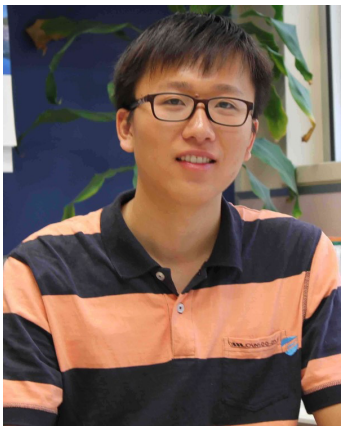
Personal Details



Name: Lai Peng

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Affiliation: Research group of Sustainable Energy, Air and Water Technology, Department of Bioscience Engineering, University of Antwerp, Antwerp 2020, Belgium

Education

Ph.D. in Environmental Engineering, 2015, The University of Queensland, Australia
Advisors: Professor Zhiguo Yuan, Professor Bing-Jie Ni, Dr Liu Ye
Dissertation Title: Understanding nitrous oxide production by ammonia oxidizing bacteria in an enriched nitrifying sludge

B.Eng. in Environmental Engineering, 2011, Tianjin University, China

Research Experience:

November, 2016 – present, Marie Curie Fellow in Research Group of Sustainable Energy, Air and Water Technology, University of Antwerp, Belgium

September, 2015 – October, 2016 Postdoctoral Researcher in Center for Microbial Ecology and Technology, Ghent University, Belgium.

March, 2015 – September, 2015 Research Assistant in Advanced Water Management Center, The University of Queensland, Australia.

Research Interests:

Understanding and mitigating nitrous oxide (N_2O) production from wastewater treatment

Novel applications of nitrogen removal based on short-cut processes (partial nitritation/anammox and nitrification/denitrification)

Mathematical modelling of pollutant biotransformation processes in wastewater and groundwater

Awards

MARIE SKŁODOWSKA-CURIE ACTIONS: Individual Fellowships (IF)

Best Presentation Award in ICSWRM 2016: 18th International Conference on Sustainable Water Resources Management, London, UK

Project:

2016 – 2018: Understanding nitrous oxide production from the mainstream partial nitritation and anammox process, funded by the European Commission Horizon 2020 Programme Marie Skłodowska-Curie Actions (grant agreement number: 708592-N2OPNA), **in charge**

2013 – 2016: ManureEcoMine – Green fertilizer upcycling from manure: technological, economic and environmental sustainability, funded by the European Commission within the 7th Framework Programme (grant agreement number: 603744), participate

2012 – 2014: Quantifying fugitive greenhouse gas emissions from Bolivar WWTP, participate

2009 – 2012: Understanding and mitigating nitrous oxide emission from wastewater treatment plants (ARC LP0991765), participate

2009 – 2011: Understanding fugitive greenhouse gas emissions from wastewater systems for reliable accounting and effective mitigation (ARC DP0987204), participate

Publications:

Peer Reviewed Papers:

1. **Peng, L**., Ni, B.J., Erler, D., Ye, L., Yuan, Z. (2014) The effect of dissolved oxygen on N_2O production by ammonia-oxidizing bacteria in an enriched nitrifying sludge. *Water Research*, 66, 12-21. *(Impact Factor: 6.942, Top 1 in the fields of water resource and environmental engineering,* ***JCR Q1****)*
2. **Peng, L**., Ni, B.J., Ye, L., Yuan, Z. (2015) The combined effect of dissolved oxygen and nitrite on N_2O production by ammonia oxidizing bacteria in an enriched nitrifying sludge. *Water Research*, 73, 29-36. *(Impact Factor: 6.942, Top 1 in the fields of water resource and environmental engineering,* ***JCR Q1****)*
3. **Peng, L**., Ni, B.J., Ye, L., Yuan, Z. (2015) N_2O production by ammonia oxidizing bacteria in an enriched nitrifying sludge linearly depends on inorganic carbon concentration. *Water Research*, 74, 58-66. *(Impact Factor: 6.942, Top 1 in the fields of water resource and environmental engineering,* ***JCR Q1****)*

4. **Peng, L**., Liu, Y., Gao, S.H., Chen, X., Ni, B.J. (2016) Evaluating simultaneous chromate and nitrate reduction during microbial denitrification processes. *Water Research*, 89, 1-8. *(Impact Factor: 6.942, Top 1 in the fields of water resource and environmental engineering,* ***JCR Q1****,* ***ESI Highly Cited Paper 2016****)*
5. **Peng, L**., Chen, X., Xu, Y., Liu, Y., Gao, S.H., Ni, B.J. (2015) Biodegradation of pharmaceuticals in membrane aerated biofilm reactor for autotrophic nitrogen removal: a model-based evaluation. *Journal of Membrane Science*, 494, 39-47. *(Impact Factor: 6.035, Top journals in the fields of Chemical engineering and polymer science in research,* ***JCR Q1****)*
6. **Peng, L**., Ni, B.J., Ye, L., Yuan, Z. (2015) Selection of mathematical models for N_2O production by ammonia oxidizing bacteria under varying dissolved oxygen and nitrite concentrations. *Chemical Engineering Journal*, 281, 661-668. *(Impact Factor: 6.216, Top journals in the field of chemical engineering,* ***JCR Q1****)*
7. **Peng, L**., Liu, Y., Ni, B.J. (2016) Nitrous oxide production in completely autotrophic nitrogen removal biofilm process: A simulation study. *Chemical Engineering Journal*, 287, 217-224. *(Impact Factor: 6.216, Top journals in the field of chemical engineering,* ***JCR Q1****)*
8. **Peng, L**., Ni, B.J., Law, Y., Yuan, Z. (2016) Modeling N_2O production by ammonia oxidizing bacteria at varying inorganic carbon concentrations by coupling the catabolic and anabolic processes. *Chemical Engineering Science*, 144, 386-394. *(Impact Factor: 2.895, Top journals in the field of chemical engineering,* ***JCR Q1****)*
9. **Peng, L**., Liu, Y., Gao, S.H., Chen, X., Xin, P., Dai, X., Ni, B.J. (2015) Evaluation on the nanoscale zero valent iron based microbial denitrification for nitrate removal from groundwater. *Scientific Reports*, 5:12331, DOI: 10.1038/srep12331. *(Impact Factor: 4.259, Nature Publishers,* ***JCR Q1****)*
10. **Peng, L**., Sun, J., Liu, Y., Dai, X., Ni, B.J. (2016) Nitrous oxide production in co-versus counter-diffusion nitrifying biofilms. *Scientific Reports*, 6:28880, DOI: 8.1038/srep28880. *(Impact Factor: 4.259, Nature Publishers,* ***JCR Q1****)*
11. **Peng, L**., Sun, J., Liu, Y., Dai, X., Ni, B.J. (2017) Nitrous oxide production in a granule-based partial nitritation reactor: A model-based evaluation. *Scientific Reports*, 7, 45609; doi:10.1038/srep45609. *(Impact Factor: 4.259, Nature Publishers,* ***JCR Q1****)*
12. **Peng, L**., Liu, Y., Gao, S.H., Ni, B.J. (2015) Assessing chromate reduction by dissimilatory iron reducing bacteria using mathematical modeling. *Chemosphere*, 139, 334-339. *(Impact Factor: 4.208*, *Top journals in the field of environmental science,* ***JCR Q1****)*
13. Gao, S.H., **Peng, L**., Liang, B., Kong, F., Zhou, X., Liu, Y., Ni, B.J., Wang, A. (2016) Bioelectrochemical reduction of an azo dye by a Shewanella oneidensis MR-1 formed biocathode. *International Biodeterioration & Biodegradation*, 115, 250-256. (***Gao, S.H. and Peng, L. contributed equally to this paper****; Impact Factor: 2.962,* ***JCR Q2***)
14. Ni, B.J., **Peng, L**., Law, Y, Guo, J. and Yuan, Z. (2014) Modeling of nitrous oxide production by autotrophic ammonia-oxidizing bacteria with multiple production pathways. *Environmental Science & Technology*, 48, 3916-3924. *(Impact Factor: 6.198, Top 1 in the field of environmental engineering,* ***JCR Q1****)*
15. Liu, Y., **Peng, L**., Chen, X., Ni, B.J. (2015) Mathematical modeling of nitrous oxide production during denitrifying phosphorus removal process. *Environmental*

Science & Technology, 49, 8595-8601. *(Impact Factor: 6.198, Top 1 in the field of environmental engineering, **JCR Q1**)*

16. Liu, Y., **Peng, L**., Ngo, H.H., Guo, W., Wang, D., Pan, Y., Sun, J., Ni, B.J. (2016) Evaluation of nitrous oxide emission from sulfide- and sulfur-based autotrophic denitrification processes. *Environmental Science & Technology*, 50, 9407−9415. *(Impact Factor: 6.198, Top 1 in the field of environmental engineering, **JCR Q1**)*
17. Gao, S.H., Fan, L., **Peng, L**., Guo, J., Agullo-́ Barcelo, M., Yuan, Z., Bond, P.L. (2016) Determining multiple responses of *pseudomonas aeruginosa* PAO1 to an antimicrobial agent, free nitrous acid. *Environmental Science & Technology*, 50, 5305−5312. *(Impact Factor: 6.198, Top 1 in the field of environmental engineering, **JCR Q1**)*
18. Liu, Y., Ngo, H., Guo, W., **Peng, L**., Pan, Y., Guo, J., Chen, X., Ni, B.J. (2016) Autotrophic nitrogen removal in membrane-aerated biofilms: archaeal ammonia oxidation versus bacterial ammonia oxidation. *Chemical Engineering Journal*, 302, 535-544. *(Impact Factor: 6.216, Top journals in the field of chemical engineering, **JCR Q1**)*
19. Sun, J., Dai, X., Liu, Y., **Peng, L.**, Ni, B.J. (2017) Sulfide removal and sulfur production in a membrane aerated biofilm reactor: Model evaluation. *Chemical Engineering Journal*, 309, 454-462. *(Impact Factor: 6.216, Top journals in the field of chemical engineering, **JCR Q1**)*
20. Chen, X., Liu, Y., **Peng, L.**, Ni, B.J. (2017) Perchlorate, nitrate, and sulphate reduction in hydrogen-based membrane biofilm reactor: Model-based evaluation. *Chemical Engineering Journal*, 316, 82-90. *(Impact Factor:6.216, Top journals in the field of chemical engineering, **JCR Q1**)*
21. Liu, Y., **Peng, L**., Guo, J., Chen, X., Ni, B.J. (2015) Evaluating the role of microbial internal storage turnover on nitrous oxide accumulation during denitrification. *Scientific Reports*, 5: 15138, DOI: 10.1038/srep15138. *(Impact Factor: 4.259, Nature Publishers, **JCR Q1**)*
22. Liu, Y., Sun, J., **Peng, L**., Wang, D., Dai, X., Ni, B.J. (2016) Assessment of heterotrophic growth supported by soluble microbial products in Anammox biofilm using multidimensional modelling. *Scientific Reports*, 6: 27576, DOI: 10.1038/srep27576. *(Impact Factor: 4.259, Nature Publishers, **JCR Q1**)*
23. Chen, X., Liu, Y., **Peng, L**., Yuan, Z., Ni, B.J. (2016) Model-based feasibility assessment of membrane biofilm reactor to achieve simultaneous ammonium, dissolved methane and sulfide removal from anaerobic digestion liquor. *Scientific Reports*, 6:25114, DOI: 10.1038/srep25114. *(Impact Factor: 4.259, Nature Publishers, **JCR Q1**)*
24. Wang, Q., Zhou, X., **Peng, L**., Wang, D., Xie, G.J., Yuan, Z. (2016) Enhancing post aerobic digestion of full-scale anaerobically digested sludge using free nitrous acid pre-treatment. *Chemosphere*, 150, 152-158. *(Impact Factor: 4.208，Top journals in the field of environmental science, **JCR Q1**)*
25. Liu, Y., Zhang, Y., Zhao, Z., Ngo, H.H., Guo, W., Zhou, J., **Peng, L.**, Ni, B.J. (2017) A modeling approach to direct interspecies electron transfer process in anaerobic transformation of ethanol to methane. *Environmental Science and Pollution Research*, 24, 855-863. (*Impact Factor:2.741, **JCR Q2***)
26. Wang, D., Liu, Y. Ngo, H.H., Zhang, C., Yang, Q., **Peng, L.**, He, D., Zeng, G., Li, X., Ni, B.J. (2017) Approach of describing dynamic production of volatile fatty

acids from sludge alkaline fermentation. *Bioresource Technology*, 238, 343-351. (*Impact Factor:5.651,* ***JCR Q1***)

27. Liu, Y. Ngo, H.H., Guo, W., Sun, J., Wang, D., **Peng, L.**, Ni, B.J. (2017) Modeling aerobic biotransformation of vinyl chloride by vinyl chloride-assimilating bacteria, methanotrophs and ethenotrophs. *Journal of Hazardous Materials*, 332, 97-103. (*Impact Factor:6.065,* ***JCR Q1***)
28. Pintucci, C., Carballa, M., Varga, S., Sarli, J., **Peng L.**, et al. (2017) The ManureEcoMine pilot installation: advanced integration of technologies for the management of organics and nutrients in livestock waste. *Water Science & Technology*, DOI: 10.2166/wst.2016.559. (*Impact Factor:1.197,* ***JCR Q3***)
29. Liu, Y., **Peng, L**., Gao, S.H., Dai, X., Ni, B.J. (2015) Mathematical modeling of microbial extracellular electron transfer by electrically active microorganism. *Environmental Science: Water Research & Technology*, 1, 747-752. (*Impact Factor:2.817,* ***JCR Q2***)
30. Liu, Y., **Peng, L.** (2015) Mathematical modeling of effects of nanomaterials on N_2O emission during denitrification. *Journal of Water Sustainability*, 4, 121-127.

Book Chapter

31. **Peng, L.**, Liu, Y., Sun, J., Ni, B.J. (2017) Microbial remediation of chromium contaminated wastes. Taylor & Francis Group, 6000 Broken Sound Parkway NW, Suite 300, Boca Raton, FL 33487-2742 CRC Press, Pages 689–706.

Papers to Be Published:

32. **Peng, L.**, Kassotaki, E., Liu, Y., Sun, J., Dai, X., Pijuan, M., Rodriguez-Roda, I., Buttiglieri, G., Ni, B.J. (2017) Modelling cometabolic biotransformation of sulfamethoxazole by an enriched ammonia oxidizing bacteria culture. *Chemical Engineering Science*, in revision.
33. **Peng, L.**, Liu, Y., Sun, J., Wang, D., Dai, X., Ni, B.J. (2017) Enhancing immobilization of arsenic in groundwater: A model-based evaluation. *Journal of Cleaner Production,* in revision.
34. **Peng, L.**, Carvajal-Arroyo, J.M., Seuntjens, D., Prat, D., Colica, G., Pintucci, C., Vlaeminck, S.E. (2017) Mitigating nitrous oxide emission from a nitritation/denitritation process treating co-digested pig manure centrate. *Water Research*, under review.
35. **Peng, L.**, Dai, X., Liu, Y., Sun, J., Ni, B.J. (2017) Model-based assessment of estrogen removal by nitrifying activated sludge. To be submitted.
36. **Peng, L.**, Dai, X., Liu, Y., Wei, W., Sun, J., Xie, G.J., Ni, B.J. (2017) Kinetic assessment of simultaneous removal of asenite, chlorate and nitrate under autotrophic and mixotrophic conditions. To be submitted.
37. **Peng, L.**, Liu, Y., Sun, J., Wang, D., Dai, X., Ni, B.J. (2017) Modeling nitrogen removal based on an algal-bacterial consortium in a photo-sequencing batch reactor. To be submitted.

Conference Papers

38. **Peng, L**., Ni, B.J., Erler, D., Ye, L., Yuan, Z. (2014) The effect of dissolved oxygen on N_2O production by ammonia-oxidizing bacteria in an enriched nitrifying sludge. In: IWA Specialist Conference 2014, Global Challenges: Sustainable Wastewater Treatment and Resource Recovery. 26-30 October, 2014, Kathmandu, Nepal.

39. Ni, B.J., **Peng, L**., Law, Y., Guo, J., Yuan, Z. (2014) An integrated model for nitrous oxide production by autotrophic ammonia-oxidizing bacteria. In: IWA Specialist Conference 2014, Global Challenges: Sustainable Wastewater Treatment and Resource Recovery. 26-30 October, 2014, Kathmandu, Nepal.
40. **Peng, L**., Ni, B.J., Ye, L., Yuan, Z. (2015) Guideline of selecting N_2O models to predict N_2O production by ammonia oxidizing bacteria. In: 9th IWA Symposium on Systems Analysis and Integrated Assessment. 14-17 June, 2015, Gold Coast, Queensland, Australia.
41. **Peng, L**., Ni, B.J., Law Y., Yuan, Z. (2015) Modeling of N_2O production by ammonia oxidizing bacteria: Integration of catabolism and anabolism. In: 9th IWA Symposium on Systems Analysis and Integrated Assessment. 14-17 June, 2015, Gold Coast, Queensland, Australia.
42. Pintucci, C., **Peng, L**., Prat, D., Colica, G., Picavet, M., Colsen, J., Varga, S., Sarli, J., Benito, O. & Vlaeminck, S.E. The ManureEcoMine pilot plant: Towards advanced nutrient management in livestock waste treatment. In: WEF/IWA Nutrient Removal and Recovery Conference 2016: Advances in Process Intensification, Resource Extraction, and Reuse. 10-13 July 2016, Denver (Colorado), USA.
43. **Peng, L**., Pintucci, C., Seuntjens, D., Carvajal-Arroyo, J.M., Vlaeminck, S.E. (2016) Mitigating nitrous oxide production from nitritation/denitritation: treatment of centrate from pig manure co-digestion as a model. In: ICSWRM 2016: 18th International Conference on Sustainable Water Resources Management. 29-30 September, 2016, London, UK.
44. **Peng, L.**, Carvajal-Arroyo, J.M., Seuntjens, D., Prat, D., Colica, G., Pintucci, C., Vlaeminck, S.E. (2017) Mitigation of nitrous oxide emission from nitritation/denitritation process. In: Nutrient Symposium 2017. 12-14 June, 2017, Ft Lauderdale, Florida, USA.

Oral Presentations in International Conferences:

1. The effect of dissolved oxygen on N_2O production by ammonia-oxidizing bacteria in an enriched nitrifying sludge. In: IWA Specialist Conference 2014, Global Challenges: Sustainable Wastewater Treatment and Resource Recovery. 26-30 October, 2014, Kathmandu, Nepal.
2. Modeling of N_2O production by ammonia oxidizing bacteria: Integration of catabolism and anabolism. In: 9th IWA Symposium on Systems Analysis and Integrated Assessment. 14-17 June, 2015, Gold Coast, Queensland, Australia.
3. Mitigating nitrous oxide production from nitritation/denitritation: treatment of centrate from pig manure co-digestion as a model. In: ICSWRM 2016: 18th International Conference on Sustainable Water Resources Management. 29-30 September, 2016, London, UK.
4. Mitigation of nitrous oxide emission from nitritation/denitritation process. In: Nutrient Symposium 2017. 12-14 June, 2017, Ft Lauderdale, Florida, USA.