

Susanne Lackner (Assistant Professor)
Karlsruhe Institute of Technology (KIT)
Engler Bunte Institute
Water Chemistry and Water Technology

Publications in peer-review Journals:

1. Gilbert E., Agrawal S., Karst S., Horn H., Nielsen P. H., **Lackner S.** (2014). Low Temperature Partial Nitritation/Anammox in a Moving Bed Biofilm Reactor treating low strength Wastewater. *Environmental Science & Technology*, 48(15), 8784-8792
2. Horn H., **Lackner S.** (2014). Modeling of Biofilm Systems: A Review. *Advances in Biochemical Engineering/Biotechnology*, Springer, doi 10.1007/10_2014_275
3. **Lackner S.**, Gilbert E.M., Vlaeminck S.V., Joss A., Horn H., van Loosdrecht M.C.M. (2014). Full-scale Partial Nitritation/Anammox Experiences - an Application Survey. *Water Research*, 55, 292-303.
4. Gilbert E.M., Agrawal S., Brunner F.C., Schwartz T., Horn H. and **Lackner S.** (2014) Response of different *Nitrospira* sp. to anoxic periods depends on operational DO. *Environmental Science & Technology*, 48(5), 2934-2941
5. Nàcher C.P., Domingo-Félez C., **Lackner S.**, and Smets B.F. (2013) Microbial activity catalyzes oxygen transfer in membrane-aerated nitritation biofilm reactors, *Journal of Membrane Science*, 446, 465-471.
6. Gilbert E.M., Müller E., Horn H., **Lackner S.** (2013) Microbial activity of suspended biomass from a nitritation–anammox SBR in dependence of operational condition and size fraction. *Applied Microbiology and Biotechnology*, 97(19), 8795-8804
7. **Lackner S.** and Horn H. (2012) Comparison of performance and operation stability in an SBR and MBBR for single stage nitritation-anammox treating wastewater with high organic load. *Environmental Technology*, 34(10), 1319-1328.
8. **Lackner S.** and Smets B.F. (2012) Effect of the kinetics of ammonium and nitrite oxidation on nitritation success or failure for different biofilm reactor geometries. *Biochemical Engineering Journal*, 69, 123-129.
9. **Lackner S.** and Horn H. (2012) Evaluating operation strategies and process stability of a single stage nitritation-anammox SBR by use of the oxidation-reduction potential (ORP). *Bioresource Technology*, 107, 70-77
10. **Lackner S.**, Lindenblatt C., Horn H. (2012) 'Swinging ORP' as operation strategy for stable reject water treatment by Deammonification in Sequencing Batch Reactors. *Chemical Engineering Journal*, 180, 190-196
11. **Lackner S.** und Horn H. (2012) Einstufige Deammonifikation zur Behandlung von Abwasser mit hohem Kohlenstoffgehalt: ein Vergleich. *gwf Wasser/Abwasser* 153, 1206-1213
12. Nàcher C.P., Sun S., **Lackner S.**, Terada A., Schreiber F., Zhou Q. and Smets B.F. (2010) Sequential aeration of Membrane Aerated Biofilm Reactors (MABRs) for high-rate autotrophic nitrogen removal: Experimental demonstration. *Environmental Science & Technology*, 44(19), 7628-7634
13. **Lackner S.**, Terada A., Horn H., Henze M., and Smets B.F. (2010) Nitritation Performance in Membrane Aerated Biofilm Reactors differs from conventional Biofilm Systems. *Water Research*, 44(20), 6073-6084
14. Terada A., **Lackner S.**, Kristensen, K. and Smets B.F. (2010) Inoculum effects on community composition and nitritation performance of autotrophic nitrifying biofilm reactors with counter-diffusion geometry. *Environmental Microbiology*, 12(10), 2858-2872
15. **Lackner S.**, Holmberg M., Terada A., Kingshott P. and Smets B.F. (2009) Enhancing the formation and shear resistance of nitrifying biofilms on membranes by surface modification. *Water Research*, 43(14), 3469-3478

16. Wang R., Terada A., **Lackner S.**, Smets B.F., Henze M., Xia S. and Zhao J. (2009) Nitritation performance and biofilm development of co- and counter-diffusion biofilm reactors: modeling and experimental comparison. *Water Research*, 43(10), 2699-2709
17. **Lackner S.**, Terada A. and Smets B.F. (2008) Heterotrophic activity compromises autotrophic nitrogen removal in membrane aerated biofilms: Results of a modeling study. *Water Research* 42(4-5), 1102-1112
18. Terada A., **Lackner S.**, Tsuneda S. and Smets B.F. (2007) Redox-stratification controlled biofilm (ReSCoBi) for completely autotrophic nitrogen removal: The effect of co- versus counter-diffusion on reactor performance. *Biotechnology and Bioengineering* 97(1), 40-51

Presentations at international conferences (presenter underlined):

1. Gilbert E.M., Agrawal S., Horn H., **Lackner S.** (2014). Effect of annual temperature changes on the combined partial nitritation-anammox process, *IWA Specialist Conference on Global Challenges for Sustainable Wastewater Treatment and Resource Recovery, Kathmandu, Nepal*
2. Gilbert E.M., Agrawal S., Brunner F., Moser S., Becker S., Horn H., **Lackner S.** (2014). NOB Suppression in Partial Nitritation/Anammox Processes for Side- and Mainstream Treatment, *IWA Specialist Conference on Global Challenges for Sustainable Wastewater Treatment and Resource Recovery, Kathmandu, Nepal*
3. Gilbert E.M., Agrawal S., Horn H., **Lackner S.** (2014) The Role of Biofilm Thickness on Partial Nitritation/ Anammox Performance at Low Temperature, *11th IWA Leading Edge Conference on Water and Wastewater Technologies, Abu Dhabi, UAE*
4. Li C., Wagner M., **Lackner S.**, Horn H. (2014) Tradeoff between mass transfer and actual biofilm surface area on carriers in moving bed biofilm reactors, *Biofilms6, Vienna, Austria*
5. Gilbert E. M., Agrawal S., Horn H., **Lackner S.** (2013). Identification of Nitrospira sp. in correlation with response to anoxic phases. Workshop Presentation, *3rd International Conference on Nitrification ICoN 3, Tokyo, Japan*
6. **Lackner S.**, Thoma K., Gander W., Schreff D., Horn H. (2013). Remaining Obstacles with the Start-up of a Full-scale Deammonification SBR treating Effluent from Digested Sludge Dewatering. *13th IWA World Congress on Anaerobic Digestion, Santiago de Compostela, Spain*
7. Li C., Wagner M., **Lackner S.**, Horn H. (2013). Combination of optical coherence tomography imaging with two-dimensional modeling of flow and substrate transport in and around biofilm grown on fluidized carriers. *IWA 9th International Conference on Biofilm Reactors, Paris, France*
8. Gilbert E.M., Horn H., **Lackner S.** (2012). Distribution of ammonium and nitrite oxidizing activity within three size classes of suspended sludge in a nitritation-anammox SBR. *IWA Nutrient Removal and Recovery Conference 2012, Harbin, China*
9. Li C., **Lackner S.**, Müller E., Schwingel T., Applegate C., Horn H. (2011). Modeling the nitrogen removal efficiency of an integrated fixed-film activated sludge system (IFAS). *IWA Biofilm Conference 2011: Processes in Biofilms, Shanghai, China*
10. Moeslang H., **Lackner S.**, Boney P. (2011). Experience with the MEMROD MBR system on large cruise ships. *6th IWA Specialist Conference on Membrane Technology for Water & Wastewater Treatment, Aachen, Germany*
11. Terada A., Kragelund C., **Lackner S.**, Sun S., Vangsgaard K., Nielsen P.H., Smets B.F. (2010). Ecophysiology And Diversity of Chloroflexi In An Anammox Biofilm Grown In An Anaerobic Fixed-Bed Upflow Reactor. *ISME 13, Seattle, WA, USA*
12. Terada A., **Lackner S.**, Kristensen K., Smets B.F. (2010). Inoculum Effects on Community Composition and Nitritation Success of Nitrifying Biofilm Grown on a Gas-Permeable Membrane. *WEF/IWA Biofilm Reactor Technology Conference 2010, Portland, Oregon, USA*
13. Nächer C.P., Sun S., **Lackner S.**, Terada, A., Schreiber, F., Zhou, Q., Smets, B.F. (2010). Sequential Aeration of Membrane-Aerated Biofilm Reactors (MABRs) for High-Rate Autotrophic Nitrogen Removal: Experimental Demonstration. *WEF/IWA Biofilm Reactor Technology Conference 2010, Portland, Oregon, USA*

14. Sun S.-P., Pellicer Nàcher C., **Lackner S.**, Terada A., Zhou Q., Smets B.F. (2009). Start-up strategies of membrane-aerated biofilm reactor (MABR) for completely autotrophic nitrogen removal. *2nd IWA Specialized Conference Nutrient Management in Wastewater Treatment Processes, Krakow, Poland*
15. Terada A., **Lackner S.**, Smets B.F. (2009). Abundance and diversity of microbial communities In long-term operated anammox biofilm reactors initiated with different inocula. *5th IWA International Specialized Conference on Microbial Population Dynamics in Biological Wastewater Treatment, Aalborg, Denmark*
16. Gilmore K.R., Smets B.F., Terada A., **Lackner S.**, Garland J.L., Love N.G (2009). Microbial community analysis in an autotrophic hollow-fiber membrane aerated biofilm reactor (HFMBR) treating a high-strength nitrogen wastewater. *5th IWA International Specialized Conference on Microbial Population Dynamics in Biological Wastewater Treatment, Aalborg, Denmark*
17. Terada A., **Lackner S.**, Smets B.F., (2008) Do different initial microbial communities converge in identically operated ANAMMOX biofilm reactors? *Biofilms III 3rd International Conference, Munich, Germany*
18. **Lackner S.**, Holmberg M., Terada A., Kingshott P., Smets B.F., (2008) Effect of membrane surface functionalization on formation and shear resistance of nitrifying biofilms. *IWA Biofilm Technologies Conference, Singapore*
19. Wang R., Terada A., **Lackner S.**, Lardon L., Smets B.F., Henze M. (2008) Start-up Strategies for Stable Autotrophic Nitrogen Removal in Redox-Stratification Controlled Biofilm Reactor (ReSCoBiR). *IWA Biofilm Technologies Conference, Singapore*
20. Terada A., **Lackner S.**, Tsuneda S., Smets B.F. (2006). Redox-stratification controlled biofilm for completely autotrophic nitrogen removal: modeling the effect of substrate co- versus counter-diffusion on performance. *IWA Biofilm Systems VI Conference, Amsterdam, The Netherlands*

Invited Talks at international conferences (presenter underlined):

1. Herrling M., Guthausen G., **Lackner S.**, Horn H. (2013) Sorption of magnetic nanoparticles on biofilm structures and identification with MRI. *Minisymposium: Smart and Active Assemblies for* Herrling M., Guthausen G., **Lackner S.**, Horn H. (2013) Sorption of magnetic nanoparticles on biofilm *Catalysis 23.-24.09.2013, Leipzig, Germany*
2. **Lackner S.** (2012). Floc based SBR technologies for nitrification anammox: working experiences and remaining obstacles. *Partial nitrification/anammox technology: μ -Symposium, Ghent University, Faculty of Bioscience Engineering*
3. **Lackner S.** (2012). Full-scale Deammonification – Experiences and Perspectives from the German Market. *IWA Nutrient Removal and Recovery Conference 2012, Harbin, China*
4. Smets B.F., Terada A., **Lackner S.** (2008) Redox stratification controlled biofilm reactors for completely autotrophic nitrogen removal. *IWA North American Membrane Research Conference, Amherst, MA, USA*

Invited Talks at national conferences (presenter underlined)

1. **Lackner S.**, Gilbert E.M., Agrawal S., Horn H. (2014). Einsatz der Deammonifikation im Hauptstrom als neue Möglichkeit zur Stickstoffelimination? 89. *Siedlungswasserwirtschaftliches Kolloquium: Energiepotenziale kommunaler Kläranlagen erkennen, nutzen und kritisch bewerten, 9. Oktober, Stuttgart*
2. **Lackner S.**, Lindenblatt C., Horn H. (2011). Betriebsstrategien für die einstufige Deammonifikation im SBR. *Vortrag, Workshop Deammonifikation, 20. September, Oskar von Miller Forum, München*
3. **Lackner S.**, Horn H. (2011). Regelstrategien für die einstufige Deammonifikation in SBR. *Vortrag, 39. Abwassertechnisches Seminar, Garching b. München*
4. **Lackner S.**, Lindenblatt C., Rapp-Fiegle S., Horn H. (2011). Deammonifikation - Verfahrenskombinationen, Umsetzbarkeit und Regelstrategien. *Vortrag, DWA Seminar KA der Zukunft, München*

5. Möslang H., **Lackner S.**, Brockmann M. (2010). Einsatz der Membrantechnik in der Industrie zur Wasserwiederverwendung. Präsentation, *DGMT Workshop, Membrantechnik im deutsch-polnischen Brückenschlag, Wrocław, Polen*

Poster presentations at international conferences:

1. Lackner S., Gilbert E. M., Schuler S., Horn H., (2014). Amplitude Heights For Given Oxygen Concentration Set-points Impact Oxygen Availability In Biofilms. *IWA Specialist Conference on Global Challenges for Sustainable Wastewater Treatment and Resource Recovery, Kathmandu, Nepal*
2. Gilbert E. M., Agrawal S., Horn H., **Lackner S.** (2013). Does the operational oxygen concentration select for nitrite oxidizers with longer lag-times? *3rd International Conference on Nitrification ICoN 3, Tokyo, Japan*
3. Gülay A., Nàcher C.P., Mutlu G.M., Jensen M., Vlaeminck S., **Lackner S.**, Terada A., Chandran K., Soerensen S.J., Hansen L.H., Al-Soud W., Smets B.F. (2013). Diversity of total and functional microbiome of anammox reactors fed with complex and synthetic nitrogen-rich wastewaters. *3rd International Conference on Nitrification ICoN 3, Tokyo, Japan*
4. Herrling M.P., Guthausen G., Horn, H., **Lackner S.**, (2013) Magnetic Resonance Imaging of local flow velocity profiles in biofilm carriers from waste water treatment. *International Conference of Magnetic Resonance Imaging, Cambridge, UK*
5. **Lackner S.**, Christensson M., Möslang H., Lemaire R., Horn H. (2012). Performance of a Moving Bed Biofilm Reactor (MBBR) in comparison with a Sequencing Batch Reactor (SBR) for treatment of industrial wastewater by nitritation-anammox. *IWA Nutrient Removal and Recovery Conference 2012, Harbin, China*
6. Terada A., **Lackner S.**, Kristensen K., Smets B.F. (2009) Initial population of ammonia- and nitrite-oxidizing bacteria compromises successful nitritation in a counter-diffusion biofilm geometry. *5th IWA International Specialized Conference on Microbial Population Dynamics in Biological Wastewater Treatment, Aalborg, Denmark*
7. **Lackner S.**, Nàcher C.P., Terada A., Lardon, L., Smets B.F. (2008) Redox Stratification Controlled Biofilm Reactors For Completely Autotrophic Nitrogen Removal. *5th IWA Leading-Edge Conference, Zurich, Switzerland*
8. Capuno R.E., Love N.G. Terada A., **Lackner S.**, Smets B.F. (2008). Model Prediction of Completely Autotrophic Nitrogen Removal under Different Reactor Configurations. *Proceedings of the Water Environment Federation 81st Annual Technical Exhibition & Conference, Chicago, IL, USA*,
9. Trably E., **Lackner S.**, Castello C., Batstone D.J., Patureau D., Schmidt J.E. (2005). Identification of Nonyl-Phenol degraders in anaerobic enrichment from digested sludge. *4th IWA Activated Sludge Population Dynamics Specialist Conference, Brisbane, Australia*