BHABANANDA BISWAS
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RESEARCH WALLET

With over 8 years of postdoctoral experience across academia and industry, I bring a strong interdisciplinary research background supported by competitive fellowships and grants. My work focuses on:

- **Sustainable minerals and materials** for environmental remediation and agricultural management
- **Functionalisation of clay, zeolite, and silicate minerals** for targeted, fit-for-purpose applications
- **Materials-based strategies** for emission reduction and waste utilisation
- **Development of clay-based slow-release phosphate fertilisers and biofertilisers**
- **Life-cycle assessment** of functional materials in environmental and agri-habitat contexts

Alongside research, I actively engage in **teaching, mentoring**, and science communication, making research accessible and inspiring future scientists..

EDUCATION

2013–2017. Doctor of Philosophy, University of South Australia
Thesis: Applied clay science (environmental application)
Highlight: As an international competitive scholar, I completed my degree in 3.5 years. At the time of thesis submission, I published 15 Q1 articles, 10 of which were my first-authored publications.

2009–2011. MSc in Marine Biodiversity and Conservation, Ghent University, Belgium
Lab: Max Planck Institute for Marine Microbiology, Bremen, Germany
Highlight: As an Erasmus Mundus fellow, I graduated with distinction.

2007–2009. MSc in Marine Biology, Khulna University, Bangladesh
Highlight: I stood first in the faculty with a high distinction grade.

2002–2006. BSc (Major: Marine Biology, Aquaculture, Chemistry, Environmental Science), Khulna University.
Highlight: I stood first in the department with a high distinction grade.

EMPLOYMENT & EXPERIENCES

Research Affiliate
University of Newcastle, Australia | July 2025–Present
- Stationed at crcCARE, continuing supervision of four PhD students
- Contributing to competitive grant proposal development

Project Lead – Sustainable Minerals and Materials
crcCARE Pty Ltd | July 2025–Present
- Leading the minerals and materials research wing focused on environmental remediation
- Driving industry collaboration and application of sustainable technologies

Research Fellow
University of Newcastle, Australia | Oct 2024–June 2025
- Advanced industry projects post-Humboldt fellowship
- Principal supervisor for two PhD students
- Project: Clay-based cattle feed formulations and fertiliser

Humboldt Research Fellow
Alexander von Humboldt Foundation, Greifswald University, Germany | Oct 2022–Sep 2024
- Developed clay-based slow-release phosphate fertiliser using low-energy mechanochemical methods
- Achieved near-complete immobilisation of PFAS and mixed metals in soil and water
- Published a widely recognised meta-analysis in clay science
- Supervised one master's student to completion
- Co-applied for EU cooperation grant with host professor
- Lab: Clay Mineralogy | Mentor: Prof Laurence N Warr

Research Fellow (Affiliate, Sabbatical)
University of Newcastle, Australia | Oct 2022–Sep 2024
- Continued PhD supervision and oversight of ARC Discovery project
- Project: Clay-based cattle feed formulations and fertiliser

Research Fellow

University of Newcastle, Australia | Mar 2021–Sep 2022

- Initiated and secured $3.2M industry funding for crcCARE
- Successfully led ARC DP application
- Lab: Environmental Remediation | Supervisor: Prof Ravi Naidu

Research Associate

University of South Australia | Oct 2017–Mar 2021

- Led CRC project on material engineering for soil and water remediation
- Granted provisional patent as lead inventor for composite remediation materials
- Published 15 peer-reviewed articles, including 6 as first/lead author
- Co-supervised 3 PhD students
- Lab: Polymer Group | Supervisor: Prof Emily Hilder

Lecturer

Jashore Science & Technology University, Bangladesh | Apr 2009–Sep 2009

- Founding faculty member contributing to curriculum development
- Delivered undergraduate courses in aquatic ecology, marine bio-resources, and pollution

PROFESSIONAL INVOLVEMENT AND LEADERSHIP

Associate Editor (Mar 2025–Present)

- *Clays and Clay Minerals* (2025–Present) – Official journal of the Clay Minerals Society (CMS), USA
- *Environmental Geochemistry and Health (EGAH)* (Mar 2025–Present) – Journal of the Society for Environmental Geochemistry and Health

National Committee Member (2025–Present)

Australian Association of von Humboldt Fellows

Editor (Jul 2021–Present)

- *Elements Magazine Newsletter, representing the Clay Minerals Society (CMS), USA. Responsible for CMS's one-page news in the bi-monthly publication.*

Guest Editor – Special Issues

- Modified Clays, Environmental Science & Pollution Research
- Novel Adsorbents for Environmental Remediation, Processes (Both issues completed and published)

Editorial Board Member

- Frontiers in Environmental Science
- Frontiers in Soil Science

Journal Reviewer

- *Reviewed over 100 manuscripts for Q1 & Q2 journals in applied clay research, environmental and agricultural materials, and carbon capture.*

Grant Reviewer

- *Detailed assessor for 6 ARC proposals (2022–Present)*
- *Reviewer for 2 CIVIS Alliance Program grants, France*

Committee Leadership

- *Chair, Standing Committee on Electronic Communication, CMS (2022–Present)*
- *Chair, Ad hoc Committee on Elements News, CMS (2021–Present)*
- *Member, Clay Teaching Committee, AIPEA (2025–Present)*
- *Chair, Early Career Researcher Group, Future Industries Institute, UniSA (2018–2021)*
- Committee member, judging panel for 3MT competition (school level), UON, 2024

Conference Leadership

- *Convener & Chair, Modified Clays for Environmental Remediation, International Clay Conference, Dublin 2025*
- *Convener & Chair, Raw and Modified Clays for Environmental Remediation, Euroclay 2018, Paris*
- *Organising Committee & Session Chair, CleanUp Conference Series (2022–Present), Adelaide*

Keynote/Invited Speaker

- *Multidisciplinary Applied Clay Research*, International Clay Conference, Dublin, July 2025
- Use of Clay and Modified Clays in Managing Health of Lake and Aquaculture Water, LifeTech2026, Jashore University of Science and Technology, Bangladesh 17-18 January 2026.

Professional Memberships

- The Clay Minerals Society
- The Royal Society of Chemistry
- American Society for Microbiology
- Australian Association of von Humboldt Fellows

Student Supervision

- Current: 5 full-time PhD students
- Completed: 2 full PhD students, 1 visiting PhD student
- Research areas:
    - Clay-based materials for environmental contaminant removal
    - Clay composites for greenhouse gas mitigation
    - Sustainable mineral-based fertilisers

Mentoring & Grant Facilitation

- Supported successful grant and award applications for students and postdocs:
    - Zubaer Hosen (PhD): CMS research grant ($2,500), travel grants (CMS & CMG), CMG research grant ($1,500)
    - Rafique Uddin (PhD): CMS research grant (2025)
    - Dr Rashidul Islam (Postdoc): AIPEA ECR grant ($5,000), selected for AIPEA's ECR committee

RESEARCH GRANT, INDUSTRY ENGAGEMENT AND RESEARCH IMPACT

Industry-Matching Grant – $20,000
University of Newcastle, 2023 | Role: Lead CI
Project: Bentonite-based sulphur fertiliser

Multidisciplinary Strategic Investment Grant – $9,550
University of Newcastle, 2023 | Role: Co-CI
Project: Water separation using two-dimensional membranes

Pilot Funding Scheme – $4,808
University of Newcastle, 2023 | Role: CI
Project: Soil health, organic matter, and microbial activity

ARC Discovery Project – $280,000
Awarded 2023 | Role: Co-CI (50:50 with Prof Ravi Naidu)
Project: Australian clays as raw materials for slow-release phosphate fertiliser
Engagement & Impact: Collaboration with ANSTO; industry interest in developing fertilisers from Australian minerals

Equipment & Infrastructure Grant – $30,000
College of Engineering, Science and Environment, University of Newcastle | Role: Co-CI
Project: Integration of electrochemical station with GC-MS

CRC CARE Grant – $1.2M
2022–2024 | Role: Lead CI
Project: Modified halloysite-based cattle feed for methane abatement

CRC CARE Grant – $400,000
2022–2024 | Role: Lead CI
Project: Halloysite composite for greenhouse gas emission mitigation
Engagement & Impact: Direct industry collaboration led by Dr Bhaba Biswas and Prof Ravi Naidu. Outcomes led to the launch of a new company with two material-based products, now registered on the Australian stock market

CRC CARE Grant – $436,100
2017–2020 | Future Industries Institute, University of South Australia
Project: Biocompatible modified clays for environmental remediation
Engagement & Impact: Externally funded based on Dr Biswas's proposal. Data contributed to ARC DP success and proof-of-concept for later industry funding

Student Research Grant – $4,000
2016–2017 | The Clay Minerals Society, USA
Project: Soil microbial metagenomic status in clay-amended soil *(Open global competition)*

SELECTIVE OUTREACH ACTIVITIES

Conference presentation

Presented over ~13 national and international conference abstracts related to clay science and environmental remediation.

SELECTIVE ACCOLADES

1. Clay Minerals Group bursary, Mineralogical Society of the UK and Ireland, United Kingdom, 2025.
2. Researcher development grant, The Royal Society of Chemistry (RSC), UK, 2022 [*open competitive basis for Early Career Researchers.*]
3. Early Career Researcher development funding, Future Industries Institute (FII), Australia, 2019.
4. Talk on "Breaking the wall of soil contamination," Falling Wall competition, Australian Academy of Science, 2019.
5. Winning spot to participate in Early Career Researcher development program, University of South Australia, 2018.
6. Clay Minerals Society travel grant, United States, 2017.
7. Top Ten Fresh Scientist in South Australia, Science in Public, Australia, 2017 [*Highly competitive, open competition among early career researchers*]
8. American Society for Microbiology travel grant for postgraduate students, United States, 2017.
9. Clay Minerals Group bursary, Mineralogical Society of the UK and Ireland, United Kingdom, 2016.
10. Research spotlight in *Elements* magazine, 2016.
11. Best oral presentation at Euroclay2015, United Kingdom, 2015 [*total delegates: 550*]
12. Governor's international postgraduate research excellence, StudyAdelaide, South Australia, 2015 [*open for all international higher research degree students in South Australia*]
13. Student travel grant, The Clay Minerals Society, United States, 2015.
14. Student research grant, The Clay Minerals Society, United States, 2015.

PUBLICATIONS

[ORCiD: https://orcid.org/0000-0001-9473-4141]

Journal article:

Biswas, B.*, Amiri, A., Thombare, B.R., Uddin, R., Grathoff, G., Naidu, R., Warr, L.N.*, 2025. Mechanochemically activated halloysite nanotube-rich kaolin clay as a carrier for slow-release phosphate fertilizer. ***ACS Sustainable Chemistry & Engineering***. 13, 8711–8721. IF: 7.3. Citation: 0.

Naidu, R.*, **Biswas, B.**, Nuruzzaman, M., Singh, B.K., 2025. Bioremediation of heavy metal(loid)s in agricultural soils and crops. ***Nat. Rev. Bioeng***. doi: 10.1038/s44222-025-00345-y. 1-14. IF: 37.6. Citation: 1.

Islam, M.R., Naidu, R., **Biswas, B**.* 2025. Kaolin clay-based diets for managing livestock's health and methane emission problem. ***Appl. Clay Sci.*** 276, 107891. IF: 5.8. Citation: 1.

Deb, A.K., Hassan, M., **Biswas, B**., Naidu, R., Xi, Y., Rahman, M.M. 2025. Functionalization of halloysite nanotubes as remediation agents for organic and inorganic contaminants: Insights into synthesis routes, removal techniques, and eco-friendly perspectives. ***Sci. Total Environ***. 989, 179771. IF: 8.0. Citation: 1.

Islam, M.R., Naidu, R., **Biswas, B**.* 2025. Natural kaolin minerals with varying iron contents reduced cattle's enteric methane generation in vitro. ***Appl. Geochem***. 189, 106459. IF: 3.5. Citation: 1.

Davoodi, S., **Biswas, B.***, Naidu, R.* 2025. Carbon capture efficiency of mechanically activated Australian halloysite-rich kaolin with varying iron impurities, and its potential reuse for removing dyes from water. ***Minerals***. 15, 399. IF: 2.2. Citation: 2.

Hosen, Z., Islam, M.R., Naidu, R., **Biswas, B.*** 2025. 'Geophagy' and clay Minerals: Influencing ruminal microbial fermentation for methane mitigation. ***Microorganisms***. 13, 866. IF: 4.1. Citation: 2.

Biswas, B.*, Grathoff, G., Naidu, R., Warr, L.N.* 2024. The multidisciplinary science of applied clay research: A 2021–2023 bibliographic analysis. ***Appl. Clay Sci.*** 258, 107471. IF: 5.8. Citation: 9.

Deb, A.K., Rahman, M.M., **Biswas, B.**, Xi, Y., Islam, M.R., Hassan, M., Naidu, R. 2024. Mesoporous architectural magnetic halloysite-polymer beads for removing toxic streptomycin from water: A sustainable remediation approach. ***Groundw. Sustain. Dev.*** 26, 101258. IF: 5.9. Citation: 3.

Islam, M.R., **Biswas, B.**, Naidu, R. 2024. CO_2 Capture Using Zeolite Synthesized from Coal Fly Ash and Its Subsequent Utilization for Fire Retardation and Dye Removal. ***ACS Sustain. Resour. Manag.*** 1, 799–

809. IF: NA. Citation: 3.

Liu, Y., **Biswas, B.**, Hassan, M., Naidu, R. 2024. Green Adsorbents for Environmental Remediation: Synthesis Methods, Ecotoxicity, and Reusability Prospects. ***Process*** 12, 1195. IF: 3.5. Citation: 36.

Liu, Y., **Biswas, B.**, Naidu, R. 2024. Novel Adsorbents for Environmental Remediation. ***Process*** 12, 670. IF: 3.5. Citation: 1.

Khodabakhshloo, N., **Biswas, B.*** 2023. Adsorption of aqueous perfluorooctane sulfonate by raw and oleylamine-modified Iranian diatomite and zeolite: Material and application insight. ***Appl. Clay Sci.*** 244, 107101. IF: 5.8. Citation: 10.

Biswas, B.*, Islam, M.R., Deb, A.K., Greenaway, A., Warr, L.N., Naidu, R.* 2023. Understanding Iron Impurities in Australian Kaolin and Their Effect on Acid and Heat Activation Processes of Clay. ***ACS Omega*** 8, 5533–5544. IF: 3.7. Citation: 28.

Deb, A.K., **Biswas, B.**, Rahman, M.M., Xi, Y., Paul, S.K., Naidu, R. 2022. Magnetite Nanoparticles Loaded into Halloysite Nanotubes for Arsenic(V) Removal from Water. ***ACS Appl. Nano Mat.*** 5, 12063–12076. IF: 5.3. Citation: 24.

Deb, A.K., **Biswas, B.**, Naidu, R., Rahman, M.M. 2022. Mechanistic insights of hexavalent chromium remediation by halloysite-supported copper nanoclusters. ***J. Hazard. Mat***. 421, 126812. IF: 12.2. Citation: 38.

Biswas, B.*, Naidu, R. 2021. Highly stable and nontoxic lanthanum-treated activated palygorskite for the removal of lake water phosphorus. ***Process*** 9, 1960. Citation: 3.

Deb, A.K., **Biswas, B.**, Goswami, N., Hilder, E.F., Naidu, R., Rahman, M.M. 2021. Synthesis of environmentally benign ultra-small copper nanoclusters-halloysite composites and their catalytic performance on contrasting azo dyes. ***Appl. Surf. Sci.*** 546, 149122. IF: 6.7. Citation: 39.

Khodabakhshloo, N., **Biswas, B.***, Moore, F.*, Du, J., Naidu, R. 2021. Organically functionalized bentonite for the removal of perfluorooctane sulfonate, phenanthrene and copper mixtures from wastewater. ***Appl. Clay Sci.*** 200, 105883. IF: 5.8. Citation: 32.

Khodabakhshloo, N.*, **Biswas, B.**, Moore, F., Du, J., Wijayawardena, A., Arabzadeh, M. 2021. Surface dispersal, emission source and human health risk assessment of heavy metal(loid)s in an active gas field, Southern Iran. Research Square Pre-print. doi: 10.21203/rs.3.rs-442451/v1

Naidu, R.*, **Biswas, B.**, Willett, I.R., Cribb, J., Kumar Singh, B., Paul Nathanail, C., Coulon, F., Semple, K.T., Jones, K.C., Barclay, A., John Aitken, R. 2021. Chemical pollution: A growing peril and potential catastrophic risk to humanity. ***Environ. Int.*** 156, 106616. IF: 11.8. Citation: 590.

Uz-Zaman, K.A., **Biswas, B.**, Rahman, M.M., Naidu, R. 2021. Smectite-supported chain of iron nanoparticle beads for efficient clean-up of arsenate contaminated water. ***J. Hazard. Mater.*** 407, 124396. IF: 12.2. Citation: 16.

Biswas, B., Labille, J., Prelot, B. 2020. Clays and modified clays in remediating environmental pollutants. ***Environ. Sci. Pollut. Res.*** 27, 38381–38383. IF: 5.8. Citation: 23.

Biswas, B.*, Juhasz, A.L., Mahmudur Rahman, M., Naidu, R. 2020. Modified clays alter diversity and respiration profile of microorganisms in long-term hydrocarbon and metal co-contaminated soil. ***Microb. Biotechnol.*** 13, 522–534. IF: 5.7. Citation: 20.

Naidu, R., Nadebaum, P., Fang, C., Cousins, I., Pennell, K., Conder, J., Newell, C.J., Longpré, D., Warner, S., Crosbie, N.D., Surapaneni, A., Bekele, D., Spiese, R., Bradshaw, T., Slee, D., Liu, Y., Qi, F., Mallavarapu, M., Duan, L., McLeod, L., Bowman, M., Richmond, B., Srivastava, P., Chadalavada, S., Umeh, A., **Biswas, B.**, Barclay, A., Simon, J., Nathanail, P. 2020. Per- and poly-fluoroalkyl substances (PFAS): Current status and research needs. ***Environ. Technol. Innov***. 19, 100915. IF: 7.1. Citation: 113.

Biswas, B.*, Warr, L.N., Hilder, E.F., Goswami, N., Rahman, M.M., Churchman, J.G., Vasilev, K., Pan, G., Naidu, R.* 2019. Biocompatible functionalisation of nanoclays for improved environmental remediation. ***Chem. Soc. Rev.*** 48, 3740–3770. IF: 46.2. Citation: 165.

España, V.A.A., Sarkar, B., **Biswas, B.**, Rusmin, R., Naidu, R. 2019. Environmental applications of thermally modified and acid activated clay minerals: Current status of the art. ***Environ. Technol. Innov***. 13, 383–397. IF: 7.1. Citation: 125.

Goswami, N., Bright, R., Visalakshan, R.M., **Biswas, B.**, Zilm, P., Vasilev, K. 2019. Core-in-cage structure regulated properties of ultra-small gold nanoparticles. ***Nanoscale Adv***. 1, 2356–2364. IF: 4.7. Citation: 17.

Goswami, N.[‡], **Biswas, B.**[‡], Naidu, R., Vasilev, K. 2019. Spatially Localized Synthesis of Metal Nanoclusters on

Clay Nanotubes and Their Catalytic Performance. ***ACS Sustainable Chem. Eng***. 7, 18350–18358 (joint first-authored). IF: 7.3. Citation: 21.

Biswas, B.*, Sarkar, B., Faustorilla, M.V., Naidu, R. 2018. Effect of surface-tailored biocompatible organoclay on the bioavailability and mineralization of polycyclic aromatic hydrocarbons in long-term contaminated soil. ***Environ. Technol. Innov***. 10, 152–161. IF: 7.1. Citation: 8.

Biswas, B., Qi, F., Biswas, J.K., Wijayawardena, A., Khan, M.A.I., Naidu, R. 2018. The fate of chemical pollutants with soil properties and processes in the climate change paradigm—a review. ***Soil Syst***. 2, 1–20. IF: 2.8. Citation: 161.

Biswas, J.K., Banerjee, A., Rai, M., Naidu, R., **Biswas, B.**, Vithanage, M., Dash, M.C., Sarkar, S.K., Meers, E. 2018. Potential application of selected metal resistant phosphate solubilizing bacteria isolated from the gut of earthworm (Metaphire posthuma) in plant growth promotion. ***Geoderma*** 330, 117–124. IF: 6.1. Citation: 152.

Khan, M.A.I., **Biswas, B.**, Smith, E., Mahmud, S.A., Hasan, N.A., Khan, M.A.W., Naidu, R., Megharaj, M. 2018. Microbial diversity changes with rhizosphere and hydrocarbons in contrasting soils. ***Ecotoxicol. Environ. Saf.*** 156, 434–442. IF: 6.8. Citation: 64.

Khan, M.A.I., **Biswas, B.**, Smith, E., Naidu, R., Megharaj, M. 2018. Toxicity assessment of fresh and weathered petroleum hydrocarbons in contaminated soil – a review. ***Chemosphere*** 212, 755–767. IF: 8.1. Citation: 257.

Nirola, R., **Biswas, B.**, Megharaj, M., Subramanian, A., Thavamani, P., Aryal, R., Saint, C. 2018. Assessment of chromium hyper-accumulative behaviour using biochemical analytical techniques of greenhouse cultivated Sonchus asper on tannery waste dump site soils. ***Environ. Sci. Pollut. Res***. 25, 26992–26999. IF: 5.8. Citation: 6.

Biswas, B.*, Sarkar, B.*, Naidu, R.* 2017. Bacterial mineralization of phenanthrene on thermally activated palygorskite: A 14C radiotracer study. ***Sci. Total Environ***. 579, 709–717. IF: 8.0. Citation: 17.

Biswas, B.*, Sarkar, B.*, Rusmin, R.*, Naidu, R.* 2017. Mild acid and alkali treated clay minerals enhance bioremediation of polycyclic aromatic hydrocarbons in long-term contaminated soil: A ^{14}C-tracer study. ***Environ. Pollut***. 223, 255–265. IF: 8.9. Citation: 39.

Biswas, B.*, Sarkar, B.*, McClure, S.*, Naidu, R.* 2017. Modified osmium tracer technique enables precise microscopic delineation of hydrocarbon-degrading bacteria in clay aggregates. ***Environ. Technol. Innov***. 7, 12–20. IF: 7.1. Citation: 9.

Biswas, B., Chakraborty, A., Sarkar, B., Naidu, R. 2017. Structural changes in smectite due to interaction with a biosurfactant-producing bacterium *Pseudoxanthomonas kaohsiungensis*. ***Appl. Clay Sci***. 136, 51–57. IF: 5.8. Citation: 34.

Singh, M., Sarkar, B., **Biswas, B.**, Bolan, N.S., Churchman, G.J. 2017. Relationship between soil clay mineralogy and carbon protection capacity as influenced by temperature and moisture. ***Soil Biol. Biochem***. 109, 95–106. IF: 9.7. Citation: 124.

Biswas, B.*, Sarkar, B.*, Naidu, R.* 2016. Influence of thermally modified palygorskite on the viability of polycyclic aromatic hydrocarbon-degrading bacteria. ***Appl. Clay Sci***. 134, 153–160. IF: 5.8. Citation: 28.

Biswas, B.*, Sarkar, B.*, Mandal, A., Naidu, R.* 2016. Specific adsorption of cadmium on surface-engineered biocompatible organoclay under metal-phenanthrene mixed-contamination. ***Water Res***. 104, 119–127. IF: 12.8. Citation: 22.

Mandal, A.‡, **Biswas, B.**‡, Sarkar, B., Patra, A.K., Naidu, R. 2016. Surface tailored organobentonite enhances bacterial proliferation and phenanthrene biodegradation under cadmium co-contamination. ***Sci. Total Environ.*** 550, 611–618 (‡ joint first author). IF: 8.0. Citation: 35.

Rusmin, R., Sarkar, B., **Biswas, B.**, Churchman, J., Liu, Y., Naidu, R. 2016. Structural, electrokinetic and surface properties of activated palygorskite for environmental application. ***Appl. Clay Sci.*** 134, 95–102. IF: 5.8. Citation: 97.

Sarkar, B., Choi, H.L., Zhu, K., Mandal, A., **Biswas, B.**, Suresh, A. 2016. Monitoring of soil biochemical quality parameters under greenhouse spinach cultivation through animal waste recycling. ***Chem. Ecol***. 32, 407–418. IF: 2.3. Citation: 8.

Singh, M., Sarkar, B., **Biswas, B.**, Churchman, J., Bolan, N.S. 2016. Adsorption-desorption behavior of dissolved organic carbon by soil clay fractions of varying mineralogy. ***Geoderma*** 280, 47–56. IF: 6.1. Citation: 124.

Biswas, B., Sarkar, B., Rusmin, R., Naidu, R.* 2015. Bioremediation of PAHs and VOCs: Advances in clay mineral-microbial interaction. ***Environ. Int.*** 85, 168–181. IF: 11.8. Citation: 147.

Biswas, B., Sarkar, B., Mandal, A., Naidu, R. 2015. Heavy metal-immobilizing organoclay facilitates polycyclic aromatic hydrocarbon biodegradation in mixed-contaminated soil. ***J. Hazard. Mater***. 298, 129–137. IF: 12.2. Citation: 90.

Sarower, M. G., Hasanuzzaman, A. F. M., **Biswas, B**., Abe, H. 2012. Taste producing components in fish and fisheries products: A review. ***Int. J. Food Ferment. Technol***. 2, 113–121. IF: N/A. Citation: 113.

Book chapter:

Biswas, B., 2025. Clay Minerals for Environmental and Agricultural Applications: Link to UN SDGs and Net Zero Goals. In: Trevor R.F., and Glen E.W. (Ed.), The Humboldt Vision: integrating fundamentals with applied research, pp 26–28.

Bidast, S., Paul, S.K., Naidu, R., **Biswas, B**.* 2025. Clay-based additives for the in-situ bioremediation of hydrocarbon-contaminated agricultural soils. In: Naidu, R. (Ed.), Contaminants in agricultural soils: Challenges and solutions. Accepted.

Naidu, R., **Biswas, B.** 2023. Introduction to inorganic contaminants and radionuclides: Global issues and challenges, Inorganic Contaminants and Radionuclides. Elsevier, pp. 1-10. Citation: 3.

Sanderson, P., Bahar, M.M., **Biswas, B.**, Naidu, R. 2023. Remediation of metals and organic contaminants in soil, Encyclopedia of Soils in the Environment, Second Edition. Elsevier, pp. V3-333. Citation: 2.

Biswas, B.*, Nirola, R., Biswas, J.K., Pereg, L., Willett, I.R., Naidu, R. 2019. Environmental Microbial Health Under Changing Climates: State, Implication and Initiatives for High-Performance Soils. In: Lal, R., Francaviglia, R. (eds), Sustainable Agriculture Reviews, 29, 1-32. Citation: 15.

Sarkar, S., Sarkar, B., Basak, B.B., Mandal, S., **Biswas, B.**, Srivastava, P. 2017. Soil mineralogical perspective on immobilization/mobilization of heavy metals, Adaptive Soil Management: From Theory to Practices. Springer Singapore, pp. 89-102. Citation: 17.

Conference proceeding and abstracts:

Biswas, B., Amiri, A., and Warr, L.N. 2025. Mechanical activation of halloysite-rich kaolin for slow-release phosphate fertiliser. International Clay Conference, Dublin, Ireland, 13-18 July 2025.

Islam, M.R., Naidu, R., **Biswas, B.** 2025. Natural kaolin minerals with varying iron contents reduced cattle's enteric methane generation. International Clay Conference, Dublin, Ireland, 13-18 July 2025.

Hosen, Z., Islam, R., Naidu, R., **Biswas, B.** 2025. Potential of kaolin clay in reducing methanogenic microbial activity in cattle, International Clay Conference, Dublin, Ireland, 13-18 July 2025.

Biswas, B., Warr, L.N., and Naidu, R. 2025. An update on the multidisciplinary science of applied clay research: A 2023–2025 bibliographic analysis. International Clay Conference, Dublin, Ireland, 13-18 July 2025.

Davoodi, S., **Biswas, B.**, Naidu, R. 2024. The mechanochemical effect of ball milling on various halloysite nanotubes and their carbon capture performance. CleanUp 2024, Adelaide, Australia.

Hosen, Z., Islam, M.R., Naidu, R., **Biswas, B.** 2024. Exploring the influences of clay mineral on rumen ecosystem. CleanUp 2024, Adelaide, Australia.

Islam, M.R., Naidu, R., **Biswas, B.** 2024. Utilising Australian clay minerals to combat methane emission from cattle burps. CleanUp 2024, Adelaide, Australia.

Biswas, B., Naidu, R., Warr, L.N. 2023. Iron-rich and poor Australian kaolin for various adsorbents development. Euroclay, Bari, Italy.

Biswas, B., Sarkar, B., Juhasz, A.L., Rahman, M.M., Naidu, R. 2017. Microbe-clay mineral synergy for environmental remediation: Microscopic, metabolic and metagenomic approaches. ASM Microbe, New Orleans, USA.

Biswas, B., Sarkar, B., Rahman, M.M., Naidu, R. 2017. Surface-tailored organoclays alter bacterial community and metabolic activity in hydrocarbon-contaminated soil. Living Clays: From Nano-scale Interactions to Incorporation in Everyday Life, Edmonton, Canada.

Sarkar, B., Rusmin, R., **Biswas, B.**, Liu, E. 2016. Cross-discipline fertilisation of clay science and nanotechnology for environmental remediation. 53rd Annual Meeting of the Clay Minerals Society: Resurgent Clays, Atlanta, Georgia, USA.

Mandal, A., Sarkar, B., **Biswas, B.**, Rahman, M.M., Naidu, R. 2014. Modified bentonite assisted bioremediation of PAHs in mixed contaminated condition: Characterisation of modified clays. 20th World Congress

of Soil Science, Jeju, South Korea.

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1. Listed contributing author. Global Environment Outlook 2025. Chapter: Land and Soils. UNEP. In press.
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Patents:

1. **Biswas, B.** and Naidu, R. Clay spread or layer. Application no. 2024903892, IP Australia.
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Industry in-confidence report:

Biswas, B. *et al*. submitted 12 in-confidence reports as the lead investigator to the industry. The theme: valorisation of clay minerals in the area of cattle feed, fertiliser and greenhouse gas adsorbent.

Media and news highlight:

1. Clay reduces methane in cow burps by 30%, https://newatlas.com/environment/cow-burps-methane-clay/
2. Multi-tasking clays can clean soil contamination, https://phys.org/news/2018-03-multi-tasking-clays-soil-contamination.html
3. Climate change threatens to expose soil pollutants, https://www.aweimagazine.com/press-release/climate-change-threatens-to-expose-deadly-soil-contaminants

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