spitzer F., Burkhardt C., Kleine T. (2022) Earth's accretion inferred from iron isotopic anomalies of supernova nuclear statistical equilibrium origin. *Earth and Planetary Science Letters* **577**, 117245.
153. **Dauphas N.**, \*Nie N.X., Blanchard M., \*Zhang Z.J., \*Zeng H., \*Ju J.Y., Meheut M., Visscher C., Canup R., §Hopp T. (2022) The extent, nature, and origin of K and Rb depletions and isotopic fractionations in Earth, Moon, and other planetary bodies. *Planetary Science Journal* **3**, 29.
152. \*Nie N.X., Chenn X.-Y., §Hopp T., \*Hu J.Y., \*Zhang Z.J., Teng F.-Z., Shahar A., **Dauphas N.** (2021) Imprint of chondrule formation on the K and Rb isotopic compositions of carbonaceous meteorites. *Science Advances* **7**, eabl3929.
151. \*Nie N.X., **Dauphas N.**, §Hopp T., \*Ju J.Y., \*Zhang Z.J., Yokochi R., Ireland T.J., Tissot F.L.H. (2021) Chromatography purification of Rb for accurate isotopic analysis by MC-ICPMS: a comparison between AMP-PAN, cation-exchange, and Sr resins. *Journal of Analytical Atomic Spectrometry* **36**, 2588.
150. §Aarons S.M., **Dauphas N.**, Blanchard M., \*Zeng H., Nie N.X., §Johnson A., Greber N., §Hopp T. (2021) Clues from *ab initio* calculations on titanium isotopic fractionation in tholeiitic and calc-alkaline magma series. *ACS Earth and Space Chemistry* **5**, 2466-2480.
149. Blanchard M., **Dauphas N.** (2021) Oxidation state, coordination, and covalency controls on iron isotopic fractionation in Earth's mantle and crust: insights from first-principles calculations and NRIXS spectroscopy. *Geophysical Monograph* **266**, 283-301.
148. Charlier B.L.A., Tissot F.L.H., Vollstaedt H., **Dauphas N.**, Wilson C.J.N., Marquez R.T. (2021) Survival of presolar p-nuclide carriers in the nebula revealed by stepwise-leaching of Allende refractory inclusions. *Science Advances* **7** (28), eabf6222.
147. Brož M., Chrenko O., Nesvorný D., **Dauphas N.** (2020) Early terrestrial planet formation by torque-driven convergent migration of planetary embryos. *Nature Astronomy* doi.org/10.1038/s41550-021-01383-3.
146. Greber N.D., Pete T., Vilela N., Lanari P., **Dauphas N.** (2021) Titanium isotopic compositions of bulk rocks and mineral separates from the Kos magmatic suite: Insights into fractional crystallization and

magma mixing processes. *Chemical Geology* **578**, 120303.

145. \*Nie N.X., **Dauphas N.**, Alp E.E., \*Zeng H., Sio C.K., \*Hu J., §Aarons S.M., \*Zhang Z., Tian H.-C., Prissel K.B., Breer J., Bi W., Hu M.Y., Sahar A., Roskosz M., Teng F.-Z., Krawczynsky M.J., Heck P.R., Spear F.S. (2021) Fe, Mg, and Ti isotopic fractionations between garnet, ilmenite, fayalite, biotite, and tourmaline: comparison between NRIXS, ab initio and study of mineral separates from the Moosilauke metapelite. *Geochim Cosmochim Acta.* **302**, 18-45.
144. \*Zhang Z., Nie N., Mendybaev R., Liu M.-C., §Hopp T., McKeegan K., **Dauphas N.** (2021) Loss and isotopic fractionation of alkali elements during diffusion-limited evaporation from molten silicate: theory and experiments. *ACS Earth and Space Chemistry*, **5**, 755-784. .
143. \*Chen C.X., \*Tissot F.L.H., Jansen M.F., Bekker A., Halverson G.P., Veizer J., **Dauphas N.** (2021) The uranium isotopic record of shales and carbonates through geologic time. *Geochimica et Cosmochimica Acta* **300**, 164-191.
142. \*Heard A.W., §Aarons S.M., Hofmann A., He X., Ireland T., Bekker A., Qin L., **Dauphas N.** (2021) Anoxic continental surface weathering conditions recorded by the Mesoarchean Pongola Supergroup, South Africa. *Geochimica et Cosmochimica Acta* **295**, 1-23.
141. \*Hu J.Y., **Dauphas N.**, Tissot F.L.H., Yokochi R., Ireland T.J., \*Zhang Z., Davis A.M., Ciesla F.J., Grossman L., Charlier B.L.A., Roskosz M., Alp E.E., Hu M.Y., Zhao J. (2021) Heating events in the nascent solar system recorded by rare earth element isotopic fractionation in refractory inclusions. *Science Advances*, **7**, eabc2962.
140. Li H., Tissot F.L.H., Lee S.-G., Hyung E., **Dauphas N.** (2020) Distribution coefficients of REEs, Sr, Y, Ba, Th, and U between  $\alpha$ -HIBA and AG50W-X8 resin at pH=4.5. *ACS Earth Space Chem* **5**, 55-65.
139. §Aarons S.M., Reimink J.R., Greber N.D., \*Heard A.W., \*Zhang Z., **Dauphas N.** (2020) Titanium isotopes constrain a magmatic transition at the Haden-Archean boundary in the Acasta Gneiss Complex. *Science Advances* **6**, eabc9959.
138. \*Heard A.W., **Dauphas N.**, Rouxel O.J., Guilbaud R., Butler I.B., \*Nie N.X., Bekker A. (2020) Resolving the role of ocean iron sinks in early atmospheric oxygenation. *Science* **370**, 446-449.
137. \*Chen X., Wang Z., Zhang Z., Nie X., **Dauphas N.** (2020) Evidence from ab initio and transport modeling for diffusion-driven zirconium isotopic fractionation in igneous rocks. *ACS Earth and Space Chemistry* **4**, 1572-1595.
136. \*Nie N.X., **Dauphas N.**, Morris R.V., Mertzman S.A. (2020) Iron isotopic and chemical tracing of basalt alteration and hematite spherule formation in Hawaii: a prospective study for Mars. *Earth and Planetary Science Letters* **544**, 116385.
135. \*Ptacek M.P., **Dauphas N.**, Greber N. (2020) Chemical evolution of the crust from a data-driven inversion of terrigenous sediment compositions. *Earth and Planetary Science Letters* **539**, 116090.
134. \*Heard A.W., **Dauphas N.** (2020) Constraints on the coevolution of oxic and sulfidic ocean iron sinks from Archean-Paleoproterozoic iron isotope records. *Geology* **48**, 358-362.
133. Pravdivtseva O., Tissot F.L.H., **Dauphas N.**, Amari S. (2020) S-process Xe, Kr and Ne in the Allende Curious Marie CAI: Case for a presolar SiC carrier. *Nature Astronomy* **4**(6), 617-624.
132. Roskosz M., Amet Q., Fitoussi C., **Dauphas N.**, Tissandier K., Hu M.Y., Said A., Alatas A., Alp E.E. (2020) Redox and structural controls on tin isotopic fractionations among magmas. *Geochimica et*



131. \*Zeng H., Rozsa V.F., \*Nie N.X., \*Zhang Z., Pham T.A.P., Galli G., **Dauphas N.** (2019) Ab initio calculation of equilibrium isotopic fractionations of potassium and rubidium in minerals and water. *ACS Earth Space Chem.* **3**, 2601-2612.
130. \*Nie, N.X., **Dauphas N.** (2019) Vapor drainage in the protolunar disk as the cause for the depletions in Rb and K of the Moon. *ApJL* **884**, L48.
129. Deng Z., Chaussidon M., Guitreau M., Puchtel I.S., **Dauphas N.**, Moynier F. (2019) An oceanic subduction origin for Archean granitoids revealed by silicon isotopes. *Nature Geoscience* **12**, 774-778.
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RUNNING PRS

Chicago Half-Marathon 2014: 1h28m38s

Chicago Marathon 2018: 2h59m07s

Chicago Run Mag Mile 10k 2017: 38m37

Chicago hot-chocolate 15K 2018: 58m16s