Aleksandr E. Marfin, Ph.D. Curriculum Vitae

Dept. of Earth & Atmospheric Sciences,
University of Houston
+18038560402; *marfin1309@gmail.com*

Research interests

- Igneous petrology, including radiogenic (e.g., Sr, Nd, Hf) and stable (e.g., Mo, Tl, Cu) isotope geochemistry in mantle processes and plume dynamics.
- Uranium-Pb dating by LA-ICPMS and trace-elements content in magmatic and metamorphic minerals (zircons, apatite, titanite, garnet etc.).
- Plume-lithosphere interaction, formation of the magmatic sulfide deposits.
- Non-traditional isotopes for understanding past climate shifts.

Education

- **PhD, Volcanology and petrology**
  Institute of the Earth Crust of Russian Academy of Science. Thesis: *Age and genesis of sulfide mineralization of the Oktyabrsk deposit, Talnakh ore district* (Advisor: Dr. Alexei Ivanov) *2018-2021*
- **MSc, Geology with honours**
  National Research Tomsk State University, Tomsk, Russia. Thesis: *Quartz typomorphism of pegmatites from different formation types* (Advisor: Dr. Bukharova Oksana) *2015-2017*
- **BSc, Geology**
  National Research Tomsk State University, Tomsk, Russia. Thesis: *Rock-forming mineral typomorphism of pegmatites from Turkistan belt* (Advisor: Dr. Konovalenko Sergei) *2012-2015*

Work experience

- **Post-Doctoral Fellow**
  Department of Earth and Atmospheric Sciences, University of Houston, TX, USA (Supervisor: Dr. Michael A. Antonelli) *2026–present*
- **Post-Doctoral Fellow**
  Department of Earth and Atmospheric Sciences, Indiana University Bloomington, IN, USA (Supervisor: Dr. Shelby T. Rader) *2023–2024*
- **Visiting Scholar (Fulbright program)**
  School of the Earth, Ocean and Environment, University of South Carolina, SC, USA (Supervisor: Dr. Michael Bizimis) *2022–2023*
- **Research Assistant**
  Institute of the Earth's Crust of the Siberian Branch of the Russian Academy of Science, Irkutsk, Russia (Supervisor: Dr. Alexei Ivanov) *2018–2022*
- **Research Assistant**
  Institute of Experimental Minerology Russian Academy of Science, Chernogolovka, Russia (Supervisor: Dr. Vadim Kamenetsky) *2018–2022*
- **Exploration geologist** (Norilsk Ni-Cu-PGE) *2017–2018*

SibGeoConsulting, Krasnoyarsk, Russia
Core documentation in an underground mine.

- **Geologist**
  Primorgeologia», Vladivostok, Russia 1:200 000 scale geological mapping in Far East of Russia — *summer 2015*
- **Technician**
  Analytical Center of geochemistry of natural systems, National Research Tomsk State University, Tomsk, Russia. — *2015*

Research awards and grants

- Government of Ireland Postdoctoral Fellowship Program (Project: Understanding the impact of voluminous basaltic volcanism on Earth's climate and biosphere), Trinity College Dublin (host), GOIPD/2023/1015, **€ 94,184** (2023-2025) *declined for Fulbright Scholarship* — *2023*
- Fulbright Scholarship (Project: Variations of Mo isotopic compositions in the Siberian trap basalts and sulphide-bearing intrusions: the key for understanding Permian-Triassic boundary, supervisor Dr. Michael Bizimis), **$46,000** (2022-2023) — *2022*
- Prize for young scientists of the Siberian Branch of the Russian Academy of Sciences (Geochemistry, magmatism and ore-forming processes in mafic-ultramafic complexes with sulphide mineralization), individual award **100,000₽** — *2021*
- Personal scholarship by the Governor of the Irkutsk region, individual award, **50,000₽** — *2020*
- Russian Foundation for Basic Research grant. *Metasomatic alterations in the aureole of the Kharaelakh intrusion and their link with Cu-Ni-PGE mineralization of the Oktyabrsk deposit, Talnakh ore district, Siberian craton*. Co-PI (PI: Alexei Ivanov) **1200,000₽** — *2019–2021*
- Russian Science Foundation grant No 16-17-10068. *Mafic volcanism of the Siberian Craton: sources based on trace element and Sr- Nd–Pb isotope data*. Co-I, **3000,000₽** — *2018–2019*
- Russian Science Foundation grant No 16-17-10145 *Evolution of the system "melt-fluid", magmatic immiscibility and the balance for chalcophile and noble metals in the arc magmas*. Co-I, **3000,000₽** — *2018–2019*

Publications – Citations: 238; h-index: 11; i10-index: 12 (Google Scholar)

13 **Marfin A.E.**, Brzozowski M., Lightfoot P., Ding X., Bizimis M., Rader S., Karnes M., Brovchenko V., Radomskaya T., Ivanov A., Belozerova O. (2025) The role of metasomatized lithospheric mantle to generating the Norilsk 1 Cu-Ni-platinum-group element sulfide deposit: Cu isotope evidence. Chemical Geology, 695, 123034 https://doi.org/10.1016/j.chemgeo.2025.123034

12 **Marfin A. E.**, Bizimis M., Lightfoot P., Yogodzinski G., Ivanov Alexei, Brzozowski M., Latyshev A., Radomskaya T. (2024) Constraints on the source of Siberian Trap magmas from Mo isotope evidence. Geochimica et Cosmochimica Acta,

375, 106-122 https://doi.org/10.1016/j.gca.2024.05.013

11 Pashkova, G. V., Zhilicheva, A. N., Chubarov, V. M., Maltsev, A. S., Ukhova, N. N., Pellinen, V. A., Sokolnikova J. V., Kirsanov D. O., Panchuk V. V., **Marfin, A. E.** (2022). Improvement of suspension-assisted total reflection X-ray fluorescence analysis of ores using wet grinding and empirical calibrations. Spectrochimica Acta Part B: Atomic Spectroscopy, 198, 106549 https://doi.org/10.1016/j.sab.2022.106549

10 Bagdasaryan, T. E., Thomson, S. N., Latyshev, A. V., Veselovskiy, R. V., Zaitsev, V. A., **Marfin, A. E.**, Zakharova, V.S., Yudin, D. S. (2022). Thermal history of the Siberian Traps Large Igneous Province revealed by new thermochronology data from intrusions. Tectonophysics, 836, 229385 https://doi.org/10.1016/j.tecto.2022.229385

9 Dokuchits, E. Y., Jiang, S. Y., Stepanov, A. S., Zhukova, I. A., Radomskaya, T. A., **Marfin, A. E.**, Vishnevskiy, A. V. (2022). Geochemistry of Ca-(K)-(Na) silicates from charoitites in the Sirenevyi Kamen gemstone deposit, Murun Complex, Eastern Siberia. Ore Geology Reviews, 104787 https://doi.org/10.1016/j.oregeorev.2022.104787

8 Ivanov, A.V., Corfu, F., Kamenetsky, V.S., **Marfin, A.E.**, Vladykin, N.V. (2021) ^{207}Pb-excess in carbonatitic baddeleyite as the result of Pa scavenging from the melt. Geochemical Perspectives Letters 18, 11-15. https://doi.org/10.7185/geochemlet.2117

7 Malyshev, S., Ivanov, A., Khudoley, A., **Marfin, A.**, Kamenetsky, V., Kamenetsky, M., Lebedeva, O. (2021). Global Implication of Mesoproterozoic (1.4 Ga) Magmatism Within Sette-Daban Range (Southeast Siberia). Scientific Reports 11, 20484 https://doi.org/10.1038/s41598-021-00010-5

6 Maltsev, A. S., Ivanov, A. V., Pashkova, G. V., **Marfin, A. E.**, Bishaev, Y. A. (2021). New prospects to the multi-elemental analysis of single microcrystal of apatite by total-reflection X- ray fluorescence spectrometry. Spectrochimica Acta Part B: Atomic Spectroscopy, 184, 106281 https://doi.org/10.1016/j.sab.2021.106281

5 **Marfin, A.E.**, Radomskaya, T.A., Ivanov, A.V., Kamenetsky, V.S., Kamenetsky, M.B., Yakich, T.Yu., Gertner, I.F., Kamo, S.L., Ernst, R.E., Pisarevsky, S.A., Glazunov, O.M. (2021) U–Pb dating of apatite, titanite and zircon of the Kingash mafic-ultramafic massif, Kan terrane, Siberia: from Rodinia break-up to the reunion with the Siberian Craton. Journal of Petrology, egab049 https://doi.org/10.1093/petrology/egab049

4 Shendrik, R., Kaneva, E., Radomskaya, T., Sharygin, I., **Marfin, A.** (2021) Relationships between the Structural, Vibrational, and Optical Properties of Microporous Cancrinite. Crystals, 11(3), 280 https://doi.org/10.3390/cryst11030280

3 **Marfin, A.E.**, Ivanov, A.V., Abramova, V.D., Anziferova, T.N., Radomskaya, T.A., Yakich, T.Y., Bestemianova, K.V. (2020) A Trace Element Classification Tree for Chalcopyrite from Oktyabrsk Deposit, Norilsk–Talnakh Ore District, Russia: LA-ICPMS Study. Minerals, 10(8), 716 https://doi.org/10.3390/min10080716

2 **Marfin, A.E.**, Ivanov, A.V., Kamenetsky, V.S., Abersteiner, A., Yakich, T.Y., Dudkin, T.V. (2020) Contact metamorphic and metasomatic processes at the Kharaelakh intrusion, Oktyabrsk deposit, Norilsk-Talnakh ore district: Application of LA-

ICP-MS dating of perovskite, apatite, garnet, and titanite. Economic Geology, 115(6), 1213-1226 https://doi.org/10.5382/econgeo.4744

1 Yakich, T., Brzozowski, M., Chernishov, A., Grieco, G., Savinova, O., Timkin, T., **Marfin, A.** (2020). Petrological features of the burlakski and nizhne-derbinsk mafic-ultramafic plutons (East Sayan mountains, Siberia, Russia). Minerals, 10(2), 119

Selected Conference Abstracts

10 **Marfin A.**, Bizimis M., Antonelli M., Lightfoot P., Brzozowski M., Lapen T. Thallium isotopic constraints on the role of recycled components in the source of Siberian Trap basalts. Goldschmidt 2026

9 DeKoekkoek G., Antonelli M., Yakymchuk C., **Marfin A.**, Day J. Calcium isotope variability in São Miguel lavas (Azores) and implications for mantle source heterogeneity and the deep carbon cycle. Goldschmidt 2026

8 Guess Z., Antonelli M., **Marfin A.**, Simon J., Lapen T. A Fresh Look at an Old Moon: Calcium Isotope Constraints on Lunar Differentiation from Previously Unstudied Lunar Meteorites. Goldschmidt 2026

7 Bizimis M., Day J. M., Khanna T., **Marfin, A.**, Kolomiets E. R., Yildirim, D. K. 2025, Plume head and tail: The Deccan-Reunion Molybdenum connection. In 2025 AGU Conference, New Orleans.

6 **Marfin A.**, Brzozowski M., Lightfoot P., Ding X., Bizimis M., Rader S., Karnes M., Brovchenko V., Radomskaya T., Ivanov A, Belozerova O. 2025, December. Contributions of metasomatized lithosphere or asthenosphere to the formation of magmatic Ni-Cu-PGE deposits: Evidence from the Norilsk 1 deposit. In 2025 AGU Conference, New Orleans.

5 **Marfin A.**, Radomskaya T., Reguir E., Ivanov A., Chakhmouradian A., Vladykin N., Demonterove E., Suvorova L., Chueshova A., and Gavrilenko A. 2025, December. Differentiated alkali-mafic-ultramafic Inagli intrusion (Aldan Shield, Russia): evidence for alkali magmatism in paleosubduction zones. In 2025 AGU Conference, New Orleans.

4 **Marfin A.**, Ding X., Rader S.T., Bizimis M., Brzozowski M., and Ivanov, A., 2024, August. Thallium and copper isotope compositions for Norilsk sulfide ores. In 2024 Goldschmidt Conference, Chicago.

3 Rader S.T., **Marfin** A., Davydova V., Karnes M., and Shcherbakov V.D. 2024, August. Thallium isotopic data unravel heterogeneity beneath Kamchatka arc. In 2024 Goldschmidt Conference, Chicago.

2 **Marfin A. E.**, Bizimis M., Lightfoot P., Yogodzinski G., Ivanov A., Brzozowski M., Latyshev A., Radomskaya T. Molybdenum isotope composition of Siberian traps basalts: implications for source contributions. GSA Connects 2023 At: Pittsburgh. Volume: 55, 2023.

1 **Marfin A.E.**, Ivanov A.V., Pashkova G.V., Brzozowski, M.J., Radomskaya T.A., Chubarov, V.M. S/Se ratio of sulfide ores and potential crustal contaminants of the Oktyabrsk deposit, Norilsk-Talnakh ore district. 14th International Ni-Cu-PGE and Naldrett Memorial Symposium – November 2020 (virtual meeting).

Open-source project

- GeoQuick — open-source web application for rapid visualization and collaborative analysis of geochemical data (Python, Streamlit, Plotly, 2024–present)
  – Single-handedly developed as a research tool for geochemical data analysis
  – Available online: https://github.com/Alexander13632/geochem-streamlit
  – Currently in active development

Service

Journal Reviewer	Geochimica et Cosmochimica Acta | Geology | Chemical Geology | Journal of Petrology | Geochemistry, Geophysics, Geosystems | Lithos | Mineralium Deposita | Geophysical Research Letters | SGR Solid Earth

Students Mentored/Advised

	Thesis/Dissertation Committee member	
Grant A. DeKoekKoek (University of Houston)		2025-

Teaching

Guest lecturer	Partial melting, fractional crystallization, assimilation (Geol 1303: Physical Geology), University of Houston, February 13, 2026 Volcanoes (Geol 1303: Physical Geology), University of Houston, February, 16 2026
Guest lecturer	Introduction to Pb isotopes: Track mantle sources with Pb isotopes (Geol 6397: Isotopics), University of Houston, February, 2026
Guest lecturer	Introduction in Radiogenic Isotope, Indiana University Bloomington, April, 2024 Native metal deposits, Indiana University Bloomington, April, 2024
Training	Trained users in clean lab techniques, including sample preparation and column chemistry for Mo and Tl. University of South Carolina, Indiana University Bloomington

Work and analytical expertise

- Experienced with the application of laser ablation quadrupole mass-spectrometry for U–Pb dating and trace-element chemistry using an Agilent 7900 ICP–MS.
- Competent in wet chemical methods for preparation of samples for Sr, Nd, Hf, Mo, Tl, Zn isotope analyses, including chromatographic methods, and use of multi-collector ICP–MS.
- Experienced with the application of confocal Raman spectrometry to help determine the mineralogy of fine-grained aggregates using a WITec Alpha 300R.
- Strong understanding of Iolite (4.0), ArcGIS, MassHunter, Python, R, and Adobe Photoshop and Illustrator.
- Proficient in mineral characterization via transmitted- and reflected-light microscopy.
- Skilled in the preparation of polished thin sections and mineral separation (e.g., zircon,

apatite) via chemical and physical methods.

Outreach and Public Engagement

- Serving as an elementary school poster judge at St. Mary of the Purification Catholic School, February, 2026
- Volunteer in Letters to a Pre-Scientist program for students, October-April, 2025 https://prescientist.org
- Participant in Jim Holland Research Initiative in STEM Education (RISE) program for underrepresented high school students, July, 2024 https://biology.indiana.edu/about/outreach/k-12-students/holland-summer-science-programs/holland-rise.html
- Participant in Science Fest at Indiana University Bloomington, engaging with the public through interactive science demonstrations and presentations, April, 2024 https://sciencefest.indiana.edu/index.html