Biosketch

Univ.-Prof. Prof. Thilo Hofmann
Position in CoE: Key Researcher

Personal Details

Place of birth	Celle, Germany
Nationality	German
Children	3 (2002, 2004, 2015)
Affiliation:	University of Vienna
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Profile	ReseacherID: A-8927-2008
List of publications	ORCID: 0000-0001-8929-6933
Academic age	23 years since PhD

Academic Career and Positions Held

I received my **PhD in aquatic geochemistry from Bremen University** in 1998. From 1999 I was first a postdoctoral scholar, and then **Assistant Professor at the University of Mainz**. Since 2005 I have been a **Full Professor and Chair for Environmental Geosciences at the University of Vienna**. I served as Vice Dean of the Faculty for Earth Sciences, Geography and Astronomy from 2006 to 2012, and then as **Dean of the Faculty** until 2016. In 2014, I founded the University of Vienna's **Environmental Research Network** and serve as Director; the network includes more than **230 scientists** from the natural sciences, the social sciences, the humanities, law, and economics, aiming to tackle today's environmental challenges. In 2017, I was appointed **Adjunct Full Professor in the Department of Civil and Environmental Engineering at Duke University** (US), and in 2018 honoured as Guest Professor at the College of Environmental Science and Engineering at Nankai University, Tianjin (China).

Scientific Achievements and Scientific Contribution to the CoE

Scientific Achievements. **Chemical pollution** can have profound effects on **microbial communities**, and thus on **biodiversity, ecosystem, and human health**. My research focuses on the investigation of such **trace pollutants**, with a special focus on nanoparticulate contamination, including plastics. My research group was one of the first to raise the question of **tire wear particles** and related additives, and published methods to measure the desorption of additives from plastics. We are one of the leading labs for the characterization of nanoparticles in environmental media, we developed the first OECD guideline and elucidated the role of engineered nanoparticles in the environment. My group showed for the first time the role of carbonaceous particles for the behaviour of organic contaminants in soil, investigated sorption mechanisms onto carbon nanotubes and fullerenes, and the usage of biochar for remediation, and persistent free radical formation from wildfire chars. I have published **>200 peer-reviewed papers** and received **awards** from the German Academic Scholarship Foundation, Berlin Technical University, and the German Water Chemical Society.

Scientific Contribution to the CoE. Within the Cluster of Excellence, I will focus on the role of **chemical perturbations on microbiomes and linked pressures on Planetary Health**. Specifically, we will provide for the first time a comprehensive **cross-system understanding** of the impacts of tire wear and its additives as examples of emerging pollutants on human and environmental health. Parameters affecting microbiome health will be transcribed to human action enabling interventions and setting targets to stop causing planetary harm by chemical pollution.

10 Most Important Publications (*relevant for the CoE)

1. *Castan, S.; Henkel, C.; Hüffer, T.; **Hofmann, T.** Microplastics and Nanoplastics Barely Enhance Contaminant Mobility in Agricultural Soils. *Commun Earth Environ* **2021**, *2* (1), 193. *https://doi.org/10.1038/s43247-021-00267-8*.

2. ***Hofmann, T.**; Lowry, G. V.; Ghoshal, S.; Tufenkji, N.; Brambilla, D.; Dutcher, J. R.; Gilbertson, L. M.; Giraldo, J. P.; Kinsella, J. M.; Landry, M. P.; Lovell, W.; Naccache, R.; Paret, M.; Pedersen, J. A.; Unrine, J. M.; White, J. C.; Wilkinson, K. J. Technology Readiness and Overcoming Barriers to Sustainably Implement Nanotechnology-Enabled Plant Agriculture. *Nat Food* **2020**, *1* (7), 416–425. *https://doi.org/10.1038/s43016-020-0110-1*.

3. *Hüffer, T.; Wehrhahn, M.; **Hofmann, T.** The Molecular Interactions of Organic Compounds with Tire Crumb Materials Differ Substantially from Those with Other Microplastics. *Environ. Sci.: Processes Impacts* **2020**, *22* (1), 121–130. *https://doi.org/10.1039/C9EM00423H*.

4. Sigmund, G.; Gharasoo, M.; Hüffer, T.; **Hofmann, T.** Deep Learning Neural Network Approach for Predicting the Sorption of Ionizable and Polar Organic Pollutants to a Wide Range of Carbonaceous Materials. *Environ. Sci. Technol.* **2020**, *54* (7), 4583–4591. *https://doi.org/10.1021/acs.est.9b06287*.

5. *Kah, M.; Beulke, S.; Tiede, K.; **Hofmann, T.** Nanopesticides: State of Knowledge, Environmental Fate, and Exposure Modeling. *Critical Reviews in Environmental Science and Technology* **2013**, *43* (16), 1823–1867. *https://doi.org/10.1080/10643389.2012.671750*.

6. *Hüffer, T.; Wagner, S.; Reemtsma, T.; **Hofmann, T.** Sorption of Organic Substances to Tire Wear Materials: Similarities and Differences with Other Types of Microplastic. *TrAC Trends in Analytical Chemistry* **2019**, *113*, 392–401. *https://doi.org/10.1016/j.trac.2018.11.029*.

7. *Miernicki, M.; **Hofmann, T.**; Eisenberger, I.; von der Kammer, F.; Praetorius, A. Legal and Practical Challenges in Classifying Nanomaterials According to Regulatory Definitions. *Nat. Nanotechnol.* **2019**, *14* (3), 208–216. *https://doi.org/10.1038/s41565-019-0396-z*.

8. *Hüffer, T.; Weniger, A.-K.; **Hofmann, T.** Sorption of Organic Compounds by Aged Polystyrene Microplastic Particles. *Environmental Pollution* **2018**, *236*, 218–225. *https://doi.org/10.1016/j.envpol.2018.01.022*.

9. *Hüffer, T.; Praetorius, A.; Wagner, S.; von der Kammer, F.; **Hofmann, T.** Microplastic Exposure Assessment in Aquatic Environments: Learning from Similarities and Differences to Engineered Nanoparticles. *Environ. Sci. Technol.* **2017**, *51* (5), 2499–2507. *https://doi.org/10.1021/acs.est.6b04054*.

10. Ottofuelling, S.; Von Der Kammer, F.; **Hofmann, T.** Commercial Titanium Dioxide Nanoparticles in Both Natural and Synthetic Water: Comprehensive Multidimensional Testing and Prediction of Aggregation Behavior. *Environ. Sci. Technol.* **2011**, *45* (23), 10045–10052. *https://doi.org/10.1021/es2023225*.