

Dr. Arindam Malakar, Ph.D. (he/him)

Curriculum Vitae

The University of Nebraska Lincoln
School of Natural Resources
Nebraska Water Center, Daugherty Water for Food Global Institute
135 Keim Hall, 1825 N 38th St., Lincoln, Nebraska 68583-0844
Phone# (402) 472 3253
Email# amalakar2@unl.edu, arindam.malakar12@gmail.com

CURRENT POSITION

August 2022 – Present **Co-founder**
Rootzone Solutions, LLC., Omaha, Nebraska, USA
(www.rootzone.us)

June 2021 – Present **Research Assistant Professor**
University of Nebraska-Lincoln, Nebraska, USA

ACADEMIC EMPLOYMENT

Jan. 2021 – May 2021 **Lecturer/T**
School of Natural Resources, University of Nebraska-Lincoln, USA

Jan. 2020 – May 2020 **Lecturer/T**
School of Natural Resources, University of Nebraska-Lincoln, USA

May 2017 – June 2021 **Post-Doctoral Research Associate**
Water Sciences Laboratory, Nebraska Water Center, University of
Nebraska-Lincoln, USA

Feb. 2017 – May 2017 **Research Associate – I**
Indian Association for the Cultivation of Science, India

May 2016 – Nov. 2016 **Water Advanced Research and Innovation Internship**
University of Nebraska-Lincoln, USA

Oct. 2012 – May 2016 **Senior Research Fellow**
Indian Association for the Cultivation of Science, India

Sep. 2010 – Sep. 2012 **Junior Research Fellow**
Indian Association for the Cultivation of Science, India

EDUCATION

May 2017 – June 2021 **Post-Doctoral Research** (Environmental Chemistry)
Nebraska Water Center, University of Nebraska-Lincoln, USA

Sep. 2010 – April 2017 **Ph.D.** (Chemistry) Department of Materials Science, Indian
Association for the Cultivation of Science and Department of
Chemistry, University of Calcutta, India. (Environmental Materials
Science)

- Thesis: Using Nanotechnology and Membrane Engineering for Effective Desalination of Water
- 2008 – 2010 **M.S.** (Chemistry (Distinction)) Department of Chemistry, Banaras Hindu University, Varanasi, India. Minor in Resources and Environmental Management.
Thesis: 3D Polymers Synthesis Based on Carboxylate Ligands
- 2005 – 2008 **B.S.** (Chemistry (Honors)) Department of Chemistry, the University of Burdwan, Burdwan, India. Minor: Physics, Mathematics, and Environmental Science

GRANTSMANSHIP

Awarded (\$2,577,504)

- 2023 – Kaiser, M. and **Malakar, A.** (2023-2025). Nebraska Center for Energy Sciences Research. Energy Research Grants - Cycle 17. “Maximizing soil carbon storage and reducing nitrogen losses by combining biochar, cover crops, and no-till.” \$170,000.
- 2022 – Ray, C. and **Malakar, A.** (2022-2027). USDA-ARS Co-operative agreement, “Development of Data Bases for Model Development and Field Testing of Crop Models in Mid-West Farms.” \$790,000.
- 2022 – **Malakar, A. (PI-US)**, Snow, D. D., and Kalmakhanova M. S. (PI-KZ). (2022-2025). Ministry of Education and Science, Kazakhstan. “CECs in Urban Wastewater of Kazakhstan.” \$17,400.
- 2022 – **Malakar, A. (PI)**, Haacker, E., Ray, C., and Snow, D. D. (2022-2026). USDA-NIFA-AFRI Foundational and Applied Science Program A1411. “Identifying Reactive Nitrogen Dynamics in the Deep Vadose Zone to Protect Groundwater Quality.” \$749,861.
- 2021 – Iqbal, J., Johnson, L., **Malakar, A.**, Milander, J., Proctor, C., Schmidt, A., and Snow, D. D. (2022-2025). USDA-NIFA-AFRI Foundational and Applied Science Program A1701. “Demonstrating an integrated nutrient management approach for improving drinking groundwater quality in Nebraska.” \$298,631.
- 2021 – Snow, D. D., **Malakar, A.**, Marzhan, K., Sagin, J., Niktin, Y., Sviderskiy, Y., Balaz, M., Uralbekov, B., and Satybaldiev, B. (2021-2022) American Councils US-Kazakhstani Universities Partnerships program grant. “Science with a Purpose: Improving Environmental Science in Kazakhstani Universities.” \$35,798.
- 2021 – Kaiser, M., **Malakar, A.**, and Koehler-Cole, K. (2021-2024). University of Nebraska - Lincoln, Agricultural Research Division/Nebraska Agricultural Experiment Station. Hatch Multistate Enhancement Program. “Maximizing soil agro-ecosystem services by combining cover cropping under no-till with application of biochar derived from waste wood of invasive Red Cedar.” \$149,275.
- 2021 – Snow, D.D., **Malakar, A.**, and Ray, C. (2021-2025). Upper Big Blue NRD. “Vadose Zone Nitrate Accumulation Upper Big Blue Natural Resources District, Relation to Fertilizer Management and Groundwater Nitrate Concentrations.” \$297,104.

Project Completed

- 2021 – Kaiser M., **Malakar A.**, and Snow D. D. (2021-2022). University of Nebraska - Lincoln, Office of Research and Economic Development, Research Council: Competitive Faculty Seed Grants - Layman Fund. “Identifying Nitrogen Dynamics in the Vadose Zone.” \$10,000.
- 2020 – Kaiser M., Snow D., Ray C., **Malakar A.**, Miller D., and D’Alessio, M. (2021-2022). U.S. Geological Survey 104(b). “Evaluation of nitrogen-based redox processes in the vadose zone.” \$20,000.
- 2019 – **Malakar, A.** (2019-2020). University of Nebraska-Lincoln, Postdoctoral Travel Grant. “American Chemical Society Spring 2020 National Meeting and Expo.” \$750.
- 2016 – **Malakar, A.**, Water Advanced Research and Innovation (WARI) Fellowship, Department of Science and Technology, University of Nebraska Lincoln and Indo-US Science and Technology Forum. \$16,953.
- 2012 – **Malakar, A.**, Senior Research Fellowship, Council for Scientific and Industrial Research, India. \$12,680, funding for Graduate Research Fellowship.
- 2010 – **Malakar, A.**, Junior Research Fellowship, Council for Scientific and Industrial Research, India. \$9,052, funding for Graduate Research Fellowship.

Pending

- 2022 – **Malakar, A.**, Das Choudhury, Roy, T., Snow, D. D., Ray, C., Mohanty, S., and Kougianos, E., (2023-2027). USDA NIFA AFRI Program A1541 “DSFAS: EasyAgro – Smart Agriculture Artificial Intelligent Predictive Decision Support Tool for Creating Resilient and Sustainable Agroecosystem.” Requested amount: \$650,000.

Declined

- 2022 – Luck, J., Balboa, G., Brown-Brandl, T., Clarke, J., Cordova, C., Erickson, G., Feit, B., Ge, Y., Ingram, E., Keshwani, J., **Malakar, A.**, Mieno, T., Mittelstet, T., Neale, C., Pitla, S., Puntel, L., Thompson, L., VanderPlas, S., Watson, A., Xiong, Y., and Yu, H. (2023-2027). USDA NIFA AFRI CAFF Program A1566, “Growing Climate Smart Practices across the Midwest: Nebraska Future Agriculture Research & Management Systems (NFARMS)” Requested amount: \$4,000,000.
- 2022 – **Malakar, A.**, Ray, C., and Snow, D. D., (2023-2024). USDA NIFA SBIR/STTR, “Rootzone Solutions: Soil Nanoamendment for Improving Fertilizer Use Efficiency and Enhance Carbon Sequestration in Agroecosystem.” Requested amount: \$175,000
- 2022 – Rose, D., Auchtung, J., Raimer-Tait, A., **Malakar, A.**, and Frels, K. (2023-2025). USDA NIFA AFRI, “Reducing cadmium availability from food by protecting the gut microbiota of children from cadmium-related dysbiosis.” Requested amount: \$649,782.
- 2022 – Maharjan, B., Ge, Y., Schimdt, A., Suyker, A., Westra, J., Ray, C., Bruns, K., Basche, A., **Malakar, A.**, Akin, H., Blanco, H., Brooks, K., Menza, N. C. L., Creech, C., Daigh, A., Iqbal, J., Kaiser, M., Liska, A., McClure, G., Meredith, G., Milander, J., Nogueira-Rodriguez, L., Qiao, X., Qi, Y., Roy, T., Santra, D., Snow, D. D., Stephenson, M., Stone G., Timmerman, A., Walters, C., and Yang, H. (2022-2026). USDA Partnerships for

- Climate-Smart Commodities “Partnerships for Climate Smart Production: Statewide Pilot Studies in Nebraska” Requested amount: \$29,194,159.
- 2022 – Jongwan, E., Park, J. S., Song, C., **Malakar, A.**, and Kaiser, M. (2022-2026). NSF-SitS 22-550 “SitS: Assessing organic carbon and nitrogen dynamics in vadose zone via a real-time, less-invasive, highly mobile *in situ* penetrometer sensing system.” Requested amount: \$1,200,000.
- 2022 Snow, D. D., Liska, A., **Malakar, A.**, and Ray, C. (2023-2025) Nebraska Center for Energy Sciences Research. Energy Research Grants - Cycle 17, Pre-Proposal. “Novel microbial amendments for increased soil organic carbon sequestration on cropland: Measurements and modeling.” Requested amount: \$170,000.
- 2021 – Mohanty, S., **Malakar, A.**, Ray, C., Kougianos, E., and Snow, D. D. (2022-2025). NSF-CSSI 21-617 “Framework: EasyAgro: Smart Agriculture Decision Tool for Creating Resilient and Sustainable Agroecosystem under Climate Stress.” Requested amount: \$1,898,055.
- 2021 – Kaiser, M., Maharjan, B., Koehler-Cole, K., and **Malakar, A.**, (2022-2024). Nebraska Center for Energy Sciences Research. Energy Research Grants - Cycle 16. “Sustainable agriculture and soil carbon sequestration via synergy of no-till, biochar, and cover crops.” Requested amount: \$170,000.
- 2021 – Mohanty, S., Kougianos, E., Liska, A., **Malakar, A.**, Ray, C., and Snow, D. D. (2022-2025). USDA-NIFA-AFRI Foundational and Applied Science Program A1541 “DSFAS: Blockchain for Water and Nitrogen Management in the Ogallala Aquifer Region of Nebraska.” Requested amount: \$400,000.
- 2021 Snow, D. D., Liska, A., **Malakar, A.**, and Ray, C. (2022-2024) Nebraska Center for Energy Sciences Research. Energy Research Grants - Cycle 16, Pre-Proposal. “Novel microbial amendments for increased soil organic carbon sequestration on cropland: Measurements and modeling.” Requested amount: \$170,000.
- 2021 – Snow, D. D., **Malakar, A.**, Panther, G., and Ray, C. (2021-2024). U.S. Geological Survey 104g. “Know Your Well Youth Led Water Science for Safe Rural Drinking Water.” Requested amount: \$247,642.
- 2021 – Snow, D. D., Li, Y., and **Malakar, A.** (2022-2026). USDA-NIFA-AFRI Foundational and Applied Science Program A1511. “Protective effect of 2-line Ferrihydrite in controlling mobility and uptake of contaminants and nutrients in the rhizosphere.” Requested amount: \$649,008.
- 2021 – Kaiser, M., Koehler-Cole, K., and **Malakar, A.** (2021-2024). USDA-NRCS-NE-CCA-21. “Improving soil health due to maximizing soil carbon storage by using biochar application as a Carbon Amendment Practice in cover crop systems under no-till.” Requested amount: \$349,538.
- 2019 – Kaiser, M., Cooper, J., **Malakar, A.**, and Snow, D. D. (2020-2023). Nebraska Environmental Trust. “Increasing soil nutrient and water retention due to application of iron coated biochar.” Requested amount: \$267,131.

2019 – Kaiser, M., Cooper, J., **Malakar, A.**, and Snow, D. D. (2020-2023). USDA-NIFA-AFRI Foundational and Applied Science Program. “Increasing soil nutrient, water, and organic matter retention by self-functionalization of biochar surface due to interactions with iron.” Requested amount: \$496,814.

PUBLICATIONS

Google Scholar (March 08th, 2023)

Citations 331; h-index 8; i-10-index 8

Articles

1. Beegum, S., **Malakar, A.**, Ray, C., and Snow, D. D., (2023). Importance of snowmelt on soil nitrate leaching to groundwater—A model study. *Journal of Contaminant Hydrology*, 255, 104163.
2. Satybaldiyev, B., Ismailov, B., Nurpeisov, N., Kenges, K., Snow, D., **Malakar, A.**, and Uralbekov, B., (2023) Evaluation of dissolved and acid-leachable trace element concentrations in relation to practical water quality standards in the Syr Darya, Aral Sea Basin, South Kazakhstan. *Chemosphere*, 313, 137465.
3. Cooper, J. A.*, **Malakar, A.***, and Kaiser, M., (2023). Self-functionalization of soil-aged biochar surfaces increases nitrate retention. *Science of the Total Environment*, 861, pp.160644.
*Co-first author
4. Ray, C., **Malakar, A.**, and Snow, D. D., (2022). Response to Groundwater Storage Recovery Raises the Risk of Nitrate Pollution by Min et al. (Vol 56, #1 pages 8-9). *Environmental Science & Technology*, 56(5), pp. 2841-2842.
5. Cooper, J., Drijber, R. A., **Malakar, A.**, Jin, V. L., Miller, D. N., and Kaiser, M., (2022). Evaluating coal char as an alternative to biochar for mitigating nutrient and carbon loss from manure amended soils – insights from a greenhouse experiment. *Journal of Environmental Quality*, 52(2), pp. 1-16.
6. Borah, P., Chetan, Sharma, V., **Malakar, A.**, Bhinder, S. S., Kansal, S. K., and Devi, P. A., (2022). Facile Method for detection and speciation of inorganic selenium with ion chromatography. *Chromatographia*, 85, pp. 213-218.
7. **Malakar, A.**, Snow, D. D., Kaiser, M., Shields, J., Maharjan, B., Walia, H., Rudnick, D., and Ray, C., (2022) Ferrihydrite enrichment in the rhizosphere of unsaturated soil improves nutrient retention while limiting arsenic and uranium plant uptake *Science of the Total Environment*, 806(4), pp.150967.
8. Panda, B., Chidambaram, S., Snow, D. D., **Malakar, A.**, Alagappan, R., Singh, D. K., and Elumalai, V., (2022). Source apportionment and health risk assessment of nitrate in foothill aquifers of Western Ghats, South India. *Ecotoxicology and Environmental Safety*, 229(1), pp. 113075.
9. **Malakar, A.**, Singh, R., Westrop, J., Weber, K. A., Elofson, C. N., Kumar, M., and Snow, D. D., (2021) Occurrence of arsenite in surface and groundwater associated with a perennial stream located in Western Nebraska, USA. *Journal of Hazardous Materials*, 416, pp. 126170.
10. **Malakar, A.**, Kanel, S. R., Ray, C., Snow, D. D., and Nadagouda, M. N., (2021). Nanomaterials in the environment, human exposure pathway, and health effects: A review. *Science of the Total Environment*, 759, pp.143470.

11. **Malakar, A.**, Kaiser, M., Snow, D. D., Walia, H., Panda, B., and Ray, C., (2020). Ferrihydrite reduction increases arsenic and uranium bioavailability in unsaturated soil. *Environmental Science & Technology*, 54(21), pp.13839-13848.
12. Islam, S., Das, S., Mishra, G., Das, B., **Malakar, A.**, Carlomagno, I., Meneghini, C., De Giudici, G., Gonçalves, L. P., Sousa, J. P., and Kolen'ko, Y. V., (2020). Coagulating and flocculating ferrihydrite: application of zinc acetate salt. *Environmental Science: Water Research & Technology*, 6(8), pp.2057-2064.
13. Snow, D. D., Cassada, D. A., Biswas, S., **Malakar, A.**, D'Alessio, M., Marshall, A. H. L., and Sallach, J. B., (2020). Detection, occurrence, and fate of emerging contaminants in agricultural environments (2020). *Water Environment Research*, 92(10), pp.1741-1750.
14. Panday, D., Mikha, M. M., Collins, H. P., Jin, V. L., Kaiser, M., Cooper, J., **Malakar, A.**, and Maharjan, B., (2019). Optimum rates of surface-applied coal char decreased soil ammonia volatilization loss. *Journal of Environmental Quality*, 49(2), pp. 256-267.
15. **Malakar, A.**, Snow, D. D., and Ray, C., (2019). Irrigation water quality — A contemporary perspective. *Water*, 11(7), pp.1482.
16. Snow, D. D., Cassada, D. A., Biswas, S., **Malakar, A.**, D'Alessio, M., Carter, L. J., Johnson, R. D., and Sallach, J. B., (2019) Detection, occurrence, and fate of emerging contaminants in agricultural environments (2019). *Water Environment Research*, 91(10), pp.1103-1113.
17. **Malakar, A.**, Islam, S., Ali, M. A., and Ray, S., (2016). Rapid decadal evolution in the groundwater arsenic content of Kolkata, India and its correlation with the practices of her dwellers. *Environmental Monitoring and Assessment*, 188(10), pp.1-11.
18. **Malakar, A.**, Das, B., Islam, S., Meneghini, C., De Giudici, G., Merlini, M., Kolen'ko, Y. V., Iadecola, A., Aquilanti, G., Acharya, S., and Ray, S., (2016). Efficient artificial mineralization route to decontaminate Arsenic (III) polluted water – The Tooeleite Way. *Scientific Reports - Nature*, 6(1), pp.1-10.
19. **Malakar, A.**, Das, B., Sengupta, S., Acharya, S., and Ray, S., (2014). ZnS nanorod is an efficient heavy metal ion extractor from water. *Journal of Water Process Engineering*, 3, pp.74-81.

Patents

20. **Malakar, A.**, Ray, C., and Snow, D. D., (2022). Patent, “Nanotechnology-based soil amendment for improving crop yield, soil carbon and nutrient use efficiency,” 63/376,002, Provisional, United States.
21. Ray, S., Islam, S., and **Malakar, A.**, (2020). Patent, “Method for instantaneous 2-line ferrihydrite synthesis in-situ using layered hydroxides and its consequent use in removing arsenic and other contaminants from groundwater and industrial wastewater,” 315405, Regular, India.
22. **Malakar, A.**, Das, B., Islam, S., Acharya, S., and Ray, S., (2020). Patent, “New Method for permanent removal of arsenic(III) from contaminated water,” 316110, Regular, India.

Book

23. Singh, P., Devi, P., **Malakar, A.**, and Snow, D. D. eds. (2021). *Selenium Contamination in Water*. Wiley, United Kingdom.

Book Chapters

24. Kanel, S. R., Nadagouda, M. N., Nakarmi, A., **Malakar, A.**, Ray, C., and Pokhrel, L. R., (2022). Assessment of health, safety, and economics of surface-modified nanomaterials for catalytic applications: a review In. *Surface Modified Nanomaterials for Applications in Catalysis*. Elsevier
25. **Malakar, A.**, Cooper, J. A., (2022). Nanotechnology at the Juncture of Water, Food, and Energy Nexus: Boon or Bane? In: Ray, C., Muddu, S., Sharma, S. (eds) *Food, Energy, and Water Nexus*. Springer, Cham. https://doi.org/10.1007/978-3-030-85728-8_13
26. Panda, B., Chidambaram, S., and **Malakar, A.**, (2021). Survival of SARS-CoV-2 in untreated and treated wastewater - A Review. In *Environmental Resilience and Transformation in times of COVID-19*. Elsevier
27. **Malakar, A.** and Snow, D. D., (2020). Nanoparticles as sources of inorganic water pollutants. In *Inorganic Pollutants in Water* (pp. 337-370). Elsevier
28. Panda, B., Radha, V. D., Chidambaram, S., **Malakar, A.**, Thilagavathi, R., Manikandan, S., Thivya, C., Ramanathan, A.L., and Ganesh, N., (2019). Fluoride contamination in groundwater—A GIS and geostatistics reappraisal. In *GIS and Geostatistical Techniques for Groundwater Science* (pp.309-322). Elsevier

Conference Proceedings (*Graduate Student, ^Undergraduate Student)

29. Srivastava, S.*, Kumar, N.*, **Malakar, A.**, Das Choudhury, S., Ray, C., Roy, T., (2023). An ML-based Probabilistic Approach for Irrigation Scheduling. European Geophysical Union General Assembly 2023, , 24 – 28 April, 2023, EGU23-8388, Vienna, Austria.
30. Kaiser M., Anuo C.*, Moreland K. C., McFarlane K. J., Li. L., Cooper J., and **Malakar A.**, (2022). Storage and Persistence of Organic Carbon in 0 to 3 m Soil Depth: Insights from 22 Arable and Native Prairie Sites in Nebraska, AGU Fall Meeting, December 11 – 16, Chicago, IL.
31. Ukwishaka, Y.*, Fleisher, D., Timlin, D., Ray, C., Reddy, V., and **Malakar, A.**, (2022). Developing Next Generation Cropping System Model for Efficient Agroecosystem [Poster session]. Water Integrated Cropping System (WICS) Conference, November 30 – December 01, Lincoln, Nebraska.
32. Kaiser M., Li, L., Hosseiniaghdam, E., Snow, D. D., **Malakar A.**, Shields, J.*, Vormstein, S., Piepho, H. -P., and Ludwig, B., (2022). 2022 ASA, CSSA, SSSA International Annual Meeting, November 06 – 09, Baltimore, MD.
33. Fossum, B.*, **Malakar, A.**, Koehler-Cole, K., and Kaiser, M., (2022). Combining Application of Biochar with Cover Cropping Under No-till to Improve Carbon, Water, and Nutrient Retention in Agricultural Soil [Poster session], ASA, CSSA, SSSA International Annual Meeting, November 06 – 09, Baltimore, MD.
34. Ukwishaka, Y.*, Fleisher, D., Timlin, D., Ray, C., Reddy, V., and **Malakar, A.**, (2022). Developing Next Generation Cropping System Model for Efficient Agroecosystem [Poster session]. WaterSmart Innovations Conference & Exposition, October 04 – 06, Las Vegas, Nevada.

35. Ndayishimiye, E.[^], Ishimwe, J.[^], Dushimeyesu, J.[^], Ukwishaka, Y.*, Beegum, S., Sun, W., Fleisher, D., Timlin, D., Ray, C., Reddy, V. and **Malakar, A.**, (2022). Crop Growth And Soil Studies For Model Verification And Validation [Poster session]. College of Agriculture and Natural Resource's Undergraduate Scholars Program (CUSP) Experiential Learning Expo, September 02, Lincoln, Nebraska.
36. Kaiser, M., Cooper, J. A., Drijber, R., **Malakar, A.**, Jin, V. L., and Miller, D. N., (2021). Efficiency of coal char versus biochar in reducing nutrient and carbon losses from manure amended soils - Insights from a greenhouse experiment, AGU Fall Meeting 2021, December 13 – 17.
37. **Malakar, A.**, Ray, C., Rudnick, D., Maharjan, B., and Snow, D. D., (2020). Natural iron dynamics in irrigated soils, SETAC North American 41st Annual Meeting, November 15 – 19, Platform Oral Presentation.
38. **Malakar, A.**, Ray, C., Snow, D. D., Saluja, M., Cooper, J. A., Kaiser, M., Walia, H., and Roberts, T., (2020). Ferrihydrite soil amendment limit arsenic uptake in rice by promoting iron plaque formation, ACS Fall 2020 Virtual Meeting & Expo, August 17 – 20, Oral Presentation.
39. **Malakar, A.**, Kaiser, M., Snow, D. D., and Ray, C., (2020). Ferrihydrite dissolution at the root zone of crops under semi-arid condition controls the plant uptake of uranium and arsenic (final paper number: ENVR 243), ACS Spring 2020 National Meeting & Expo, March 22 – 26, Oral presentation.
40. **Malakar, A.**, Kaiser, M., Snow, D. D., and Ray, C., (2019). Impact of ferrihydrite transformation on the bioavailability of arsenic and uranium in intermittently irrigated soils, AGU Fall Meeting 2019, December 7 – 11.
41. Cooper, J. A., **Malakar, A.** and Kaiser, M., (2019). Self-Functionalization of Soil-Aged Biochar Surfaces by Iron Increases Nitrate Retention, AGU Fall Meeting 2019, December 7 – 11.
42. Snow, D. D. and **Malakar, A.**, (2018). Detecting changing water quality in intensive food production systems, Indo-US bilateral workshop on Water-Food-Energy-Climate nexus: A perspective towards a sustainable future (WFEC nexus 2018).
43. **Malakar, A.**,* (2016). The tooeliete story, International Conference on Industrial Chemistry June 27 – 28.

Media Coverage of Research or Interviews

44. Alamdari, N. and Hansen, M., “Can new technology save Nebraska’s water?” *Lincoln Journal Star*, December 31st, 2022. Readership 76,374.
45. Alamdari, N. and Hansen, M., “Can new technology save Nebraska’s water?” *Flatwater Free Press*, December 24th, 2022.
46. Schrage, S. “Adding mineral to irrigation may lower toxic elements in soils.” *Phys.Org*, November 24th, 2021.
47. Schrage, S. “Without a trace? Adding mineral to irrigation may lower toxic elements in soils.” *Nebraska Today*, November 24th, 2021.
48. Niyogi, S. “City losing fight against arsenic; north worst-hit.” *Times of India*, October 16th, 2016. Readership 1,590,784.

49. Ghosal, A. "Arsenic contamination in water alarming in 100 Kolkata Municipal Corporation wards." *The Indian Express*, October 14th, 2016. Readership 312,500.
50. Karenjay, J. "Arsenic toxicity in more than 100 wards of the megacity." *Ei Samay*, October 14th, 2016. Readership 243,273.
51. Karenjay, J. "Arsenic free water Bengal scientists show a path forward." *Ei Samay*, July 06th, 2016. Readership 243,273.

TEACHING EXPERIENCE

University

- | | |
|-------------|--|
| Fall 2022 | Soil Carbon & Nitrogen Dynamics (AGRO985), The University of Nebraska, Lincoln, Nebraska, USA |
| Spring 2022 | Independent Research Study (NRES 399), undergraduate research. The University of Nebraska, Lincoln, Nebraska, USA |
| Spring 2021 | Fundamentals of Environmental Sampling (NRES 319). The University of Nebraska, Lincoln, Nebraska, USA |
| Spring 2021 | Environmental Sampling Laboratory (NRES 320). The University of Nebraska, Lincoln, Nebraska, USA, with outdoor and field-based study settings. |
| Spring 2020 | Fundamentals of Environmental Sampling (NRES 319). The University of Nebraska, Lincoln, Nebraska, USA |
| Spring 2020 | Environmental Sampling Laboratory (NRES 320). The University of Nebraska, Lincoln, Nebraska, USA, with outdoor and field-based study settings. |

RESEARCH EXPERIENCE

- | | |
|-----------------------|---|
| June 2021 – Present | Research Assistant Professor, the University of Nebraska, Lincoln, Nebraska USA. <i>Currently supervising two undergraduate students, and one master's student. Co-supervising three Ph.D. and two Master's students. Graduated one MS student (Major: Natural Resource Sciences) and one Undergraduate student (Major: Integrated Sciences) and one postdoctoral researcher.</i> |
| May 2017 – June 2021 | Postdoctoral Research Associate, Nebraska Water Center, the University of Nebraska, Lincoln, Nebraska, USA. <i>Co-supervised two graduates (MS) students (Major: Natural Resource Sciences) and supervised four undergraduate students.</i> |
| Feb 2017 – April 2017 | Research Associate I, Indian Association for the Cultivation of Science, Kolkata, India. <i>Co-supervised one graduate (Ph.D.) student.</i> |

AWARDS

- 2015 – Young Scientist Award, Materials Research Society of India (MRSI).

- 2015 – Best Poster Award, Indian Innovations in Materials Research: New Materials and Processes (IIMR15) Conference, Kolkata, India.
- 2014 – Best Poster Award, In-house Science Day Celebration, Indian Association for the Cultivation of Science, Kolkata, India.
- 2010 – Graduate Aptitude Test for Engineering (GATE), Indian Institute of Technology, India.
- 2010 – Highly Competitive and Prestigious Shyama Prasad Mukherjee (SPM) Fellowship, Selected in Final Round, Council for Scientific and Industrial Research, India.
- 2010 – Master of Sciences, Distinction with first-class, Banaras Hindu University, Varanasi, India.
- 2009 – National Eligibility Test (NET), Among the top 10 candidate of the 2009-2010 session, Council for Scientific and Industrial Research, India.

INVITED TALKS

- 2022 – Critical Aspect of Vadose Zone to Protect Groundwater Resources, International Conference on Higher Education Institute Challenges Solutions for Sustainable Development Goals 2022 (ICSDG 2022), Chennai, India, November 16th, 2022.
- 2021 – Identifying Anoxic Microsites at Root Zone of Unsaturated Soil, Water and Air Research, Initiative for Societal Health (WaARISH 2021), SRM Institute of Science and Technology, Chennai, India, August 25th, 2021.
- 2020 – Nano-biogeochemistry of iron oxides, Department of Agronomy and Horticulture, University of Nebraska, Lincoln, Nebraska, USA, September 18th, 2020.
- 2019 – Biogeochemistry of iron oxides, Department of Agronomy and Horticulture, University of Nebraska, Lincoln, Nebraska, USA, October 19th, 2019.
- 2019 – Role of Ferrihydrite at the Root Zone in Uptake of Arsenic, Selenium and Uranium by Crops in Intermittent Irrigation System Central Scientific Instruments Organisation (CSIR-CSIO), Chandigarh, India, September 19th, 2019.
- 2018 – Agrochemical Impacts on Human and Environmental Health: Mechanisms and Mitigation (Multistate Hatch Project W3045), Annual ARD Hatch Multistate Project Director Meeting, June 12th, 2018.
- 2018 – Arsenic - A global threat, which calls for a localized solution, School of Natural Resources, University of Nebraska, Lincoln, USA, February 6th, 2018.
- 2016 – The tooeleite story- An arsenic mineral, Nebraska Water Center, University of Nebraska, Lincoln, Nebraska, USA, June 8th, 2016.
- 2014 – The tooeleite story- An arsenic mineral, Università degli Studi di Cagliari, Cagliari, Italy, October 17th, 2014.
- 2014 – Forward Osmosis (FO) as newest tool for effective desalination of water, Università Degli Studi Roma Tre, Rome, Italy, October 16th, 2014.

CONFERENCES

Podium Presentations (*Presenting Author)

- 2022 – Kaiser M.*, Anuo C., Moreland K. C., McFarlane K. J., Li. L., Cooper J., and **Malakar A.** Storage and Persistence of Organic Carbon in 0 to 3 m Soil Depth: Insights from 22 Arable and Native Prairie Sites in Nebraska, AGU Fall Meeting, December 11 – 16, Chicago, IL.
- 2022 – Kaiser M.*, Li, L., Hosseiniaghdam, E., Snow, D. D., **Malakar A.**, Shields, J.*, Vormstein, S., Piepho, H. -P., and Ludwig, B. Deep Soil Carbon, 2022 ASA, CSSA, SSSA International Annual Meeting, November 06 – 09, Baltimore, MD.
- 2020 – **Malakar, A.**, Ray, C., Rudnick, D., Maharjan, B., and Snow, D. D.* “Natural Iron Dynamics in Irrigated Soils,” SETAC North American 41st Annual Meeting, November 15 – 19.
- 2020 – **Malakar, A.**,* Ray, C., Snow, D.D., Saluja, M., Cooper, J. A., Kaiser, M., Walia, H., and Roberts, T., 2020. “Ferrihydrite soil amendment limit arsenic uptake in rice by promoting iron plaque formation,” ACS Fall 2020 Virtual Meeting & Expo, August 17-20.
- 2020 – **Malakar, A.**,* Kaiser, M., Snow, D. D., and Ray, C. “Ferrihydrite dissolution at the root zone of crops under semi-arid condition controls the plant uptake of uranium and arsenic” (final paper number: ENVR 243), ACS Spring 2020 National Meeting & Expo, March 22-26, Oral presentation. <https://doi.org/10.1021/scimeetings.0c03694>
- 2018 – Snow, D. D.* and **Malakar, A.** “Detecting changing water quality in intensive food production systems,” Indo-US bilateral workshop on Water-Food-Energy-Climate nexus: A perspective towards a sustainable future (WFEC nexus 2018).
- 2016 – **Malakar, A.*** “The tooeliete story,” International Conference on Industrial Chemistry June 27-28. <http://dx.doi.org/10.4172/2469-9764.C1.003>

Poster Presentations (*Presenting Author)

- 2022 – Ukwishaka, Y.*, Fleisher, D., Timlin, D., Ray, C., Reddy, V., and **Malakar, A.** Developing Next Generation Cropping System Model for Efficient Agroecosystem. Water Integrated Cropping System (WICS) Conference, November 30 – December 01, Lincoln, Nebraska.
- 2022 – Fossum, B. *, **Malakar, A.**, Koehler-Cole, K., and Kaiser, M. Combining Application of Biochar with Cover Cropping Under No-till to Improve Carbon, Water, and Nutrient Retention in Agricultural Soil, ASA, CSSA, SSSA International Annual Meeting, November 06 – 09, Baltimore, MD.
- 2022 – Ukwishaka, Y.*, Fleisher, D., Timlin, D., Ray, C., Reddy, V., and **Malakar, A.** Developing Next Generation Cropping System Model for Efficient Agroecosystem. WaterSmart Innovations Conference & Exposition, October 04 – 06, Las Vegas, Nevada.
- 2022 – Ndayishimiye, E.*, Ishimwe, J., Dushimeyesu, J., Ukwishaka, Y., Beegum, S., Sun, W., Fleisher, D., Timlin, D., Ray, C., Reddy, V. and **Malakar, A.** Crop Growth And Soil Studies For Model Verification And Validation [Poster session]. College of Agriculture and Natural Resource’s Undergraduate Scholars Program (CUSP) Experiential Learning Expo, September 02, Lincoln, Nebraska.

- 2021 – Kaiser, M.*, Cooper, J. A., Drijber, R., **Malakar, A.**, Jin, V. L., and Miller, D. N. Efficiency of coal char versus biochar in reducing nutrient and carbon losses from manure amended soils - Insights from a greenhouse experiment, AGU Fall Meeting 2021, December 13 – 17.
- 2019 – **Malakar, A.***, Kaiser, M., Snow, D. D., and Ray, C. “Impact of ferrihydrite transformation on the bioavailability of arsenic and uranium in intermittently irrigated soils,” AGU Fall Meeting 2019, December 7-11.
- 2019 – Cooper, J. A. *, **Malakar, A.** and Kaiser, M. “Self-Functionalization of Soil-Aged Biochar Surfaces by Iron Increases Nitrate Retention,” AGU Fall Meeting 2019, December 7-11.
- 2017 – Singh, R. *, Westrop, J., Eloffson, C., **Malakar, A.**, Snow, D. D., and Weber, K.A. “Surface or subsurface source of arsenic in groundwater,” 2017 Water for Food Global Conference, April 10-12, Lincoln, Nebraska, USA.
- 2015 – **Malakar, A.*** and Ray, S. “The tooelite way for direct arsenic (III) removal from contaminated natural water,” Young Scientists’ Colloquium 2015 Organized by Materials Research Society of India (MRSI) Kolkata Chapter, September 11, at CGCRI, Kolkata, India.
- 2015 – **Malakar, A.*** and Ray, S. “The tooelite story,” Indian Innovations in Materials Research: New Materials and Processes (IIMR15), June 25-27 at CGCRI, Kolkata, India.
- 2014 – **Malakar, A.**, “Can arsenite be trapped in a crystal?” In-house Science Day Celebration, 214, February 28 at Indian Association for the Cultivation of Science, Kolkata, India

Attended

- 2022 – AGU Fall Meeting 2022, December 7 – 11, Organized by American Geophysical Union, Chicago, IL, USA.
- 2022 – ACS Campaign for a Sustainable Future Zero Hunger Summit, December 5 – 8, Organized by American Chemical Society, Online.
- 2022 – Water Integrated Cropping System (WICS) Conference, November 30 – December 01, Lincoln, Nebraska.
- 2022 – International Conference on Higher Education Institute Challenges Solutions for Sustainable Development Goals 2022 (ICSDG 2022), Organized by SRM Institute of Science and Technology, Chennai, India, November 16th (Virtual).
- 2022 Faculty of Color Symposium: Navigating Educational Spaces in an Age of Racial Distress, Uncertainty, and Anxiety, Organized by Office of Diversity and Inclusion, November 4th, Nebraska Union, University of Nebraska, Lincoln, Nebraska, USA.
- 2022 IO2022: Innovation Accelerated, Organized by InsideOutside.io, September 19 – 20, Nebraska Innovation Campus, Lincoln, Nebraska, USA.
- 2022 – AgMIP Conference - Making Climate-Smart Agriculture Work, May 24 – 26, Supported by National Institute for Food and Agriculture, Online.
- 2022 – International Conference on Higher Education Institute Challenges Solutions for Sustainable Development Goals 2022 (ICSDG 2022), Chennai, India, November 16th.

- 2021 – Water and Air Research, Initiative for Societal Health (WaARISH 2021), Organized by SRM Institute of Science and Technology, Chennai, India, August 25th, 2021 (Virtual).
- 2020 – ACS Fall 2020 Virtual Meeting & Expo, August 17 – 20, Organized by American Chemical Society, Virtual.
- 2020 – ACS Spring 2020 National Meeting & Expo, March 22 – 26, Organized by American Chemical Society, Philadelphia, PA, USA (Virtual).
- 2019 – AGU Fall Meeting 2019, December 7 – 11, Organized by American Geophysical Union, San Francisco, CA, USA.
- 2018 – Nebraska Water Symposium on October 24 – 26, Organized by Nebraska Water Center at the Water for Food Global Institute, University of Nebraska-Lincoln, USA.
- 2018 – The 2018 MOISST workshop: From soil moisture observations to actionable decision, June 4 – 7, University of Nebraska-Lincoln, Lincoln, Nebraska, USA.
- 2018 – Write Winning Grant Proposals, March 16, University of Nebraska, Lincoln, Nebraska, USA
- 2017 – Nebraska Water Symposium on October 26 – 27, Organized by Nebraska Water Center at the Water for Food Global Institute, University of Nebraska-Lincoln, USA.
- 2016 – Nebraska Water Symposium on October 20, Organized by Nebraska Water Center at the Water for Food Global Institute, University of Nebraska-Lincoln, USA.
- 2014 – Advances in Nanomaterials using Synchrotron Techniques (ANST-2014)” December 11-13, Saha Institute of Nuclear Physics, Kolkata, India.

INTERNATIONAL VISIT

- 2016 – Water Advanced Research and Innovation Internship, part of Ph.D. program at University of Nebraska, Lincoln, Nebraska, USA, from May 14 – November 2.
- 2015 – Visiting scholar at University of Cagliari, Cagliari, Italy for ARSELLA Project, from May 3 - 7.
- 2015 – Synchrotron experiments, XAFS and MCX beamline at Elettra, Trieste, Italy from April 22 – May 2nd May.
- 2014 – Synchrotron experiments, Materials Science and XAFS beamline at Elettra, Trieste, Italy, November 25 – December 6.
- 2014 – Visiting scholar at University of Cagliari, Cagliari, Italy for ARSELLA Project, from October -November.
- 2014 – Synchrotron experiment, μ -XAS at BM23 beamline of ESRF, Grenoble, France, November 14-16.
- 2013 – Synchrotron experiment, XAFS beamline at Elettra, Trieste, Italy, October 27 – November 1.

PROFESSIONAL ACTIVITIES

Panelist	United State Department of Agriculture (USDA), National Institute of Food and Agriculture (NIFA) Agricultural Food and Research Initiative (AFRI) – Flagship grant, 2022.
Editorial Advisory Board	American Chemical Society Agricultural Science & Technology Journal, 2023.
Reviewer	Water Research, Environmental Science & Technology, Science of the Total Environment, Journal of Water Process Engineering, Environmental Nanotechnology, Monitoring & Management, Desalination, Agronomy, Journal of Environmental Management, Journal of Environmental Science, Water, Chemosensors, Environmental Geochemistry and Health, Sustainability, Remote Sensing, and Journal of Applied Polymer Science.
Reviewer	Collaborative Initiative Grant at the University of Nebraska, 2022.
Member	American Chemical Society, American Geophysical Union, and Royal Society of Chemistry.

SERVICES

2017 – 2021	Committee member, Postdoctoral Association of the University of Nebraska, Nebraska.
2011 – 2023	Committee member, Democratic Research Scholar Organization (DRSO), India
2018 – 2022	Reviewer of Undergraduate Research Program (UCARE) supporting undergraduate research at the University of Nebraska.
2018	Undergraduate poster competition judge in the University of Nebraska Lincoln Spring Research Fair.
2011 – 2017	Executive Board, Research Scholars of Indian Association for the Cultivation of Science, India.

OUTREACH ACTIVITIES

2022	Water for Food from the Field, Sutherland, Nebraska.
2022	Bazile Groundwater Management Area Field Day, Creighton, Nebraska.
2018	East Campus Discovery Day, University of Nebraska – Lincoln, Nebraska.
2016	Water Quality of Your Locality, Kolkata, India.