



Publications

Helmholtz Centre for Environmental Research – UFZ

Topic 7: Towards a Sustainable Bioeconomy - Resources, Utilization, Engineering and AgroEcosystems

Preface

This list includes all publications of the year 2025 assigned to program topic 7 “Towards a Sustainable Bioeconomy - Resources, Utilization, Engineering and AgroEcosystems” of the Helmholtz research program "Changing Earth – Sustaining our Future" within the research field Earth and Environment which were authored, co-authored or edited by staff members of the Helmholtz Centre for Environmental Research - UFZ.

If a publication belongs to more than one program topic, both primary and secondary assignments are indicated.

The editorial deadline for this publication list was 6 March 2026.

In contrast to external authors, UFZ staff names are highlighted in **bold type** in all publications.

The concluding index lists all UFZ authors in alphabetical order with the sequential numbers of their publications.

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Publications in ISI/Scopus listed journals/series

1. **Abbaszade, G., Stückrath, K., Müller, S. (2025):**
Bacterial colony biopsies: Spatial discrimination of heterogeneous cell types by cytometric fingerprinting
Methods Ecol. Evol. **16** (5), 972 - 987
[10.1111/2041-210x.70022](https://doi.org/10.1111/2041-210x.70022)
2. **Abdelsamad, A.M.A., Saeidi, N., Mackenzie, K. (2025):**
Mesoporous silica nanoparticles for rapid removal of PFOA: Impact of surface functional groups on adsorption efficiency and adsorbent regeneration
Environ. Pollut. **383**, art. 126796
[10.1016/j.envpol.2025.126796](https://doi.org/10.1016/j.envpol.2025.126796)
3. **Adrian, L., Sawers, R.G., Deobald, D. (2025):**
Organohalide respiration in *Dehalococcoides* strains represents a novel mode of proton motive force generation
In: Poole, R.K., Kelly, D.J. (eds.)
Advances in Microbial Physiology 86
Elsevier, London,
[10.1016/bs.ampbs.2024.12.001](https://doi.org/10.1016/bs.ampbs.2024.12.001)
4. **Anuforo, P.C., Würz, B., Wick, L.Y., Kallies, R. (2025):**
Draft genome sequences of *Pseudomonas chengduensis* strain BW1 and *Sphingobium* sp. strain MK2 isolated from oil sands process-affected water
Microbiol. Resour. Ann. **14** (2), e00677-24
[10.1128/mra.00677-24](https://doi.org/10.1128/mra.00677-24)
5. **Armanu, E.G., Bertoldi, S., Chrzanowski, Ł., Volf, I., Heipieper, H.J., Eberlein, C. (2025):**
Benefits of immobilized bacteria in bioremediation of sites contaminated with toxic organic compounds
Microorganisms **13** (1), art. 155
[10.3390/microorganisms13010155](https://doi.org/10.3390/microorganisms13010155)
6. **Armanu, E.G., Bertoldi, S., Schmidt, M., Heipieper, H.J., Volf, I., Eberlein, C. (2025):**
Hydrochar from agricultural waste as a biobased support matrix enhances bacterial degradation of diethyl phthalate
Molecules **30** (5), art. 1167
[10.3390/molecules30051167](https://doi.org/10.3390/molecules30051167)

7. **Armanu, E.G.,** Secula, M.S., **Eberlein, C., Schmidt, M., Heipieper, H.J.,** Volf, I. (2025):
Hydrochars from agricultural and forestry waste designed to achieve multipurpose matrices: Modeling and optimization of process parameters
Results Eng. **28** , art. 108252
[10.1016/j.rineng.2025.108252](https://doi.org/10.1016/j.rineng.2025.108252)
8. **Bachelder, J.,** Wiggerhauser, M., Winkel, L.H.E., Frossard, E., Tolu, J. (2025):
Drastic variations in chemical composition of organic inputs: Implications for organic fertilization
Environ. Sci. Technol. **59** (31), 16463 - 16477
[10.1021/acs.est.5c06493](https://doi.org/10.1021/acs.est.5c06493)
9. **Bade, F., Kleinstauber, S., Moeller, L.** (2025):
Foam formation during anaerobic digestion of sugar beet silage: causes and countermeasures
Bioresour. Technol. **437** , art. 133180
[10.1016/j.biortech.2025.133180](https://doi.org/10.1016/j.biortech.2025.133180)
10. **Baker, D.N.,** Giraud, M., Göbbert, J.H., Scharr, H., Riedel, M., Hvanberg, E.T., Schnepf, A. (2025):
Virtual world coupling with photosynthesis evaluation for synthetic data production *in silico* *Plants* **7** (2), diaf018
[10.1093/insilicoplants/diaf018](https://doi.org/10.1093/insilicoplants/diaf018)
11. **Bin Hudari, M.S.,** Deb, S., **Vogt, C.,** Filippini, M., **Nijenhuis, I.** (2025):
Temperature-associated effects on methanogenesis and microbial reductive dechlorination of trichloroethene in contaminated aquifer sediments
Front. Water **7** , art. 1566161
[10.3389/frwa.2025.1566161](https://doi.org/10.3389/frwa.2025.1566161)
12. **Bin Hudari, M.S., Vogt, C.** (2025):
Sulfidic toluene mineralization by aquifer microbial communities at different temperatures
FEMS Microbiol. Ecol. **101** (8), fiaf079
[10.1093/femsec/fiaf079](https://doi.org/10.1093/femsec/fiaf079)
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13. **Bolay, P., Toepel, J., Bühler, B.** (2025):
Biotechnological applications of cyanobacteria: *Synechocystis* and *Synechococcus* strains
In: Holtmann, D. (ed.)
Unconventional organisms in biotechnology
Adv. Biochem. Eng. Biotechnol. *192*
Springer Nature, p. 155 - 191
[10.1007/10_2025_282](https://doi.org/10.1007/10_2025_282)

14. Boussouga, Y.-A., Lin, Z.-F., **Schmidt, M.**, Schäfer, A.I. (2025):
Rethinking water resources: Harnessing The Gambia River with pressure-driven membrane processes for sustainable supply
Sci. Total Environ. **997** , art. 180158
[10.1016/j.scitotenv.2025.180158](https://doi.org/10.1016/j.scitotenv.2025.180158)
15. **Bozan, M., Berreth, H.**, Lindberg, P., **Bühler, K.** (2025):
Cyanobacterial biofilms: from natural systems to applications
Trends Biotechnol. **43** (2), 318 - 332
[10.1016/j.tibtech.2024.08.005](https://doi.org/10.1016/j.tibtech.2024.08.005)
16. Bozkurt, K., Lohrmann, C., **Weinhardt, F.**, Hanke, D., Hopp, R., Gerlach, R., Holm, C., Class, H. (2025):
Intermittent flow paths in biofilms grown in a microfluidic channel
Adv. Water Resour. **203** , art. 105018
[10.1016/j.advwatres.2025.105018](https://doi.org/10.1016/j.advwatres.2025.105018)
17. **Breulmann, M., Merbach, A., Bernhard, K., Moeller, L.** (2025):
Enhancing urban resilience: Stormwater retention and evapotranspiration performance of green roofs under extreme rainfall events
Land **14** (5), art. 977
[10.3390/land14050977](https://doi.org/10.3390/land14050977)
18. Camin, F., Besic, D., Brewer, P.J., Allison, C.E., Coplen, T.B., Dunn, P.J.H., **Gehre, M.**, Gröning, M., Meijer, H.A.J., Hélie, J.-F., Iacumin, P., Kraft, R., Krajnc, B., **Kümmel, S.**, Lee, S., Meija, J., Mester, Z., Mohn, J., Moossen, H., Qi, H., Skrzypek, G., Sperlich, P., Viallon, J., Wassenaar, L.I., Wielgosz, R.I. (2025):
Stable isotope reference materials and scale definitions — Outcomes of the 2024 IAEA experts meeting
Rapid Commun. Mass Spectrom. **39** (14), e10018
[10.1002/rcm.10018](https://doi.org/10.1002/rcm.10018)
19. Chen, M., **Wang, G.**, Ma, B., Musat, N., Shen, P., Wei, Z., Wei, Y., **Richnow, H.H.**, Zhang, J. (2025):
Deciphering the transfer of antimicrobial resistance genes in the urban water cycle from water source to reuse: a review
Environ. Int. **201** , art. 109584
[10.1016/j.envint.2025.109584](https://doi.org/10.1016/j.envint.2025.109584)
20. **Chen, W., Korth, B.**, Fu, D., **Worrich, A.** (2025):
Integrating experiments and machine learning modeling to assess the half-wave potentials of antibiotics
ACS ES&T Eng. **5** (12), 3400 - 3412
[10.1021/acsestengg.5c00569](https://doi.org/10.1021/acsestengg.5c00569)

21. Ciesielski, T., Titov, I., Semerád, J., Parus, A., Marecik, R., Cłapa, T., Narożna, D., Trzebny, A., Kloziński, A., Siwińska-Ciesielczyk, K., Dabert, M., Táncsics, A., **Heipieper, H.J.**, Cajthaml, T., Woźniak-Karczewska, M., Chrzanowski, Ł. (2025):
Moisture governs diesel biodegradation in sand soil – polystyrene microplastic have a negligible impact
J. Hazard. Mater. **498** , art. 139907
[10.1016/j.jhazmat.2025.139907](https://doi.org/10.1016/j.jhazmat.2025.139907)
22. **Dehghani, F., Reitz, T., Schlüter, S., Kästner, M., Blagodatskaya, E.** (2025):
Decoupling of heat and CO₂ release during decomposition of cellulose and its building blocks in soil
Soil Biol. Biochem. **206** , art. 109801
[10.1016/j.soilbio.2025.109801](https://doi.org/10.1016/j.soilbio.2025.109801)
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23. **Dev Roy, S.**, Kuffer, M., Wang, J. (2025):
Exploring the influence of building morphology on surface temperatures: A multi-city analysis in Europe
Build. Environ. **282** , art. 113274
[10.1016/j.buildenv.2025.113274](https://doi.org/10.1016/j.buildenv.2025.113274)
24. Domergue, L., **Georgi, A., Schierz, A.**, Cimetière, N., Giraudet, S., Hauchard, D. (2025):
Regeneration of the adsorption properties of hydrophobic zeolites for the treatment of diclofenac by Fenton-like process: Influence of Fenton catalyst location
Sep. Purif. Technol. **379, Part 2** , art. 134557
[10.1016/j.seppur.2025.134557](https://doi.org/10.1016/j.seppur.2025.134557)
25. **Duncan, A.H.**, Armenta, N., Garcia-Ledezma, F., Heck, C.A., Hafner, S., Planer-Friedrich, B., Fendorf, S. (2025):
Alternate wetting and drying limits arsenic in porewater and rice grain under severe future climate conditions
Environ. Sci. Technol. **59** (42), 22796 - 22806
[10.1021/acs.est.5c03552](https://doi.org/10.1021/acs.est.5c03552)
26. **Ejikeugwu, C.P.**, Nwakaeze, E.A., Aniekwe, C.W., Onu, E.N., Adikwu, M.U., Eze, P.M. (2025):
Investigating the factors influencing antibiotic use practices and their association with antimicrobial resistance awareness among poultry farmers in Enugu State, Nigeria
Antimicrob. Steward. Healthc. Epidemiol. **5** (1), e236
[10.1017/ash.2025.10141](https://doi.org/10.1017/ash.2025.10141)

27. **Eliza, M.**, Hipperson, H., Harrison, E. (2025):
Different transcriptional impacts of prophage within the rhizobia-legume symbiosis
Symbiosis **96** , 249 - 260
[10.1007/s13199-025-01075-w](https://doi.org/10.1007/s13199-025-01075-w)
28. **Esmaeili Aliabadi, D.**, Wulff, N., **Lehneis, R.**, **Sadr, M.**, **Gutjahr, S.**, Reutter, F.J., **Jordan, M.**, **Lehmann, P.**, **Thrän, D.** (2025):
Climate change may impair the transition to a fully renewable energy system: A German case study
Energy **338** , art. 138684
[10.1016/j.energy.2025.138684](https://doi.org/10.1016/j.energy.2025.138684)
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29. Espinoza Miranda, S.S., **Abbaszade, G.**, Hess, W.R., Drescher, K., Saliba, A.-E., Zaburdaev, V., Chai, L., Dreisewerd, K., Grüneberger, A., Westendorf, C., **Müller, S.**, Mascher, T. (2025):
Resolving spatiotemporal dynamics in bacterial multicellular populations: approaches and challenges
Microbiol. Mol. Biol. Rev. **89** (1), e00138-24
[10.1128/mmbr.00138-24](https://doi.org/10.1128/mmbr.00138-24)
30. **Eziuzor, S.C.**, **Vogt, C.** (2025):
Exploring benzene mineralization by anaerobes isolated from denitrifying enrichment cultures
Anaerobe **94** , art. 102979
[10.1016/j.anaerobe.2025.102979](https://doi.org/10.1016/j.anaerobe.2025.102979)
31. Feord, H.K., Keuschnig, C., Trivedi, C.B., Mourot, R., Zervas, A., Turpin-Jelfs, T., Tranter, M., Anesio, A.M., **Adrian, L.**, Benning, L.G. (2025):
Linking extreme light availability to cellular function in algae-dominated communities on the Greenland Ice Sheet
FEMS Microbiol. Ecol. **101** (10), fiaf095
[10.1093/femsec/fiaf095](https://doi.org/10.1093/femsec/fiaf095)
32. Fonseca de Souza, L., Gutierrez Oliveira, H., Pellegrinetti, T.A., Mendes, L.W., **Bonatelli, M.L.**, Romão Dumaresq, A.S., Sinatti, V.V.C., Pinheiro, J.B., Azevedo, J.L., Quecine, M.C. (2025):
Co-inoculation with *Bacillus thuringiensis* RZ2MS9 and rhizobia improves the soybean development and modulates soil functional diversity
FEMS Microbiol. Ecol. **101** (2), fiaf013
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33. **Gai, B., Kumar, R., Hüesker, F., Mi, C., Kong, X., Boehrer, B., Rinke, K., Shatwell, T.** (2025):
Catchments amplify reservoir thermal response to climate warming
Water Resour. Res. **61** (1), e2023WR036808
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34. Grimm, H., Lorenz, J., Straub, D., Joshi, P., Shuster, J., Zarfl, C., **Muehe, E.M.**, Kappler, A. (2025):
Nitrous oxide is the main product during nitrate reduction by a novel lithoautotrophic iron(II)-oxidizing culture from an organic-rich paddy soil
Appl. Environ. Microb. **91** (1), e01262-24
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35. Gupta, R., Singh, V.P., Sharma, A., **Sharma, P.**, Kumar, M. (2025):
Emerging roles of nanoparticles in sustainable agriculture
Plant Nano Biol. **13**, art. 100197
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36. **Haenelt, S., Akay, C., Richnow, H.-H., Kümmel, S., Stryhanyuk, H., Müller, J.A., Musat, N.** (2025):
Compartment-specific effect of sulfamethoxazole at low µg/L concentrations on microbial nitrogen assimilation in a river system
Water Res. X **28**, art. 100390
[10.1016/j.wroa.2025.100390](https://doi.org/10.1016/j.wroa.2025.100390)
Main topic T7; Secondary topic T9
37. Haluska, A.A., Blendinger, E., Rügner, H., Buchner, D., Duda, J.-P., Thiel, V., Blumenberg, M., Ostertag-Henning, C., **Kümmel, S.**, Grathwohl, P. (2025):
Hydrocarbons, hydrogen, and organic acids generation by ball milling and batch incubation of sedimentary rocks
Appl. Geochem. **178**, art. 106160
[10.1016/j.apgeochem.2024.106160](https://doi.org/10.1016/j.apgeochem.2024.106160)
38. Hauer, A., Zuev, A., **Chatzinotas, A., Jurburg, S., Kümmel, S.**, Potapov, A. (2025):
Tracking assimilation of microbial biomass, leaf litter and artificially created soil organic matter by soil fauna using multi-resource stable isotope labelling
Eur. J. Soil Biol. **126**, art. 103752
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39. **Heipieper, H.** (2025):
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Appl. Microbiol. Biotechnol. **109** (1), art. 95
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40. **Heipieper, H.J.** (2025):
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[10.1007/s12268-025-2545-2](https://doi.org/10.1007/s12268-025-2545-2)
41. Hidalgo, K.J., Centurion, V.B., Lemos, L.N., Soriano, A.U., Valoni, E., Baessa, M.P., **Richnow, H.H., Vogt, C.**, Oliveira, V.M. (2025):
Disentangling the microbial genomic traits associated with aromatic hydrocarbon degradation in a jet fuel-contaminated aquifer
Biodegradation **36**, art. 7
[10.1007/s10532-024-10100-6](https://doi.org/10.1007/s10532-024-10100-6)
42. Hill, R.C., **Pieńkowska, A., Merbach, I., Reitz, T., Muehe, E.M.**, Vengosh, A. (2025):
Impacts of fertilization on metal(loid) transfer from soil to wheat in a long-term fertilization experiment – using $^{87}\text{Sr}/^{86}\text{Sr}$ isotopes as metal(loid) tracer
Environ. Int. **205**, art. 109851
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43. Hmedat, A.N., **Chávez Morejón, M.**, Rivera, D.G., Pantelic, N.Đ., Wessjohann, L.A., Kaluderovic, G.N. (2025):
Cyclic lipopeptides as selective anticancer agents: *In vitro* efficacy on B16F10 mouse melanoma cells
Anti-Cancer Agents Med. Chem. **25** (12), 873 - 882
[10.2174/0118715206351208250102114944](https://doi.org/10.2174/0118715206351208250102114944)
44. **Houben, T., Ebeling, P., Khurana, S., Schmid, J.S., Boog, J.** (2025):
Machine-learning based spatiotemporal prediction of soil moisture in a grassland hillslope
Vadose Zone J. **24** (2), e70011
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45. Iglesias-Riobó, J., **Bonatelli, M.L.**, Machado-Fernández, C., Mauricio-Iglesias, M., Carballa, M. (2025):
Optimising medium chain carboxylate production in xylan mixed-culture monofermentation
Bioresour. Technol. **420**, art. 132124
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46. **Itzenhäuser, M.A.**, Enkerlin, A.M., Dewald, J.A., Avşar, B., **Stauder, R., Halpick, H., Schaale, R., Baumann, L.M., Fernandez Merayo, N., Maskow, T.**, Selim, K.A., Weinberg, C.E., **Klähn, S.** (2025):
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47. **Izadi, P., Korth, B., Harnisch, F.** (2025):
On assessing the energy efficiency of bioelectrochemical systems for cathodic synthesis and remediation
J. Power Sources **652**, art. 237631
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48. Jenner, A.-K., Malik, C., Böttcher, G., Roeser, P., **Gehre, M.**, Schmiedinger, I., Böttcher, M.E. (2025):
Sources and fate of dissolved sulphate, carbonate, and nitrate in groundwater of the temperate climate zone: a high-resolution multi-isotope (H, C, O, S) study in north-eastern Germany
Isot. Environ. Health Stud. **61** (1), 20 - 41
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49. Ji, Q., Liu, Y., Zhang, H., Gao, Y., Ding, Y., Xie, J., Zhang, J., Jin, X., **Lai, B.**, Chen, C., Wang, J., Gao, W., Mei, K. (2025):
Structural insights into the substrate recognition of ginsenoside glycosyltransferase Pq3-O-UGT2
Adv. Sci. **12** (11), art. 2413185
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50. Joseph, N.T., Droz, B., Schwichtenberg, T., Oetjen, K., **Sühnholz, S.**, Jones, G.D., Field, J.A., Higgins, C.P., Helbling, D.E. (2025):
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Environ. Sci. Technol. **59** (42), 22852 - 22865
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51. **Jurburg, S.D.** (2025):
Short read lengths recover ecological patterns in 16S rRNA gene amplicon data
Mol. Ecol. Resour. **25** (6), e14102
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52. **Jurburg, S.D.**, Arboleda-Baena, C., Xie, A., Che, R., Ge, T., Yang, Y., Cai, Y., Zhang, Y., Li, G., Sun, X. (2025):
Regional collaborative data harmonization: Building the next generation of global observations
Soil Ecol. Lett. **7** (4), art. 250354
[10.1007/s42832-025-0354-7](https://doi.org/10.1007/s42832-025-0354-7)
53. **Kas, A., Izadi, P.**, Dinges, I., Stöckl, M., **Harnisch, F.** (2025):
Gas diffusion electrodes enable enhanced energy efficiency of electrochemical CO₂ reduction in natural brine-inspired electrolytes
J. CO2 Util. **102**, art. 103268
[10.1016/j.jcou.2025.103268](https://doi.org/10.1016/j.jcou.2025.103268)
54. **Kasmanas, J.C., Magnúsdóttir, S.**, Zhang, J., Smalla, K., Schloter, M., Stadler, P.F., de Carvalho, A.C.P.L.F., **Nunes da Rocha, U.** (2025):
Integrating comparative genomics and risk classification by assessing virulence, antimicrobial resistance, and plasmid spread in microbial communities with gSpreadComp
GigaScience **14**, g1af072
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55. Kempf, K., **Kümmel, S., Gehre, M.**, Kempf, O., Steinberg, P., Molkentin, J., Münch, S., Jira, W. (2025):
A comprehensive view on the fate of ¹⁵N isotope-labeled nitrite in model systems for cured and heated sausages
Food Chem. **493, Part 2**, art. 145755
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56. Khaliq, S., **Schlenker, A., Kümmel, S.**, Höhn, D., Jochmann, M.A., Kerpen, K., **Fink, P., Weitere, M.**, Schmidt, T.C. (2025):
Spatial and temporal patterns of *Gammarus* sp. in lowland streams analyzed through amino acid isotope analysis
Int. Rev. Hydrobiol. **110** (2), 151 - 165
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Integrated effects of microbial culture and nitrogen application on phytoremediation, physiology and growth of maize in glyphosate-contaminated soil
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58. Kim, B.-C. R., **Kleinstuber, S.**, Lawson, C.E. (2025):
Carbon-efficient waste upcycling: combining syngas fermentation and chain elongation with synthetic consortia
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