

PUBLICATION/CITATION INDEXES

Google Scholar: <https://scholar.google.com/citations?user=qzgKZVIAAAAJ&hl=en>
WebSci (j. articles only): <https://www.webofscience.com/wos/author/record/N-7533-2013>
ResearchGate: <https://www.researchgate.net/profile/Conel-Alexander>
ORCID: <https://orcid.org/0000-0002-8558-1427>

2026

- (263) Peterson L.D., Alexander C.M.O'D., Wang J., Bullock E.S., Irving A.J. and Nielsen S.G. (2026) The pre-disruption hydrogen budgets of the taassite and brachinite parent bodies. *Meteorit. Planet. Sci.* In Press.
- (262) Gray M.L., Weisberg M.K., Alexander C.M.O'D., Wang J., Foustoukos D.I. and Ebel D.S. (2026) Challenges of measuring volatiles in enstatite chondrites and evaluating their contribution to Earth's volatile inventory. *Meteorit. Planet. Sci.* In Press.
- (261) Nittler L.R., Barosch J., Alexander C.M.O'D. and Wang J. (2026) Constraints for nuclear astrophysics from an unusual presolar silicate-oxide aggregate grain found in primitive ordinary chondrite Meteorite Hills 00526. *The European Physical Journal A* **62**:110.
- (260) Alexander C.M.O'D. and Foustoukos D.I. (2026) The bulk abundances and isotopic compositions of H in CM and CI carbonaceous chondrites. *Geochim. Cosmochim. Acta*, **424**, 176-193
- (259) Foustoukos D.I. Alexander C.M.O'D., Cody G.D., Stern J.C., Bates S.M., Furukawa Y., Koga T., Glavin D.P., Dworkin J.P., Barnes J.J., Nguyen A.N., Connolly Jr. H.C. and Lauretta D.S. (2026) The H, C and N abundances and isotopic compositions of samples with outer Solar System heritage: Asteroid Bennu and the Tarda and Tagish Lake meteorites. *Geochim. Cosmochim. Acta*, **424**, 113-127.
- (258) José J., Liu N., Alexander C.M.O'D. and Wang J. (2026) New NanoSIMS multielement isotope data reveal CO novae as key sources of ¹³C-rich presolar silicon carbide grains. *European Physical Journal A* **62**:130.
- (257) Oerter E.J.H., Herd C.D.K. and Alexander C.M.O'D. (2026) Triple oxygen and hydrogen stable isotope composition of hydroxyl water in Orgueil (CI-type) and Tagish Lake (C2-type) carbonaceous chondrites. *Geochim. Cosmochim. Acta* **418**, 79-96.
- (256) Cody G.D., Alexander C.M.O'D., Foustoukos D.I., Hazen R.M., Glavin D.P., Dworkin J.P., Furukawa Y., Koga T., Connolly H.C. and Lauretta D.S. (2026) Placing asteroid Bennu's organic solids in molecular and elemental context with those in aqueously altered carbonaceous chondrites. *Geochim. Cosmochim. Acta* **413**, 33-47.

- (255) Barnes J. J., et al. (2025) The variety and origin of materials accreted by Bennu's parent asteroid. *Nat. Astron.* **9**, 1785–1802.
- (254) Wong M. L., et al. (2025) Organic geochemical evidence for life in Archean rocks identified by pyrolysis–GC–MS and supervised machine learning. *Proc. Natl. Acad. Sci.* **122**, e2514534122.
- (253) Yabuta H., McCoy T.J. and Alexander C.M.O'D. (2025) One's trash is another's treasure: cosmic rubble piles. *Elements* **21**, 340-345.
- (252) Iizuka T., et al. (2025) Late fluid flow in a primitive asteroid revealed by Lu–Hf isotopes in Ryugu. *Nature* **646**, 62-67.
- (251) Quirico E., Yabuta H., Beck P., Bonal L., Bardyn A., Nittler L.R. and Alexander C.M.O'D. (2025) Co-evolution of organics and water in experimentally shocked Murchison and EET 90628 chondrites. *Geochim. Cosmochim. Acta* **402**, 316-337.
- (250) Eckart L.M., Busemann H., Krietsch D., Mertens C.A.K., Maden C., Alexander C.M.O'D. and Righter K. (2025) Noble gases in CO chondrites: Primordial components, effects of parent body thermal alteration, and cosmic ray exposure ages. *Geochim. Cosmochim. Acta* **402**, 104-133.
- (249) Peterson L.D., Newcombe M.E., Alexander C.M.O'D., Wang J. and Nielsen S.G. (2025) A reconstruction of the H₂O and F contents of the Erg Cech 002 parent body. *Geochim. Cosmochim. Acta* **399**, 82-92.
- (248) Dottin III J.W., Horton F., Alexander C.M.O'D., Shaha A., Wang J., Boesenberg J. S., Bullock E. and Shirey S.B. (2025) Hydrogen isotopic evidence for a core component in Baffin Island lavas. *Sci. Adv.* **11**, eadr2917.
- (247) Lee M.R., Alexander C.M.O'D., Bischoff A., Brearley A.J., Dobrică E., Fujiya W., Le Guillou C., King A. J., van Kooten E., Krot A.N., Leitner J., Marrocchi Y., Patzek M., Petaev M.I., Piani L., Pravdivtseva O., Remusat L., Telus M., Tsuchiyama A. and Vacher L.G. (2025) Low-temperature aqueous alteration of chondrites. *Space Sci. Rev.* **221**, 11.
- (246) Glavin D.P., et al. (2025) Abundant ammonia and nitrogen-rich soluble organic matter in samples from asteroid (101955) Bennu. *Nat. Astron.* 10.1038/s41550-024-02472-9.
- (245) Krot A.N., Petaev M.I., Piani L., Marrocchi Y., Fujiya W., Pravdivtseva O.V., Dobrică E., Vacher L.G., King A.J., Lee M., Van Kooten E., Jacobsen B., Alexander C.M.O'D., Bischoff A., Brearley A.J., Le Guillou C., Remusat L., Leitner J. and Huss G.R. (2025) Metasomatic alteration of type 3 ordinary and carbonaceous chondrites. *Space Sci. Rev.* **221**, 7.
- (244) Schönbächler M., et al. (2025) Zirconium isotope composition indicates s-process depletion in samples returned from asteroid Ryugu. *Meteorit. Planet. Sci.* **60**, 3-16
- (243) Miller K.E., Foustoukos D.I., Cody G.D. and Alexander C.M.O'D. (2025) Experimental heating of complex organic matter at Titan's interior conditions supports contributions to atmospheric N₂ and CH₄. *Geochim. Cosmochim. Acta* **390**, 38-56.

- (242) Schrader D.L., Torrano Z.A., Foustoukos D.I., Alexander C.M.O'D., Render J. and Brennecka G.A. (2025) Reassessing the proposed “CY chondrites”: Evidence for multiple meteorite types and parent bodies from Cr-Ti-H-C-N isotopes and bulk elemental compositions. *Geochim. Cosmochim. Acta* **390**, 24-37.
- (241) Oerter E.J., Garenne A., Cisneros M., Cody G.D., Singleton M. and Alexander C.M.O'D. (2025) Triple oxygen and hydrogen stable isotope composition of water in Murchison carbonaceous chondrite accessed by thermogravimetry-enabled laser spectroscopy. *Chem. Geol.* **673**, 122557.

2024

- (240) Bergin E.A., Alexander C., Drozdovskaya M., Gounelle M. and Pfalzner S. (2024) Interstellar heritage and the birth environment of the Solar System. In: *Comets III* (eds. K. Meech, M. Combi, D. Bockelée-Morvan, S. N. Raymond and M. Zolensky). Univ. Arizona Press, Tucson. pp. 3-31.
- (239) Kita N.T., et al. (2024) Disequilibrium oxygen isotope distribution among aqueously altered minerals in Ryugu asteroid returned samples. *Meteorit. Planet. Sci.* **59**, 2097-2116.
- (238) Cody G.D., Alexander C.M.O'D., Foustoukos D.I., Kebukawa Y. and Wang Y. (2024) On the origin and evolution of deuterium enrichment in type 1 and 2 chondritic organic solids. *Geochim. Cosmochim. Acta* **386**, 139-156.
- (237) van Kooten E.M.M.E., Brearley A., Ebel D.S., Alexander C.M.O'D., Gemma M.E. and Hezel D.C. (2024) Is there a genetic relationship between chondrules and matrix? *Space Sci. Rev.* **220**, 74.
- (236) Nguyen A.N., Clemett S.J., Thomas-Keprta K., Alexander C.M.O'D., Glavin D. P., Dworkin J.P., Connolly Jr H.C. and Lauretta D.S. (2024) Micro- and nanoscale studies of insoluble organic matter and C-rich presolar grains in Murchison and Sutter's Mill in preparation for Bennu sample analysis. *Meteorit. Planet. Sci.* **59**, 2831-2850.
- (235) Spitzer F., et al. (2024) The Ni isotopic composition of Ryugu reveals a common accretion region for carbonaceous chondrites. *Sci. Adv.* **10**, eadp2426
- (234) Lauretta D. S., et. al. (2024) Asteroid (101955) Bennu in the laboratory: Properties of the sample collected by OSIRIS-REx. *Meteorit. Planet. Sci.* **59**, 2453–2486.
- (233) Torrano Z.A., et al. (2024) Neodymium-142 deficits and samarium neutron stratigraphy of C-type asteroid (162173) Ryugu. *Meteorit. Planet. Sci.* **59**, 1966-1982.
- (232) Aléon J., et al. (2024) Hydrogen in magnetite from asteroid Ryugu. *Meteorit. Planet. Sci.* **59**, 2058-2072.
- (231) Ligtnerink N.F.W., Pinilla P., van der Marel N., van Scheltinga J.T., Booth A.S., Alexander C.M.O'D. and Riebe M.E.I. (2024) The rapid formation of macromolecules in irradiated ice of protoplanetary disk dust traps. *Nat. Astron.* 10.1038/s41550-024-02334-4.
- (230) Schrader D.L., Cloutis E.A., Applin D.M., Davidson J., Torrano Z.A., Foustoukos D., Alexander C.M.O'D., Domanik K. J., Matsuoka M., Nakamura T., Zega T. J., Brennecka G.A. and Render J. (2024) Tarda and Tagish Lake: Samples from

- the same outer Solar System asteroid and implications for D- and P-type asteroids. *Geochim. Cosmochim. Acta* **380**, 48-70.
- (229) Yui H., et al. (2024) Pyrrhotites in asteroid 162173 Ryugu: Records of the initial changes on their surfaces with aqueous alteration. *Geochim. Cosmochim. Acta* **379**, 172-183.
- (228) Righter K., Alexander C.M.O'D., Foustoukos D.I., Eckart L.M., Mertens C.A.K., Busemann H., Maden C., Schutt J., Satterwhite C.E., Harvey R.P., Pando K. and Karner J. (2024) Pairing relations within CO₃ chondrites recovered at the Dominion Range and Miller Range, Transantarctic mountains: Constraints from chondrule olivines, noble gas, and H, C, N bulk and isotopic compositions. *Meteorit. Planet. Sci.* **59**, 1258-1276.
- (227) Peterson L.D., Newcombe M.E., Alexander C.M.O'D., Wang J. and Nielsen S.G. (2024) The H-poor nature of incompletely melted planetesimals: The view from acapulcoites and lodranites. *Geochim. Cosmochim. Acta* **370**, 1-14.
- (226) Liu N., Alexander C.M.O'D., Meyer B.S., Nittler L.R., Wang J. and Stroud R.M. (2024) Explosive nucleosynthesis in core-collapse Type II supernovae: Insights from new C, N, Si, and Al–Mg isotopic compositions of presolar grains. *Astrophys. J. Lett.* **961**, L22.
- (225) Cody G.D., Alexander C.M.O'D., Foustoukos D.I., Busemann H., Eckley S., Burton A.S., Berger E.L., Nuevo M., Sandford S. A., Glavin D.P., Dworkin J.P., Connolly Jr H.C. and Lauretta D.S. (2024) The nature of insoluble organic matter in Sutter's Mill and Murchison carbonaceous chondrites: Testing the effect of x-ray computed tomography and exploring parent body organic molecular evolution. *Meteorit. Planet. Sci.* **59**, 3-22.
- (224) Torrano Z.A., Alexander C.M.O'D., Carlson R.W., Render J., Brennecka G.A. and Bullock E.S. (2024) A common isotopic reservoir for amoeboid olivine aggregates (AOAs) and calcium-aluminum-rich inclusions (CAIs) revealed by Ti and Cr isotopic compositions. *Earth Planet. Sci. Lett.* **627**, 118551.
- (223) Hu Y., et al. (2024) Pervasive aqueous alteration in the early Solar System revealed by potassium isotopic variations in Ryugu samples and carbonaceous chondrites. *Icarus* **409**, 115884.

2023

- (222) Morita M., et al. (2023) Analysis of cation composition in dolomites on the intact particles sampled from asteroid Ryugu. *Analytical Chemistry* 10.1021/acs.analchem.3c03463.
- (221) Nakanishi N., et al. (2023) Nucleosynthetic s-process depletion in Mo from Ryugu samples returned by Hayabusa2. *Geochim. Persp. Lett.* **28**, 31-36
- (220) Weisberg M.K., Zolensky M.E., Kimura M., Howard K.T., Ebel D.S., Gray M.L. and Alexander C.M.O'D. (2023) Nanophase magnetite in matrix of anomalous EL3 chondrite Northwest Africa (NWA) 8785. *Meteorit. Planet. Sci.* **58**, 1693-1706.

- (219) Bizzarro M., et al. (2023) The magnesium isotope composition of samples returned from asteroid Ryugu. *Astrophys. J. Lett.* **958**, L25.
- (218) Allen N.M., Riebe M.E.I., Foustoukos D.I., Mertens C.A.K., Busemann H., Alexander C.M.O'D., Cody G.D. and Maden C. (2023) Temperature dependent loss of noble gases from insoluble organic matter and presolar grains during hydrothermal alteration. *Earth Planet. Sci. Lett.* **624**, 118460.
- (217) Yokoyama T., et al. (2023) Water circulation in Ryugu asteroid affected the distribution of nucleosynthetic isotope anomalies in returned sample. *Sci. Adv.* **9**, eadi7048.
- (216) Patzer A., Bullock E.S. and Alexander C.M.O'D. (2023) Testing models for the compositions of chondrites and their components: III. CM chondrites. *Geochim. Cosmochim. Acta* **359**, 30-45.
- (215) Tang H., et al. (2023) The oxygen isotopic composition of samples returned from asteroid Ryugu with implications for the nature of the parent planetesimal. *The Planetary Science Journal* **4**: 144.
- (214) Peterson L.D., Newcomb M.E., Alexander C.M.O'D., Wang J., Klein F., Bekaert D.V., Nielsen S.G. (2023) The H content of aubrites: An evaluation of bulk versus *in situ* methods for quantifying water in meteorites. *Earth Planet. Sci. Lett.* **620**: 118341.
- (213) Koefoed P., Barrat J.-A., Pravdivtseva O., Alexander C.M.O'D., Lodders K., Ogliore R., Wang K. (2023) The potassium isotopic compositions of chondrites and the origin of isotopic variations among primitive planetary bodies. *Geochim. Cosmochim. Acta* **358**, 49-60.
- (212) Nguyen A. N., et al. (2023) Abundant presolar grains and primordial organics preserved in carbon-rich exogenous clasts in asteroid Ryugu. *Sci. Adv.* **9**: eadh1003
- (211) Fujiya W., et al. (2023) Carbonate record of temporal change in oxygen fugacity and gaseous species in asteroid Ryugu. *Nat. Geosci.* **16**, 675-682.
- (210) Piani L., et al. (2023) Hydrogen isotopic composition of hydrous minerals in asteroid Ryugu. *Astrophys. J. Lett.* **946**, L43.
- (209) Newcombe M.E., Nielsen S.G., Peterson L.D., Wang J., Alexander C.M.O'D., Sarafian A.R., Shimizu K., Nittler L.R. and Irving A.J. (2023) Degassing of early-formed planetesimals restricted water delivery to Earth. *Nature* **615**, 854-857.
- (208) Yokoyama T., et al. (2023) Samples returned from the asteroid Ryugu are similar to Ivuna-type carbonaceous meteorites. *Science* **379**, eabn7850.
- (207) Nomura H., Furuya K., Cordiner M.A., Charnley S.B., Alexander C.M.O'D., Nixon C.A., Guzman V.V., Yurimoto H., Tsukagoshi T. and Iino T. (2023) The isotopic links from planet forming regions to the Solar System. In: *Protostars and Planets VII* (eds. S.-I. Inutsuka, Y. Aikawa, T. Muto, K. Tomida and M. Tamura). Astronomical Society of the Pacific, San Francisco. pp. 1075-1099.
- (206) Nie N.X., Wang D., Torrano Z.A., Carlson R.W., Alexander C.M.O'D. and Shahr A. (2023) Meteorites have inherited nucleosynthetic anomalies of potassium-40 produced in supernovae. *Science* **379**, 372-376.
- (205) Zhu K., Schiller M., Moynier F., Groen M., Alexander C.M.O'D., Davidson J., Schrader D.L., Bischoff A. and Bizzarro M. (2023) Chondrite diversity revealed

- by chromium, calcium and magnesium isotopes. *Geochim. Cosmochim. Acta* **342**, 156-168.
- (204) Peterson L.D., Newcombe M.E., Alexander C.M.O'D., Wang J., Sarafian A.R., Bischoff A. and Nielsen S.G. (2023) The H₂O content of the ureilite parent body. *Geochim. Cosmochim. Acta* **340**, 141-157.

2022

- (203) Kawasaki N., et al. (2022) Oxygen isotopes of anhydrous primary minerals show kinship between asteroid Ryugu and comet 81P/Wild2. *Sci. Adv.* **8**, eade2067
- (202) Liu N., Stephan T., Cristallo S., Vescovi D., Gallino R., Nittler L.R., Alexander C.M.O'D. and Davis A.M. (2022) Presolar silicon carbide grains of types Y and Z: their strontium and barium isotopic compositions and stellar origins. *The European Phys. J. A* **58**, 216.
- (201) Moynier F., et al. (2022) The Solar System calcium isotopic composition inferred from Ryugu samples. *Geochem. Persp. Lett.* **24**, 1-6.
- (200) Hopp T., et al. (2022) Ryugu's nucleosynthetic heritage from the outskirts of the Solar System. *Sci. Adv.* **8**, eadd8141.
- (199) Barosch J., Nittler L.R., Wang J., Dobrică E., Brearley A.J., Hezel D.C. and Alexander C.M.O'D. (2022) Presolar O- and C-anomalous grains in unequilibrated ordinary chondrite matrices. *Geochim. Cosmochim. Acta* **335**, 169-182.
- (198) Barosch J., et al. (2022) Presolar stardust in asteroid Ryugu. *Astrophys. J. Lett.* **935**, L3.
- (197) Alexander C.M.O'D., Wynn J.G. and Bowden R. (2022) Sulfur abundances and isotopic compositions in bulk carbonaceous chondrites and insoluble organic material: Clues to elemental and isotopic fractionations of volatile chalcophiles. *Meteorit. Planet. Sci.* **57**, 334-351.
- (196) Patzer A., Bullock E.S. and Alexander C.M.O'D. (2022) Testing models for the compositions of chondrites and their components: II. CR chondrites. *Geochim. Cosmochim. Acta* **319**, 1-29.
- (195) Alexander C.M.O'D. (2022) An exploration of whether Earth can be built from chondritic components, not bulk chondrites. *Geochim. Cosmochim. Acta* **318**, 428-451.
- (194) Alexander C.M.O'D., Nilges M.J., Cody G.D. and Herd C.D.K. (2022) Are radicals responsible for the variable deuterium enrichments in chondritic insoluble organic material? *Geochim. Cosmochim. Acta* **316**, 135-149.

2021

- (193) Zhu K., Moynier F., Alexander C.M.O'D., Davidson J., Schrader D. L., Zhu J.-M., Wu G.-L., Schiller M., Bizzarro M. and Becker H. (2021a) Chromium stable

- isotope panorama of chondrites and implications for Earth early accretion. *Astrophys. J.* **923**: 94.
- (192) Liu N., Barosch J., Nittler L.R., Alexander C.M.O'D., Wang J., Cristallo S., Busso M. and Palmerini S. (2021) New multielement isotopic compositions of presolar SiC grains: Implications for their stellar origins. *Astrophys. J. Lett.* **920**, L26.
 - (191) Krietsch D., Busemann H., Riebe M.E.I., King A.J., Alexander C.M.O'D., and Maden C. (2021) Noble gases in CM carbonaceous chondrites: Effect of parent body aqueous and thermal alteration and cosmic ray exposure ages. *Geochim. Cosmochim. Acta*, **310**, 240-280.
 - (190) Singerling S.A., Liu N., Nittler L.R., Alexander C.M.O'D. and Stroud R.M. (2021) TEM Analyses of unusual presolar silicon carbide: Insights into the range of circumstellar dust condensation conditions. *Astrophys. J.* **913**, 90.
 - (189) Paquette J.A., Fray N., Bardyn A., Engrand C., Alexander C.M.O'D., Siljeström S., Cottin H., Merouane S., Isnard R., Stenzel O.J., Fischer H., Rynö J., Kissel J. and Hilchenbach M. (2021) D/H in the refractory organics of comet 67P/Churyumov-Gerasimenko measured by Rosetta/COSIMA. *Monthly Notices of the Royal Astronomical Society* **504**, 4940-4951.
 - (188) Patzer A., Bullock E.S. and Alexander C.M.O'D. (2021) Testing models for the compositions of chondrites and their components: I. CO chondrites. *Geochim. Cosmochim. Acta* **304**, 119-140.
 - (187) Zhu K., Moynier F., Schiller M., Alexander C.M.O'D., Davidson J., Schrader D.L., van Kooten E. and Bizzarro M. (2021b) Chromium isotopic insights into the origin of chondrite parent bodies and the early terrestrial volatile depletion. *Geochim. Cosmochim. Acta* **301**, 158-186.
 - (186) Shimizu K., Alexander C.M.O'D., Hauri E.H., Sarafian A.R., Nittler L.R., Wang J., Jacobsen S.D. and Mendybaev R.A. (2021) Highly volatile element (H, C, F, Cl, S) abundances and H isotopic compositions in chondrules from carbonaceous and ordinary chondrites. *Geochim. Cosmochim. Acta* **301**, 230-258.
 - (185) d'Ischia M., Manini P., Martins Z., Remusat L., Alexander C.M.O'D., Pizzarini C., Barone V. and Saladino R. (2021) Insoluble organic matter in chondrites: Archetypal melanin-like PAH-based multifunctionality at the origin of life? *Physics of Life Reviews* **37**, 65-93.
 - (184) Nittler L.R., Alexander C.M.O'D., Patzer A. and Verdier-Paoletti M.J. (2021) Presolar stardust in highly pristine CM chondrites Asuka 12169 and Asuka 12236. *Meteor. Planet. Sci.* **56**, 260-276.
 - (183) Foustoukos D.I., Alexander C.M.O'D. and Cody G.D. (2021) H and N systematics in thermally altered chondritic insoluble organic matter: An experimental study. *Geochim. Cosmochim. Acta* **300**, 44-64.
 - (182) Zhu K., Moynier F., Schiller M., Alexander C.M.O'D., Barrat J.-A., Bischoff A. and Bizzarro M. (2021) Mass-independent and mass-dependent Cr isotopic composition of the Rumuruti (R) chondrites: Implications for their origin and planet formation. *Geochim. Cosmochim. Acta* **293**, 598-609.
 - (181) Bischoff A., et al. (2021) The old, unique C1 chondrite Flensburg – Insight into the first processes of aqueous alteration, brecciation, and the diversity of water-

bearing parent bodies and lithologies. *Geochim. Cosmochim. Acta* **293**, 142-186.

2020

- (180) Glavin D.P., McLain H.L., Dworkin J.P., Parker E.T., Elsila J.E., Aponte J.C., Simkus D N., Pozarycki C.I., Graham H.V., Nittler L.R. and Alexander C.M.O'D. (2020) Abundant extraterrestrial amino acids in the primitive CM carbonaceous chondrite Asuka 12236. *Meteor. Planet. Sci.* **55**, 1979-2006.
- (179) Boss A.P., Alexander C.M.O'D. and Podolak M. (2020) Evolution of CAI-sized particles during FU Orionis outbursts. I. Particle trajectories in protoplanetary disks with beta cooling. *Astrophys. J.* **901**, 81.
- (178) Taylor S., Lever J.H., Burgess K.D., Stroud R.M., Brownlee D.E., Nittler L.R., Bardyn A., Alexander C.M.O'D., Farley K.A., Treffkorn J., Messenger S. and Wozniakiewicz P.J. (2020) Sampling interplanetary dust from Antarctic air. *Meteor. Planet. Sci.* **55**, 1128-1145.
- (177) Riebe M.E.I., Foustoukos D.I., Alexander C.M.O'D., Steele A., Cody G.D., Mysen B.O. and Nittler L.R. (2020) The effects of atmospheric entry heating on organic matter in interplanetary dust particles and micrometeorites. *Earth Planet. Sci. Lett.* **540**, 116266.
- (176) Simon J.I., Christoffersen R., Wang J., Mouser M.D., Mills R.D., Ross D.K., Rahman Z. and Alexander C.M.O'D. (2020) Volatiles in lunar felsite clasts: Impact-related delivery of hydrous material to an ancient dry lunar crust. *Geochim. Cosmochim. Acta* **276**, 299-326.
- (175) Chan Q.H.S., Franchi I.A., Zhao X., Stephant A., Wright I.P. and Alexander C.M.O'D. (2020) Organics preserved in anhydrous interplanetary dust particles: Pristine or not? *Meteor. Planet. Sci.* **55**, 1320-1345.
- (174) Nittler L.R., Stroud R.M., Alexander C.M.O'D. and Howell K. (2020) Presolar grains in primitive ungrouped carbonaceous chondrite Northwest Africa 5958. *Meteoritics Planet. Sci.* **55**, 1160-1175.
- (173) Riebe M.E.I., Busemann H., Alexander C.M.O'D., Nittler L.R., Herd C.D.K., Maden C., Wang J. and Wieler R. (2020) Effects of aqueous alteration on primordial noble gases and presolar SiC in the carbonaceous chondrite Tagish Lake. *Meteor. Planet. Sci.* **55**, 1257-1280.

2019

- (172) Davidson J., Schrader, D.L., Alexander C.M.O'D., Nittler L.R. and Bowden R. (2019) Re-examining thermal metamorphism of the Renazzo-like (CR) carbonaceous chondrites: Insights from pristine Miller Range 090657 and shock-heated Graves Nunataks 06100. *Geochim. Cosmochim. Acta* **267**, 240-256.

- (171) Davidson J., Alexander C.M.O'D., Stroud R.M., Busemann H. and Nittler L.R. (2019) Mineralogy and petrology of Dominion Range 08006: A very primitive CO₃ carbonaceous chondrite. *Geochim. Cosmochim. Acta* **265**, 259-278.
- (170) Liu N., Stephan T., Cristallo S., Gallino R., Boehnke P., Nittler L.R., Alexander C.M.O'D., Davis A.M., Trappitsch R., Pellin M.J. and Dillmann I. (2019) Presolar silicon carbide grains of Types Y and Z: Their molybdenum isotopic compositions and stellar origins. *Astrophys. J.* **881**:28.
- (169) Telus M., Alexander C.M.O'D., Hauri E.H. and Wang J. (2019) Calcite and dolomite formation in the CM parent body: Insight from in situ C and O isotope analyses. *Geochim. Cosmochim. Acta* **260**, 275-291.
- (168) Kebukawa Y., Alexander C.M.O'D. and Cody G.D. (2019) Comparison of FT-IR spectra of bulk and acid insoluble organic matter in chondritic meteorites: An implication for missing carbon during demineralization. *Meteor. Planet. Sci.* **54**, 1632–1641.
- (167) Isnard R., Bardyn A., Fray N., Briois C., Cottin H., Paquette J., Stenzel O., Alexander C., Baklouti D., Engrand C., Orthous-Daunay F.R., Siljeström S., Varmuza K. and Hilchenbach M. (2019) H/C elemental ratio of the refractory organic matter in cometary particles of 67P/Churyumov-Gerasimenko. *Astron. Astrophys.* **630**, A27.
- (166) Alexander C.M.O'D. (2019) Quantitative models for the elemental and isotopic fractionations in chondrites: The carbonaceous chondrites. *Geochim. Cosmochim. Acta* **254**, 277-309.
- (165) Alexander C.M.O'D. (2019) Quantitative models for the elemental and isotopic fractionations in the chondrites: The non-carbonaceous chondrites. *Geochim. Cosmochim. Acta* **254**, 246-276.
- (164) Kaplan H.H., Milliken R.E., Alexander C.M.O'D. and Herd C.D.K. (2019) Reflectance spectroscopy of insoluble organic matter (IOM) and carbonaceous meteorites. *Meteor. Planet. Sci.* **54**, 1051-1068.
- (163) Nittler L.R., Stroud R.M., Trigo-Rodríguez J.M., De Gregorio B.T., Alexander C.M.O'D., Davidson J., Moyano-Camero C.E. and Tanbakouei S. (2019) A cometary building block in a primitive asteroidal meteorite. *Nature Astronomy* **3**, 659-666.
- (162) Zhu K., Liu J., Moynier F., Qin L., Alexander C.M.O'D. and He Y. (2019) Chromium isotopic evidence for an early formation of chondrules from the Ornans CO chondrite. *Astrophys. J.* **873**: 82.

2018

- (161) Desch S.J., Kalyaan A. and Alexander C.M.O'D. (2018) The effect of Jupiter's formation on the distribution of refractory elements and inclusions in meteorites. *Astrophys. J. Suppl.* **238**: 11.
- (160) Quirico E., Bonal L., Beck P., Alexander C.M.O'D., Yabuta H., Nakamura T., Nakato A., Flandinet L., Montagnac G., Schmitt-Kopplin P. and Herd C.D.K. (2018) Prevalence and nature of heating processes in CM and C2-ungrouped

chondrites as revealed by insoluble organic matter. *Geochim. Cosmochim. Acta* **241**, 17-37.

- (159) Ebel D.S., Alexander C.M.O'D. and Libourel G. (2018) Vapor–Melt Exchange. In: Chondrules: Records of Protoplanetary Disk Processes (A.N. Krot, H.C. Connolly Jr and S.S. Russell, eds.), 151-174.
- (158) Glavin D.P., Alexander C.M.O'D., Aponte J.C., Dworkin J.P., Elsila J.E. and Yabuta H. (2018) The origin and evolution of organic matter in carbonaceous chondrites and links to their parent bodies. In: Primitive Meteorites and Asteroids (N. Abreu, ed.), 205-271.
- (157) Takigawa A., Stroud R.M., Nittler L.R., Alexander C.M.O'D. and Miyake A. (2018) High-temperature dust condensation around an AGB star: Evidence from a highly pristine presolar corundum. *Astrophys. J. Lett.* **862**, L13.
- (156) Kaplan H.H., Milliken R.E. and Alexander C.M.O'D. (2018) New constraints on the abundance and composition of organic matter on Ceres. *Geophys. Res. Lett.* **45**, 5274-5282.
- (155) Nittler L.R., Alexander C.M.O'D., Liu N. and Wang J. (2018) Extremely ⁵⁴Cr- and ⁵⁰Ti-rich presolar oxide grains in a primitive meteorite: Formation in rare types of supernovae and implications for the astrophysical context of Solar System birth. *Astrophys. J. Lett.* **856**: L24.
- (154) Liu N., Stephan T., Boehnke P., Nittler L.R., Meyer B.S., Alexander C.M.O'D., Davis A.M., Trappitsch R. and Pellin M.J. (2018) Common occurrence of explosive hydrogen burning in Type II supernovae. *Astrophys. J.* **855**: 144.
- (153) Nittler L.R., Alexander C.M.O'D., Davidson J., Riebe M.E.I., Stroud R.M. and Wang J. (2018) High abundances of presolar grains and ¹⁵N-rich organic matter in CO3.0 chondrite Dominion Range 08006. *Geochim. Cosmochim. Acta* **226**, 107-131.
- (152) McAdam M.M., Sunshine J.M., Howard K.T., Alexander C.M., McCoy T.J. and Bus S. J. (2018) Spectral evidence for amorphous silicates in least-processed CO meteorites and their parent bodies. *Icarus* **306**, 32-49.
- (151) Alexander C.M.O'D., McKeegan K.D. and Altwegg K. (2018) Water reservoirs in small planetary bodies: Meteorites, asteroids, and comets. *Space Sci. Rev.* **214**: 36.
- (150) Liu N., Nittler L.R., Alexander C.M.O'D. and Wang J. (2018) Late formation of silicon carbide in type II supernovae. *Science Advances* **4**, eaao1054.
- (149) Alexander C.M.O'D., Greenwood R.C., Bowden R., Gibson J.M., Howard K.T. and Franchi I.A. (2018) A mutli-technique search for the most primitive CO chondrites. *Geochim. Cosmochim. Acta* **221**, 406-420.
- (148) Ireland T. R., Ávila J.N., Lugaro M., Cristallo S., Holden P., Lanc P., Nittler L., Alexander C.M.O'D., Gyngard F. and Amari S. (2018) Rare earth element abundances in presolar SiC. *Geochim. Cosmochim. Acta* **221**, 200-218.
- (147) Nguyen A.N., Nittler L.R., Alexander C.M.O'D. and Hoppe P. (2018) Titanium isotopic compositions of rare presolar SiC grain types from the Murchison meteorite. *Geochim. Cosmochim. Acta* **221**, 162-181.

2017

- (146) Liu N., Steele A., Nittler L.R., Stroud R.M., De Gregorio B.T., Alexander C.M.O'D. and Wang J. (2017) Coordinated EDX and micro-Raman analysis of presolar silicon carbide: A novel, nondestructive method to identify rare subgroup SiC. *Meteor. Planet. Sci.* **52**, 2550-2569.
- (145) Alexander C.M.O'D., Nittler L.R., Davidson J. and Ciesla F.J. (2017) Measuring the level of interstellar inheritance in the solar protoplanetary disk. *Meteor. Planet. Sci.* **52**, 1797-1821.
- (144) Liu N., Stephan T., Boehnke P., Nittler L.R., Alexander C.M.O'D., Wang J., Davis A.M., Trappitsch R. and Pellin M.J. (2017) J-type carbon stars: A dominant source of ^{14}N -rich presolar SiC grains of type AB. *Astrophys. J. Lett.* **844**: L12.
- (143) Sutton S., Alexander C.M.O'D., Bryant A., Lanzirotti A., Newville M. and Cloutis E.A. (2017) The bulk valence state of Fe and the origin of water in chondrites. *Geochim. Cosmochim. Acta* **211**, 115-132.
- (142) Alexander C.M.O'D., Cody G.D., De Gregorio B.T., Nittler L.R. and Stroud R.M. (2017) The nature, origin and modification of insoluble organic matter in chondrites, the major source of Earth's C and N. *Chemie der Erde - Geochemistry* **77**, 227-256.
- (141) Liu N., Nittler L.R., Pignatari M., Alexander C.M.O'D. and Wang J. (2017) Stellar origin of ^{15}N -rich presolar SiC grains of Type AB: Supernovae with explosive hydrogen burning. *Astrophys. J. Lett.* **842**: L1
- (140) Alexander C.M.O'D. (2017) The origin of inner Solar System water. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences* **375**: 20150384.
- (139) Blackburn T., Alexander C.M.O'D., Carlson R. and Elkins-Tanton L.T. (2017) The accretion and impact history of the ordinary chondrite parent bodies. *Geochim. Cosmochim. Acta* **200**, 201-217.
- (138) Mills R.D., Simon J.I., Alexander C.M.O'D., Wang J. and Hauri E.H. (2017). Water in alkali feldspar: The effect of rhyolite generation on the lunar hydrogen budget. *Geochem. Perspect. Lett.* **3**, 115-123
- (137) Labidi, J., Farquhar, J., Alexander, C.M.O'D., Eldridge, D.L. and Oduro, H. (2017). Mass independent sulfur isotope signatures in CMs: Implications for sulfur chemistry in the early Solar System. *Geochim. Cosmochim. Acta* **196**, 326-350.

2016

- (136) Cleaves L.I., Bergin E.A., Alexander C.M.O'D., Du F., Graninger D., Öberg K.I. and Harries T.J. (2016). Exploring the origins of deuterium enrichments in solar nebular organics. *Astrophys. J.* **819**: 13.
- (135) Liu N., Nittler L.R., Alexander C.M.O'D., Wang J., Pignatari M., José J. and Nguyen A.N. (2016). Stellar origins of extremely ^{13}C - and ^{15}N -enriched presolar SiC grains: Novae or supernovae? *Astrophys. J.* **820**: 140.

2015

- (134) Alexander, C.M.O'D., Bowden, R., Fogel, M.L. and Howard, K.T. (2015). Carbonate abundances and isotopic compositions in chondrites. *Meteoritics Planet. Sci.* **50**, 810-833.
- (133) DeMeo F.E., Alexander C.M.O'D., Walsh K.J., Binzel R.P. and Chapman C.R. (2015). The compositional structure of the asteroid belt, in: Michel P., DeMeo F.E., Bottke W.F. (Eds.), *Asteroids IV*. University of Arizona Press, Tucson, pp. 13-41.
- (132) Howard K.T., Alexander C.M.O'D., Schrader D.L. and Dyl K.A. (2015). Classification of hydrous meteorites (CR, CM and C2 ungrouped) by phyllosilicate fraction: PSD-XRD modal mineralogy and planetesimal environments. *Geochim. Cosmochim. Acta* **149**, 206-222.
- (131) Krot A.N., Nagashima K., Alexander C.M.O'D., Ciesla F.J., Fujiya W. and Bonal L. (2015). Sources of water and aqueous activity on the chondrite parent asteroids, in: Michel P., DeMeo F.E., Bottke W.F. (Eds.), *Asteroids IV*. University of Arizona Press, Tucson, pp. 635-660.
- (130) Usui T., Alexander C.M.O'D., Wang J., Simon J.I. and Jones J.H. (2015). Meteoritic evidence for a previously unrecognized hydrogen reservoir on Mars. *Earth Planet. Sci. Lett.* **410**, 140-151.

2014

- (129) Alexander C.M.O'D., Cody G.D., Kebukawa Y., Bowden R., Fogel M.L., Kilcoyne A.L.D., Nittler L.R., Herd C.D.K. (2014). Elemental, isotopic and structural changes in Tagish Lake insoluble organic matter produced by parent body processes. *Meteoritics Planet. Sci.* **49**, 503-525.
- (128) Aponte J.C., Tarozo, R., Alexandre M.R., Alexander C.M.O'D., Charnley S.B., Hallmann C., Summons R.E., Huang Y. (2014). Chirality of meteoritic free and IOM-derived monocarboxylic acids and implications for prebiotic organic synthesis. *Geochim. Cosmochim. Acta* **131**, 1-12.
- (127) Cleaves L.I., Bergin E.A., Alexander C.M.O'D., Du F., Graninger D., Öberg K.I., Harries T.J. (2014). The ancient heritage of water ices in the Solar System. *Science* **345**, 1590-1593.
- (126) Davidson J., Busemann H., Nittler L.R., Alexander C.M.O'D., Orthous-Daunay F.-R., Franchi I.A., Hoppe P. (2014). Abundances of presolar silicon carbide grains in primitive meteorites determined by NanoSIMS. *Geochim. Cosmochim. Acta* **139**, 248-266.
- (125) Davidson J., Schrader D.L., Alexander C.M.O'D., Lauretta D.S., Busemann H., Franchi I.A., Greenwood R.C., Connolly Jr., H.C., Domanik K.J., Verchovsky A. (2014). Petrography, stable isotope compositions, microRaman spectroscopy and presolar components of RBT 04133: A reduced CV3 carbonaceous chondrite. *Meteoritics Planet. Sci.* **49**, 2133-2151.

- (124) Davis A.M., Alexander C.M.O'D., Ciesla F.J., Gounelle M., Krot A.N., Petaev M.I. and Stephan T. (2014). Samples of the Solar System: Recent developments, in: Beuther, H., Klessen, R.S., Dullemond, C.P., Henning, T. (Eds.), *Protostars and Planets VI*. Univ. of Arizona, pp. 809-831.
- (123) Zega T.J., Nittler L.R., Gyngard F., Alexander C.M.O'D., Stroud R.M., Zinner E.K. (2014). A transmission electron microscopy study of presolar spinel. *Geochim. Cosmochim. Acta* **124**, 152-169.

2013

- (122) Alexander C.M.O'D., Howard K., Bowden R., Fogel M.L. (2013). The classification of CM and CR chondrites using bulk H, C and N abundances and isotopic compositions. *Geochim. Cosmochim. Acta* **123**, 244-260.
- (121) Bonal L., Alexander C.M.O'D., Huss G.R., Nagashima K., Quirico E., Beck P. (2013). Hydrogen isotopic composition of the water in CR chondrites. *Geochim. Cosmochim. Acta* **106**, 111-133.
- (120) De Gregorio B.T., Stroud R.M., Nittler L.R., Alexander C.M.O'D., Bassim N.D., Cody G.D., Kilcoyne A.L.D., Sandford S.A., Milam S.N., Nuevo M., Zega T.J. (2013). Isotopic and chemical variation of organic nanoglobules in primitive meteorites. *Meteoritics Planet. Sci.* **48**, 904-928.
- (119) Marty B., Alexander C.M.O'D., Raymond S.N. (2013). Primordial origins of Earth's carbon. *Reviews in Mineralogy and Geochemistry* **75**, 149-181.
- (118) Starkey N.A., Franchi I.A., Alexander C.M.O'D. (2013). A Raman spectroscopic study of organic matter in interplanetary dust particles and meteorites using multiple wavelength laser excitation. *Meteoritics Planet. Sci.* **48**, 1800-1822.
- (117) Yang L., Ciesla F.J., Alexander C.M.O'D. (2013). The D/H ratio of water in the solar nebula during its formation and evolution. *Icarus* **226**, 256-267.

2012

- (116) Alexander C.M.O'D., Bowden R., Fogel M.L., Howard K.T., Herd C.D.K., Nittler L.R. (2012). The provenances of asteroids, and their contributions to the volatile inventories of the terrestrial planets. *Science* **337**, 721-723.
- (115) Alexander C.M.O'D., Ebel D.S. (2012). Questions, questions: Can the contradictions between the petrologic, isotopic, thermodynamic, and astrophysical constraints on chondrule formation be resolved? *Meteoritics Planet. Sci.* **47**, 1157-1175.
- (114) Boss A.P., Alexander C.M.O'D., Podolak M. (2012). Cosmochemical consequences of particle trajectories during FU Orionis outbursts by the early Sun. *Earth Planet. Sci. Lett.* **345-348**, 18-26.

- (113) Lee M.R., Lindgren P., Sofe M.R., Alexander C.M.O'D., Wang J. (2012). Extended chronologies of aqueous alteration in the CM2 carbonaceous chondrites: Evidence from carbonates in Queen Alexandra Range 93005. *Geochim. Cosmochim. Acta* **92**, 148-169.
- (112) Usui T., Alexander C.M.O'D., Wang J., Simon J.I., Jones J.H. (2012). Origin of water and mantle-crust interactions on Mars inferred from hydrogen isotopes and volatile element abundances of olivine-hosted melt inclusions of primitive shergottites. *Earth Planet. Sci. Lett.* **357-358**, 119-129.

2011

- (111) Alexander, C.M.O'D., 2011. Modeling diffusive dissolution in silicate melts. *Geochim. Cosmochim. Acta* **75**, 588-607.
- (110) Alexander, C.M.O'D., 2011. A common origin for organics in meteorites and comets: Was it interstellar? *Proceedings of the International Astronomical Union* **7**, 288-301.
- (109) Aponte, J.C., Alexandre, M.R., Wang, Y., Brearley, A.J., Alexander, C.M.O'D., Huang, Y., 2011. Effects of secondary alteration on the composition of free and IOM-derived monocarboxylic acids in carbonaceous chondrites. *Geochim. Cosmochim. Acta* **75**, 2309-2323.
- (108) Busemann, H., Spring, N.H., Alexander, C.M.O'D., Nittler, L.R., 2011. Raman spectroscopy on cometary and meteoritic organic matter. *Spectroscopy Letters* **44**, 554-559.
- (107) Cloutis, E.A., Hiroi, T., Gaffey, M.J., Alexander, C.M.O'D., Mann, P., 2011. Spectral reflectance properties of carbonaceous chondrites: 1. CI chondrites. *Icarus* **212**, 180-209.
- (106) Cody, G.D., Heying, E., Alexander, C.M.O'D., Nittler, L.R., Kilcoyne, A.L.D., Sandford, S.A., Stroud, R.M., 2011. Establishing a molecular relationship between chondritic and cometary organic solids. *Proc. Nat. Acad. Sci.* **108**, 19171-19176.
- (105) Ebel, D.S., Alexander, C.M.O'D., 2011. Equilibrium condensation from chondritic porous IDP enriched vapor: Implications for Mercury and enstatite chondrite origins. *Planet. Space Sci.* **59**, 1888-1894.
- (104) Herd, C.D.K., Blinova, A., Simkus, D.N., Huang, Y., Taroza, R., Alexander, C.M.O'D., Gyngard, F., Nittler, L.R., Cody, G.D., Fogel, M.L., Kebukawa, Y., Kilcoyne, A.L.D., Hilts, R.W., Slater, G.F., Glavin, D.P., Dworkin, J.P., Callahan, M.P., Elsila, J.E., De Gregorio, B.T., Stroud, R.M., 2011. Origin and evolution of prebiotic organic matter as inferred from the Tagish Lake meteorite. *Science* **332**, 1304-1307.
- (103) Kebukawa, Y., Alexander, C.M.O'D., Cody, G.D., 2011. Compositional diversity in insoluble organic matter in type 1, 2 and 3 chondrites as detected by infrared spectroscopy. *Geochim. Cosmochim. Acta* **75**, 3530-3541.

- (102) Qin, L., Carlson, R.W., Alexander, C.M.O'D., 2011. Correlated nucleosynthetic isotopic variability in Cr, Sr, Ba, Sm, Nd and Hf in Murchison and QUE 97008. *Geochim. Cosmochim. Acta* 75, 7806-7828.
- (101) Qin, L., Nittler, L.R., Alexander, C.M.O'D., Wang, J., Stadermann, F.J., Carlson, R.W., 2011. Extreme ^{54}Cr -rich nano-oxides in the CI chondrite Orgueil - Implication for a late supernova injection into the solar system. *Geochim. Cosmochim. Acta* 75, 629-644.
- (100) Stroud, R.M., Chisholm, M.F., Heck, P.R., Alexander, C.M.O'D., Nittler, L.R., 2011. Supernova shock-wave-induced CO-formation of glassy carbon and nanodiamond. *Astrophys. J. Lett.* 738, L27.
- (99) Yokoyama, T., Alexander, C.M.O'D., Walker, R.J., 2011. Assessment of nebular versus parent body processes on presolar components present in chondrites: Evidence from osmium isotopes. *Earth Planet. Sci. Lett.* 305, 115-123.
- (98) Zega, T., Alexander, C.M.O'D., Nittler, L.R., Stroud, R., 2011. A transmission microscopy study of presolar hibonite. *Astrophys. J.* 730, 83-93.

2010

- (97) Alexander, C.M.O'D., Newsome, S.N., Fogel, M.L., Nittler, L.R., Busemann, H., Cody, G.D., 2010. Deuterium enrichments in chondritic macromolecular material – Implications for the origin and evolution of organics, water and asteroids. *Geochim. Cosmochim. Acta* 74, 4417-4437.
- (96) De Gregorio, B.T., Stroud, R.M., Nittler, L.R., Alexander, C.M.O'D., Kilcoyne, A.L.D., Zega, T.J., 2010. Isotopic anomalies in organic nanoglobules from Comet 81P/Wild 2: Comparison to Murchison nanoglobules and isotopic anomalies induced in terrestrial organics by electron irradiation. *Geochim. Cosmochim. Acta* 74, 4454-4470.
- (95) Liu, M.-C., Nittler, L.R., Alexander, C.M.O'D., Lee, T., 2010. Lithium-beryllium-boron isotopic compositions in meteoritic hibonite: Implications for origin of ^{10}Be and early Solar System irradiation. *Astrophys. J.* 719, L99-L103.
- (94) Liu, M.C., Nittler, L., Alexander, C.M.O'D., Lee, T., 2010. Lithium-beryllium-boron isotopes in the meteorites: implications for irradiation in the early solar system, *Nuclei in the Cosmos XI*, Heidelberg, Germany, p. 145.
- (93) Nguyen, A.N., Nittler, L.R., Stadermann, F.J., Stroud, R.M., Alexander, C.M.O'D., 2010. Coordinated Analyses of Presolar Grains in the Allan Hills 77307 and Queen Elizabeth Range 99177 Meteorites. *Astrophys. J.* 719, 166-189.
- (92) Qin, L., Alexander, C.M.O'D., Carlson, R.W., Horan, M.F., Yokoyama, T., 2010. Contributors to chromium isotope variation of meteorites. *Geochim. Cosmochim. Acta* 74, 1122-1145.
- (91) Qin, L., Rumble, D., Alexander, C.M.O'D., Carlson, R.W., Jenniskens, P., Shaddad, M.H., 2010. The chromium isotopic composition of Almahata Sitta. *Meteoritics Planet. Sci.* 45, 1771-1777.
- (90) Yabuta, H., Alexander, C.M.O'D., Fogel, M.L., Kilcoyne, A.L.D., Cody, G.D., 2010. A molecular and isotopic study of the macromolecular organic matter of

- the ungrouped C2 WIS 91600 and its relationship to Tagish Lake and PCA 91008. *Meteoritics Planet. Sci.* 45, 1446-1460.
- (89) Yokoyama, T., Alexander, C.M.O'D., Walker, R.J., 2010. Osmium isotope anomalies in chondrites: Results for acid residues and related leachates. *Earth Planet. Sci. Lett.* 291, 48-59.
- (88) Zega, T., Alexander, C.M.O'D., Busemann, H., Nittler, L.R., Hoppe, P., Stroud, R.M., Young, A.F., 2010. Mineral associations and character of isotopically anomalous organic material in the Tagish Lake carbonaceous chondrite. *Geochim. Cosmochim. Acta* 74, 5966-5983.

2009

- (87) Alexander, C.M.O'D., 2009. Laboratory studies of circumstellar and interstellar materials, in: *Interstellar dust from astronomical observations to fundamental studies*. Boulanger, F., Joblin, C., Jones, A., Madden, S. (Eds.). European Astronomical Society Publication Series, pp. 75-102.
- (86) Horan, M.F., Alexander, C.M.O'D., Walker, R.J., 2009. Highly siderophile element evidence for early solar system processes in components from ordinary chondrites. *Geochim. Cosmochim. Acta* 73, 6984-6997.

2008

- (85) Alexander, C.M.O'D., Cody, G.D., Fogel, M., Yabuta, H., 2008. Organics in meteorites - Solar or interstellar?, in: *Organic Matter in Space*. Kwok, S., Sandford, S.A. (Eds.). Cambridge University Press, Hong Kong, pp. 293-297.
- (84) Alexander, C.M.O'D., Grossman, J.N., Ebel, D.S., Ciesla, F.J., 2008. The formation conditions of chondrules and chondrites. *Science* 320, 1617-1619.
- (83) Cody, G.D., Ade, H., Alexander, C.M.O'D., Araki, T., Butterworth, A., Fleckenstein, H., Flynn, G.J., Gilles, M.K., Jacobsen, C., Kilcoyne, A.L.D., Messenger, K., Sandford, S.A., Tyliszczak, T., Westphal, A.J., Wirick, S., Yabuta, H., 2008. Quantitative organic and light element analysis of Comet 81P/Wild 2 particles using C-, N-, and O- μ -XANES. *Meteoritics Planet. Sci.* 43, 353-366.
- (82) Cody, G.D., Alexander, C.M.O'D., Kilcoyne, A.L.D., Yabuta, H., 2008. Unraveling the chemical history of the Solar System as recorded in extraterrestrial organic matter, in: *Organic matter in space*. Cambridge University Press, Hong Kong, pp. 277-282.
- (81) Cody, G.D., Alexander, C.M.O'D., Yabuta, H., Kilcoyne, A.L.D., Araki, T., Ade, H., Dera, P., Fogel, M., Militzer, B., Mysen, B.O., 2008. Organic thermometry for chondritic parent bodies. *Earth Planet. Sci. Lett.* 272, 446-455.

- (80) Herzog, G.F., Alexander, C.M.O'D., Berger, E.L., Delaney, J.S., Glass, B.P., 2008. Potassium isotope fractionation in Australasian microtektites: Evidence for potassium evaporation and condensation in a vapor plume. *Meteoritics Planet. Sci.* 43, 1641-1657.
- (79) McCanta, M.C., Treiman, A.H., Dyar, M.D., Alexander, C.M.O'D., Rumble III, D., Essene, E.J., 2008. The LaPaz Icefield 04840 meteorite: Mineralogy, metamorphism, and origin of an amphibole- and biotite-bearing R chondrite. *Geochim. Cosmochim. Acta* 72, 5757-5780.
- (78) Nittler, L.R., Alexander, C.M.O'D., Gallino, R., Hoppe, P., Nguyen, A.N., Stadermann, F.J., Zinner, E.K., 2008. Aluminum-, calcium- and titanium-rich oxide stardust in ordinary chondrite meteorites. *Astrophys. J.* 682, 1450-1478.

2007

- (77) Alexander, C.M.O'D., Boss, A.P., Keller, L.D., Nuth, I., J. A., Weinberger, A., 2007. Astronomical and meteoritic evidence for the nature of interstellar dust and its processing in protoplanetary disks, in: *Protostars and Planets V*. Reipurth, B., Jewitt, D., Keil, K. (Eds.). University of Arizona Press, Tucson, pp. 801-814.
- (76) Alexander, C.M.O'D., Fogel, M., Yabuta, H., Cody, G.D., 2007. The origin and evolution of chondrites recorded in the elemental and isotopic compositions of their macromolecular organic matter. *Geochim. Cosmochim. Acta* 71, 4380-4403.
- (75) Busemann, H., Alexander, C.M.O'D., Nittler, L.R., 2007. Characterization of insoluble organic matter in primitive meteorites by microRaman spectroscopy. *Meteoritics Planet. Sci.* 42, 1387-1416.
- (74) Lugaro, M., Karakas, A.I., Nittler, L.R., Alexander, C.M.O'D., Hoppe, P., Iliadis, C., Lattanzio, J.C., 2007. On the asymptotic giant branch star origin of peculiar spinel grain OC2. *Astron. Astrophys.* 461, 657-664.
- (73) Martins, Z., Alexander, C.M.O'D., Orzechowska, G.E., Fogel, M.L., Ehrenfreund, P., 2007. Indigenous amino acids in primitive CR meteorites. *Meteoritics Planet. Sci.* 42, 2125-2136.
- (72) Nguyen, A.N., Stadermann, F.J., Zinner, E., Stroud, R.M., Alexander, C.M.O'D., Nittler, L.R., 2007. Characterization of presolar silicate and oxide grains in primitive carbonaceous chondrites. *Astrophys. J.* 656, 1223-1240.
- (71) Nittler, L.R., Alexander, C.M.O'D., 2007. Pre-solar grains: outlook and opportunities for astrophysics. *Highlights of Astronomy* 14, 357-360.
- (70) Yabuta, H., Williams, L.B., Cody, G.D., Alexander, C.M.O'D., Pizzarello, S., 2007. The insoluble carbonaceous material of CM chondrites: A possible source of discrete organic compounds under hydrothermal conditions. *Meteoritics Planet. Sci.* 42, 37-48.
- (69) Yokoyama, T., Rai, V.K., Alexander, C.M.O'D., Lewis, R.S., Carlson, R.W., Shirey, S.B., Thiemens, M.H., Walker, R.J., 2007. Osmium isotope evidence for uniform distribution of s- and r-process components in the early solar system. *Earth Planet. Sci. Lett.* 259, 567-580.

2006

- (68) Zinner E., Nittler L.R., Alexander C.M.O'D. and Gallino R. (2006) The study of radioisotopes in presolar dust grains. *New Astronomy Review* **50**, 574-577.
- (67) Brownlee, D.E., et al., 2006. Comet 81P/Wild 2 under a microscope. *Science* 314, 1711-1716.
- (66) Busemann, H., Young, A.F., Alexander, C.M.O'D., Hoppe, P., Mukhopadhyay, S., Nittler, L.R., 2006. Interstellar chemistry recorded in organic matter from primitive meteorites. *Science* 314, 727-730.
- (65) Cuzzi, J.N., Alexander, C.M.O'D., 2006. Chondrule formation in particle-rich nebular regions at least hundreds of kilometres across. *Nature* 441, 483-485.
- (64) Lauretta, D.S., Nagahara, H., Alexander, C.M.O'D., 2006. The formation of ferromagnesian chondrules, in: *Meteorites and the Early Solar System II*. Lauretta, D.S., McSween, H.Y., Jr. (Eds.). The University of Arizona Press, Tucson, pp. 431-459.
- (63) Roskosz, M., Luais, B., Watson, H.C., Toplis, M.J., Alexander, C.M.O'D., Mysen, B.O., 2006. Experimental quantification of the fractionation of Fe isotopes during metal segregation from a silicate melt. *Earth Planet. Sci. Lett.* 248, 851-867.
- (62) Sandford, S.A., et al., 2006. Organics captured from comet 81P/Wild 2 by the Stardust spacecraft. *Science* 314, 1720-1724.

2005

- (61) Alexander, C.M.O'D., 2005. Re-examining the role of chondrules in producing the volatile element fractionations in chondrites. *Meteoritics Planet. Sci.* 40, 943-965.
- (60) Alexander, C.M.O'D., 2005. From supernovae to planets: The view from meteorites and IDPs, in: Krot, A.N., Scott, E.R.D., Reipurth, B. (Eds.), *Chondrites and the Protoplanetary Disk*. The Astronomical Society of the Pacific, San Francisco, pp. 972-1002.
- (59) Alexander, C.M.O'D., Grossman, J.N., 2005. Alkali elemental and potassium isotopic compositions of Semarkona chondrules. *Meteoritics Planet. Sci.* 40, 541-556.
- (58) Cody, G.D., Alexander, C.M.O'D., 2005. NMR studies of chemical structural variation of insoluble organic matter from different carbonaceous chondrite groups. *Geochim. Cosmochim. Acta* 69, 1085-1097.
- (57) Davis, A.M., Alexander, C.M.O'D., Nagahara, H., Richter, F.M., 2005. Evaporation and condensation during CAI and chondrule formation, in: *Chondrites and the*

- Protoplanetary Disk. Krot, A.N., Scott, E.R.D., Reipurth, B. (Eds.). Astronomical Society of the Pacific, San Francisco, pp. 432-455.
- (56) Huss, G.R., Alexander, C.M.O'D., Palme, H., Bland, P.A., Wasson, J.T., 2005. Genetic relationships between chondrules, fine-grained rims, and interchondrule matrix, in: Chondrites and the Protoplanetary Disk. Krot, A.N., Scott, E.R.D., Reipurth, B. (Eds.). Astronomical Society of the Pacific, San Francisco, pp. 701-731.
 - (55) Taylor, S., Alexander, C.M.O'D., Delaney, J.S., Ma, P., Herzog, G.F., Engrand, C., 2005. Isotopic fractionation of iron, potassium, and oxygen in stony cosmic spherules: Implications for heating histories and sources. *Geochim. Cosmochim. Acta* 69, 2647-2662.
 - (54) Wang, Y., Huang, Y., Alexander, C.M.O'D., Fogel, M., Cody, G., 2005. Molecular and compound-specific hydrogen isotope analyses of insoluble organic matter from different carbonaceous chondrites groups. *Geochim. Cosmochim. Acta* 69, 3711-3721.
 - (53) Zinner, E., Nittler, L.R., Hoppe, P., Gallino, R., Straniero, O., Alexander, C.M.O'D., 2005. Oxygen, magnesium and chromium isotopic ratios of presolar spinel grains. *Geochim. Cosmochim. Acta* 69, 4149-4165.

2004

- (52) Alexander, C.M.O'D., 2004. Chemical equilibrium and kinetic constraints for chondrule and CAI formation conditions. *Geochim. Cosmochim. Acta* 68, 3943-3969.
- (51) Cohen, B., Hewins, R.H., Alexander, C.M.O'D., 2004. The formation of chondrules by open-system melting of nebular condensates. *Geochim. Cosmochim. Acta* 68, 1661-1675.
- (50) Stroud, R.M., Nittler, L.R., Alexander, C.M.O'D., 2004. Polymorphism in presolar Al₂O₃ grains from asymptotic giant branch stars. *Science* 305, 1455-1457.

2003

- (49) Alexander, C.M.O'D., 2003. Meteoritics: A question of timing. *Nature* 423, 691-692.
- (48) Boctor, N.Z., Alexander, C.M.O'D., Wang, J., Hauri, E.H., 2003. Sources of water in Martian meteorites. *Geochim. Cosmochim. Acta* 67, 3971-3989.
- (47) Boyce, C.K., Cody, G.D., Fogel, M.L., Hazen, R.M., Alexander, C.M.O'D., Knoll, A.H., 2003. Chemical evidence for cell wall lignification and evolution of tracheids in early Devonian plants. *Int. J. Plant Sci.*

- (46) Kehm, K., Hauri, E.H., Alexander, C.M.O'D., Carlson, R.W., 2003. High precision iron isotope measurements of meteoritic material by cold plasma ICP-MS. *Geochim. Cosmochim. Acta* 67, 2879-2891.
- (45) Nittler, L.R., Alexander, C.M.O'D., 2003. Automated isotopic measurements of micron-sized dust: Applications to meteoritic presolar silicon carbide. *Geochim. Cosmochim. Acta* 67, 4961-4980.
- (44) Yu, Y., Hewins, R.H., Alexander, C.M.O'D., Wang, J., 2003. Experimental study of evaporation and isotopic mass fractionation of potassium in silicate melts. *Geochim. Cosmochim. Acta* 67, 773-786.

2002

- (43) Alexander, C.M.O'D., 2002. Application of MELTS to kinetic evaporation models of FeO-bearing silicate melts. *Meteoritics Planet. Sci.* 37, 245-256.
- (42) Alexander, C.M.O'D., Taylor, S., Delaney, J.S., Ma, P., Herzog, G.F., 2002. Mass-dependent fractionation of Mg, Si, and Fe isotopes in five stony cosmic spherules. *Geochim. Cosmochim. Acta* 66, 173-183.
- (41) Cody, G.D., Alexander, C.M.O'D., Tera, F., 2002. Solid state (¹H and ¹³C) NMR spectroscopy of the insoluble organic residue in the Murchison meteorite: A self-consistent quantitative analysis. *Geochim. Cosmochim. Acta* 66, 1851-1865.
- (40) Grossman, J.N., Alexander, C.M.O'D., Wang, J., Brearley, A.J., 2002. Zoned chondrules in Semarkona: Evidence for high- and low-temperature processing. *Meteoritics Planet. Sci.* 37, 49-73.

2001

- (39) Alexander, C.M.O'D., 2001. Exploration of quantitative kinetic models for the evaporation of silicate melts in vacuum and hydrogen. *Meteoritics Planet. Sci.* 36, 255-284.
- (38) Alexander, C.M.O'D., 2001. Inherited material from the proto-solar cloud: composition and origin. *Phil. Trans. R. Soc. Lond. A* 359, 1973-1988.
- (37) Alexander, C.M.O'D., Boss, A.P., Carlson, R.W., 2001. The early evolution of the inner solar system: A meteoritic perspective. *Science* 293, 64-68.
- (36) Alexander, C.M.O'D., Wang, J., 2001. Iron isotopes in chondrules: Implications for the role of evaporation during chondrule formation. *Meteoritics Planet. Sci.* 36, 419-428.
- (35) Carlson, R.W., Hauri, E., Alexander, C.M.O'D., 2001. Matrix-induced isotopic mass fractionation in the ICP-MS, in: *Plasma source mass spectrometry: The new millennium*. Holland, G.P., Tanner, S.D. (Eds.). Roy. Soc. Chem., Cambridge, pp. 288-297.

- (34) Krot, A.N., Meibom, A., Russell, S.S., Alexander, C.M.O'D., Jeffries, T.E., Kiel, K., 2001. A new astrophysical setting for chondrule formation. *Science* 291, 1776-1779.

2000

- (33) Alexander, C.M.O'D., Grossman, J.N., Wang, J., Zanda, B., Bourot-Denise, M., Hewins, R.H., 2000. The lack of potassium-isotopic fractionation in Bishunpur chondrules. *Meteoritics Planet. Sci.* 35, 859-868.
- (32) Grossman, J.N., Alexander, C.M.O'D., Wang, J., Brearley, A.J., 2000. Bleached chondrules: Evidence for widespread aqueous processes on the parent asteroids of ordinary chondrites. *Meteoritics Planet. Sci.* 35, 467-486.

1999

- (31) Alexander, C.M.O'D., Nittler, L.R., 1999. The Galactic chemical evolution of Si, Ti and O isotopes. *Astrophys. J.* 519, 222-235.
- (30) Nittler, L.R., Alexander, C.M.O'D., 1999. Can stellar dynamics explain the metallicity distributions of presolar grains? *Astrophys. J.* 526, 249-256.

1998

- (29) Alexander, C.M.O'D., Russell, S.S., Arden, J.W., Ash, R.D., Grady, M.M., Pillinger, C.T., 1998. The origin of chondritic macromolecular organic matter: A carbon and nitrogen isotope study. *Meteoritics Planet. Sci.* 33, 603-622.
- (28) Boyd, S.R., Wright, I.P., Alexander, C.M.O'D., Pillinger, C.T., 1998. High resolution stepped-combustion mass spectrometry: Application to the detection and analysis of fine-grained diamond in meteorites and rocks. *Geostandards Newsletter* 22, 71-83.
- (27) Hutchison, R., Alexander, C.M.O'D., Bridges, J.C., 1998. Elemental redistribution in Tieschitz and the origin of white matrix. *Meteoritics Planet. Sci.* 33, 1169-1180.
- (26) Nittler, L.R., Alexander, C.M.O'D., Wang, J., Gao, X., 1998. Meteoritic oxide grain from supernova found. *Nature* 393, 222.

1997

- (25) Alexander, C.M.O'D., 1997. Dust production in the Galaxy: The meteorite perspective, in: Bernatowicz, T.J., Zinner, E.K. (Eds.), *Astrophysical implications of the laboratory study of presolar materials*. AIP Conference Proceedings, Woodbury, pp. 567-594.
- (24) Bridges, J.C., Alexander, C.M.O'D., Hutchison, R., Franchi, I.A., Pillinger, C.T., 1997. Sodium-chlorine-rich mesostases in Chainpur (LL3) and Parnallee (LL3) chondrules. *Meteoritics Planet. Sci.* 32, 555-566.
- (23) Nittler, L., Alexander, C.M.O'D., Gao, X., Walker, R.M., Zinner, E., 1997. Stellar sapphires: The properties and origins of presolar Al_2O_3 in meteorites. *Astrophys. J.* 483, 475-495.
- (22) Nittler, L.R., Alexander, C.M.O'D., Gao, X., Walker, R.M., Zinner, E., 1997. Presolar Al_2O_3 grains as probes of stellar nucleosynthesis and galactic chemical evolution. *Nuclear Physics A* 621, 113-116.
- (21) Russell, S.S., Ott, U., Alexander, C.M.O'D., Zinner, E.K., Pillinger, C.T., 1997. Presolar silicon carbide from the Indarch (EH4) meteorite: comparison with SiC populations from other meteorite classes. *Meteoritics Planet. Sci.* 32, 719-732.

1996

- (20) Alexander, C.M.O'D., 1996. Recycling and volatile loss in chondrule formation, in: Hewins, R.H., Jones, R.H., Scott, E.R.D. (Eds.), *Chondrules and the Protoplanetary Disk*. Cambridge Univ. Press, Cambridge, pp. 233-242.

1995

- (19) Alexander, C.M.O'D., 1995. Trace element contents of chondrule rims and interchondrule matrix in ordinary chondrites. *Geochim. Cosmochim. Acta* 59, 3247-3266.
- (18) Bridges, J.C., Hutchison, R., Franchi, I.A., Alexander, C.M.O'D., Pillinger, C.T., 1995. A feldspar-nepheline achondrite clast in Parnallee. *Proc. NIPR Symp. Antarc. Met.* 8, 195-203.
- (17) Nittler, L.R., Alexander, C.M.O'D., Gao, X., Walker, R.M., Zinner, E.K., 1995. Oxygen-rich stardust in meteorites, in: Busso, M., Gallino, R., Raiteri, C.M. (Eds.), *Nuclei in the Cosmos III*. AIP Press, New York, pp. 585-590.
- (16) Nittler, L.R., Hoppe, P., Alexander, C.M.O'D., Amari, S., Eberhardt, P., Gao, X., Lewis, R.S., Strebel, R., Walker, R.M., Zinner, E., 1995. Silicon nitride from supernovae. *Astrophys. J.* 453, L25-L28.

- (15) Sears, D.W.G., Morse, A.D., Hutchison, R., Guimon, R.K., Jie, L., Alexander, C.M.O'D., Benoit, P.H., Wright, I., Pillinger, C., Xie, T., Lipschutz, M.E., 1995. Metamorphism and aqueous alteration in low petrographic type ordinary chondrites. *Meteoritics* 30, 169-181.

1994

- (14) Alexander, C.M.O'D., 1994. Trace element distributions within ordinary chondrite chondrules: Implications for chondrule formation conditions and precursors. *Geochim. Cosmochim. Acta* 58, 3451-3467.
- (13) Alexander, C.M.O'D., Swan, P., Prombo, C.A., 1994. Occurrence and implications of silicon nitride in enstatite chondrites. *Meteoritics* 29, 79-85.
- (12) Nittler, L., Alexander, C.M.O'D., Gao, X., Walker, R.M., Zinner, E., 1994. Interstellar oxide grains from the Tieschitz ordinary chondrite. *Nature* 370, 443-446.

1993

- (11) Alexander, C.M.O'D., 1993. Presolar SiC in chondrites: How variable and how many sources? *Geochim. Cosmochim. Acta* 57, 2869-2888.

1992

- (10) Kovalenko, L.J., Maechling, C.R., Clemett, S.J., Philpott, J.-M., Zare, R.N., Alexander, C.M.O'D., 1992. Microscopic organic analysis using two-step laser mass spectrometry: application to meteoritic acid residues. *Anal. Chem.* 64, 682-690.

1991

- (9) Nichols, R.H., Jr., Hohenberg, C.M., Alexander, C.M.O'D., Olinger, C.T., Arden, J.W., 1991. Xenon and neon from acid-resistant residues of Inman and Tieschitz. *Geochim. Cosmochim. Acta* 55, 2921-2936.

1990

- (8) Alexander, C.M.O'D., Arden, J.W., Ash, R.D., Pillinger, C.T., 1990. Presolar components in the ordinary chondrites. *Earth Planet. Sci. Lett.* 99, 220-229.
- (7) Alexander, C.M.O'D., Swan, P., Walker, R.M., 1990. *In situ* measurement of interstellar silicon carbide in two CM chondrite meteorites. *Nature* 348, 715-717.

1989

- (6) Alexander, C.M.O'D., Barber, D.J., Hutchison, R., 1989. The microstructure of Semarkona and Bishunpur. *Geochim. Cosmochim. Acta* 53, 3045-3057.
- (5) Alexander, C.M.O., Hutchison, R., Barber, D.J., 1989. Origin of chondrule rims and interchondrule matrices in unequilibrated ordinary chondrites. *Earth Planet. Sci. Lett.* 95, 187-207.

1988

- (4) Hutchison, R., Alexander, C.M.O., Barber, D.J., 1988. Chondrules: chemical, mineralogical and isotopic constraints on theories of their origin. *Phil. Trans. R. Soc. Lond.* A325, 445-458.
- (3) Scott, E.R.D., Barber, D.J., Alexander, C.M.O'D., Hutchison, R., Peck, J.A., 1988. Primitive material surviving in chondrites: Matrix, in: Kerridge, J.F., Matthews, M.S. (Eds.), *Meteorites and the Early Solar System*. University of Arizona Press, Tucson, pp. 718-745.

1987

- (2) Alexander, C.M.O., Hutchison, R., Graham, A.L., Yabuli, H., 1987. Discovery of scapolite in the Bishunpur (LL3) chondritic meteorite. *Mineral. Mag.* 51, 733-735.
- (1) Hutchison, R., Alexander, C.M.O., Barber, D.J., 1987. The Semarkona meteorite: First recorded occurrence of smectite in an ordinary chondrite, and its implications. *Geochim. Cosmochim. Acta* 51, 1875-1882.