

CURRICULUM VITAE OF ZHIGUO YUAN AM

ACADEMIC QUALIFICATIONS:

PhD in Control Engineering (1992), Bachelor in Control Engineering (1985), both from Beijing University of Aeronautics and Astronautics, China

CURRENT APPOINTMENTS:

2018 – present, ARC Australian Laureate Fellow

2015 – present, Director, Advanced Water Management Centre (AWMC), The University of Queensland

2007 – present, Professor, AWMC, The University of Queensland

2017 – present, Editor, Water Research

PREVIOUS APPOINTMENTS:

2001 – 2014, Deputy Director, AWMC, The University of Queensland

2012 – 2016, Executive and Leader of Future Technologies Program, CRC for Water Sensitive Cities (\$117M)

1998 – 2006, Postdoctoral Researcher, Research Fellow, Senior Lecturer & Associate Professor, AWMC

1994 – 1998, Postdoctoral Researcher, Department of Applied Mathematics, Biometrics and Process Control (BIOMATH), University of Ghent, Belgium

HONOURS AND AWARDS:

- 2019 Member of Order of Australia
- 2018 Distinguished Fellow, International Water Association
- 2017 ARC Australian Laureate Fellowship
- 2017 Australian Water Association's National Research Innovation Award
- 2015 elected as Fellow of the Australian Academy of Technological Sciences and Engineering (ATSE)
- 2015 the ATSE Clunies Ross Award
- 2015 in Engineers Australia's List of Australia's Top 100 Most Influential Engineers
- 2014 B/HERT (Business / Higher Education Round Table) Best Research & Development Award *and* Award for Outstanding Excellence in Collaboration for SCORE project – as Project Leader
- 2014 International Water Association (IWA) Global Project Innovation Award (Applied Research Category) – as Project Leader
- 2010 The University of Queensland Graduate School Supervision Award
- 2010 elected as Fellow of International Water Association (IWA)
- 2008 IWA Project Innovation Award (Applied Research Category, East Asia and Pacific) – as Project Leader
- 2008 Engineers Australia's Engineering Excellence Award in Research, Development and Innovation, Queensland, for sewer corrosion and odour management – as Project Leader

CAREER PROFILE:

Since moving from aeronautical engineering to environmental engineering and biotechnology, Professor Zhiguo Yuan has been working on the interface between process engineering and biological sciences. He focuses on the effective integration of these disciplines to develop innovative technological solutions to wastewater management including the recovery of resources in wastewater such as bioenergy in the form of methane. He is the founder of three bioprocess-focused companies. His research has to date delivered documented benefits to the Australian water industry of over \$400M. At the same time, his academic impact has been very strong, with publications in all top journals relevant to his fields of research including Science and Nature. In the past few years, he has published on average 30 SCI papers annually, with an annual citation rate of over 2000 (Scopus) in the past three consecutive years. He is widely regarded as one of the top researchers in the world in the fields of wastewater management and environmental biotechnology. Professor Yuan is a key leader in establishing AWMC as one of the world's foremost water research institutes, and is the current serving Director. At present AWMC has over 100 staff and students and has an annual budget of \$8-10M. UQ ranks no.1 in Australia in both environmental engineering and environmental biotechnology, with substantial contributions from the AWMC. Professor Yuan is one of founding members of the \$171M CRC for Water Sensitive Cities and served as Leader of one of four Programs (Future Technologies). He has been Chief Investigator for 24 ARC Discovery, Linkage and Fellowship Projects, leading 20 including the second-largest ARC Linkage Project ever awarded (the SCORE project, \$4.9M ARC funding) which attracted over \$8M contributions from 11 industry partners. He was awarded the ARC Australian Laureate Fellowship in 2017.

ACADEMIC IMPACT:

Prof Yuan has published extensively in top engineering and science journals. He is one of the few engineers who published in *Science* and *Nature*. The citation to his work is exceptional for an engineer. Some highlights of his academic achievements are:

- One paper in *Science* in 2014, as the corresponding author, which identified an opportunity for the water industry worldwide to save billions of dollars annually.
- One paper in *Nature* in 2013, as a corresponding author, which reported for the first time the presence of an organism, which anaerobically oxidise methane to carbon dioxide through reverse methanogenesis, coupled to nitrate reduction to nitrite.
- Over 500 publications to date, including ~400 SCI (Science Citation Index) publications; 4 books, 10 book chapters
- A highly prolific author for *Water Research* (IF = 7.915, ranked the no.1 journal in water resource engineering), with 120 papers to date, mostly as the corresponding author
- Total citations ~17,000/~23,000, H-index = 70/84 (Scopus/Google Scholar, July 2019);
- 9 patent applications for biotechnologies relating to urban water management, 7 as lead inventor.

END USER AND SOCIETAL IMPACTS:

- Research on sewer management has delivered substantial benefits to the Australian water industry, documented to \$400M to date
- Strong partnership with the Australian water industry, with funding support from all major water utilities
- Substantial capacity building in the Australian water industry sewer asset management. The 11 partners in the SCORe Project provide services to 60% of the Australian population and include five of eight Australian states and territories
- Founder of 3 spin-off, bioprocess-focused companies: SeweX, Cloevis and Lodomat. While still in early, start-up phase, these companies have generated multi-million dollar revenues.

SIGNIFICANT CONTRIBUTIONS AND RESEARCH IMPACT:

Anaerobic methane oxidation: His group was one of the first two worldwide to successfully enrich organisms able to perform Denitrification coupled to Anaerobic Methane Oxidation (DAMO), a newly discovered microbial process that links the global nitrogen and carbon cycles. The ground-breaking impact of this work is evidenced through its 2013 publication in the top scientific journal, *Nature*. Professor Yuan was the initiator and key driver of this research and a corresponding author on this paper. Lately, Prof Yuan has extended his research on this topic to the production of value-added chemicals such as volatile fatty acids and polyhydroxyalkanoates from methane using biological processes. His research has produced strong evidence demonstrating the feasibility and potential of methane-based biotechnology.

Corrosion and odour management in sewers: Professor Yuan's applied research on sewer corrosion and odour management is fundamentally changing the practice of most Australian water utilities. The 10-year, ~\$25M (\$12M in cash) "*Putting Science into Sewers*" research effort has already achieved documented savings to date for the Australian water industry of over \$400 million, based on testimonial letters provided by industry partners. The global impact and economic benefits of this work are also growing significantly and will be many times greater than just across Australia. He has published over 100 papers in this area alone, including one in *Science*, which is widely praised as "*Putting Sewers in Science*".

FNA-based biotechnologies: Professor Yuan's research revealed that free nitrous acid (FNA) is inhibitory to a broad range of microorganisms at parts per billion levels, and strongly biocidal to most microorganisms in wastewater systems at parts per million levels. These scientific discoveries have led to the development of the Cloevis technology, which removes biofilms from sewer pipes, and the Lodomat technology, which enables energy neutral/positive wastewater treatment.

Quantifying, modelling and mitigating greenhouse gas (methane and nitrous oxide) emission from water systems: Professor Yuan's research has also revealed for the first time, and contrary to previous assumptions made by IPCC (Intergovernmental Panel on Climate Change), that methane emissions from sewers are substantial, potentially contributing an additional 10-30% of the currently estimated total greenhouse gas emissions from wastewater systems. His team has developed the first model in the world that predicts methane production in sewers. His research has also developed a number of promising solutions for the mitigation of

methane emissions. His greenhouse gas research team is leading the world in the development and application of models for predicting and mitigating nitrous oxide emission from wastewater systems.

Optimisation of biological phosphorus removal processes: Professor Yuan's research on the metabolism of polyphosphate- and glycogen-accumulating organisms has considerably advanced the scientific knowledge on biological phosphorus removal. The metabolic models developed are being used as an important tool for investigating the competition between these organisms, which has had profound impact in the wastewater industry in optimising the widely used biological phosphorus removal processes. His work on this topic alone has attracted over 2000 citations.

COMMERCIAL TECHNOLOGIES:

The SeweX model – the most advanced model in the world predicting in-sewer processes: Professor Yuan pioneered, in collaboration with Dr Keshab Sharma, an advanced model characterising in-sewer physical, chemical and biological processes for predicting H₂S production. He personally solved a problem that for more than 20 years was known as a bottleneck in sewer modelling. The new kinetic expressions he developed increased the simulation speed by more than 100 times, and made the dynamic simulation of large sewer networks possible. This has enabled the uptake of this model by the water utilities globally, and has generated savings in excess of several hundred million dollars through improved corrosion and odour management solutions. The model won two prestigious awards in 2008 and Professor Yuan established a spin-off company, SeweX, which has undertaken over \$2M in modelling consulting work since 2009. Clients include both Australian water utilities and overseas entities.

Clovis - Free nitrous acid (FNA) to control unwanted sewer biofilm growth: During fundamental bio-process studies, Professor Yuan and his team of PhD students discovered that at sub-ppm to ppm levels, free nitrous acid has a strong biocidal effect on microorganisms causing cell lysis and biofilm detachment. These findings led to the development of the Clovis technology, which effectively removes sewer biofilm and control its growth at a low cost compared to the currently used technologies. The patent supporting this technology has been granted in several countries, with Professor Yuan named as the first inventor. The technology is being commercialised worldwide.

Lodomat – Pre-treatment of wastewater sludge to enhance methane production: Prof Yuan also developed a novel, patented free nitrous acid-based technology to maximize bio-methane recovery from wastewater. The technology is applicable to any existing wastewater treatment plants with marginal investment. It involves the installation of a straightforward mixing tank operated at atmospheric temperature and pressure, with FNA, the active chemical additive, being a by-product of wastewater treatment. This technology provides strong support to the on-going paradigm shift in wastewater management from an energy consuming to an energy generating process. UniQuest Pty Ltd is commercialising the technology under the trademark of Lodomat. The technology is being demonstrated at pilot- and full-scale plants.

PROFESSIONAL MEMBERSHIPS AND SERVICE:

- Distinguished Fellow, the International Water Association (IWA)
- Editor, *Water Research* (since 2017)
- Editor, *Water Science and Technology*, IWA Publishing (since 2005)
- Editor, *Frontiers of Environmental Science and Engineering in China* (since 2006)
- Chair, 13th IWA Conference on Instrumentation, Control and Automation, June, Cairns, Australia, 2021
- Chair, the 2018 IWA Conference on Nutrients Removal and Recovery, Brisbane, Australia, Nov. 18-21.
- Chair, 9th IWA Symposium on Modelling and Integrated Assessment, Gold Coast, Australia, June, 2015.
- Chair, 6th International Conference on Sewer Processes and Networks, Gold Coast, Australia, Nov, 2010
- Chair, 10th IWA Conference on Instrumentation, Control and Automation, June, Cairns, Australia, 2009
- Ex-Chair, Sewer Systems and Processes Working Group of the IWA/IAHR Joint Committee on Urban Drainage (Nov 2011 – Sept 2013)
- Ex-Chair, IWA Specialist Group on Instrumentation, Control and Automation (08/2005-06/2009)
- Current or previous Management Committee member of IWA Specialist Groups on Modelling and Integrated Assessment (SAIA, since June 2000-2015), Instrumentation, Control and Automation (2001-2009) and Nutrients Removal and Recovery (NRR, since 2009)

MAJOR FUNDING SUPPORT:

- Overall funding since 2001 ~\$45M,

- 24 ARC Discovery, Linkage and Fellowship projects (leading CI for 20) totalling ~\$23M
- Numerous industry-funded research projects
- Consulting projects totalling over \$2M

MANAGEMENT, MENTORING AND RESEARCH TRAINING:

- >40 completed PhD graduates since 2001, ~20 on-going PhD students
- Supervised and mentored a similar number of postdoctoral research fellows including two Future Fellows, five DECRA Fellows, two Queensland State Fellows, and several The University of Queensland Fellows, some of whom are now professors and world-leading researchers
- 3 PhD students won the prestigious Huber Technology Prize in years, 2008, 2010 and 2014
- 1 PhD student won the AEESP (Association of Environmental Engineering and Science Professors) Best PhD Thesis Award in 2005. This was the first time that a non-US university won this prestigious award
- Graduate School Supervision Award, The University of Queensland (2010)
- Inaugural Research, Innovation and Supervision Award (Supervision category, 2010), Faculty of Engineering, Architecture and Information Technology, The University of Queensland

SELECTED INFLUENTIAL PUBLICATIONS:

1. Pikaar, I#, Sharma, K#, Hu, S., Gernjak, W., Keller, J. and **Yuan, Z.** (2014) Reducing sewer corrosion through integrated urban water management. *Science*, 345: 812-814. #Equal first author. [IF: 37.025]
2. Haroon, M. F.*, Hu, S.*, Shi, Y., Imelfort, M., Keller, J., Hugenholtz, P., **Yuan, Z.**#, and Tyson, G. W.# (2013) Anaerobic oxidation of methane coupled to nitrate reduction in a novel archaeal lineage. *Nature*, 500, 567–570. * equal first author; # joint corresponding author. [IF: 40.137]
3. Wang, Q., Ye, L., Jiang, G., Jensen, P., Batstone, D., **Yuan, Z.** (2013) Free Nitrous Acid (FNA)-Based Pre-treatment Enhances Methane Production from Waste Activated Sludge. *Environmental Science and Technology*, 47(20): 11897-11904. [IF: 6.653]
4. **Yuan, Z.**, Pratt, S. and Batstone, D. J. (2012) Phosphorus recovery from wastewater through microbial processes" *Current Opinion in Biotechnology*. 23: 878–883. [IF: 8.035]
5. Jiang, G., Gutierrez, O. and **Yuan, Z.** (2011) The strong biocidal effect of free nitrous acid on anaerobic sewer biofilms. *Water Research*, 45(12): 3735-3743. [IF: 7.051]
6. Zhou, Y., Pijuan, M., Zeng, R., **Yuan, Z.** (2008) Free nitrous acid (FNA) inhibition on nitrous oxide (N₂O) reduction by a denitrifying EBPR sludge. *Environmental Science and Technology*. 42(22): 8260-8265. [IF: 6.653]
7. Freguia, S., Rabaey, K., **Yuan, Z.** and Keller, J. (2007) Electron and carbon balances in microbial fuel cells reveal temporary bacterial storage behaviour during electricity generation. *Environmental Science and Technology*, 41 (8): 2915-2921. [IF: 6.653]
8. Vadivelu, M. V., **Yuan, Z.**, Fux, C. and Keller, J. (2006) The inhibitory effects of free nitrous acid on the energy generation and growth processes of an enriched *Nitrobacter* culture. *Environmental Science and Technology*. 40(14); 4442-4448. [IF: 6.653]
9. Oehmen, A., **Yuan, Z.**, Blackall, L. L. and Keller, J. (2005) Comparison of acetate and propionate uptake by polyphosphate accumulating organisms and glycogen accumulating organisms. *Biotechnology and Bioengineering*. 91(2): 162-168. [IF: 3.952]
10. Zeng, R., Lemaire, R., **Yuan, Z.** and Keller, J. (2003) Simultaneous nitrification, denitrification and phosphorus removal in a lab-scale sequencing batch reactor. *Biotechnology and Bioengineering*. 84:170-178. [IF: 3.952]

DR ZHIGUO YUAN FULL PUBLICATION LIST TILL 07/2018

Books

1. Foley, J., **Yuan, Z.**, Keller, J., Senante, E., Chandran, K., Willis, J., Shah, A., van Loosdrecht, M.C.M. and van Voorthuizen E. (2015) *N₂O and CH₄ Emission from Wastewater Collection and Treatment Systems* ISBN: 9781780407333, IWA Publishing, 248 pages
2. Foley, J., **Yuan, Z.**, Keller, J., Senante, E., Chandran, K., Willis, J., Shah, A., van Loosdrecht, M. and van Voorthuizen (2011) *N₂O and CH₄ emission from wastewater collection and treatment systems: technical report*. Global Water Research Coalition, London, April, 2011. ISBN 978-90-77622-24-7.
3. Foley, J., **Yuan, Z.**, Keller, J., Senante, E., Chandran, K., Willis, J., Shah, A., van Loosdrecht, M. and van Voorthuizen (2011) *N₂O and CH₄ emission from wastewater collection and treatment systems: state of the science report*. Global Water Research Coalition, London, April, 2011. ISBN 987-90-77622-23-0.
4. Olsson, G., Nielsen, M., **Yuan, Z.**, Jensen, A. L. and Steyer, J-P. (2005) *Instrumentation, Control and Automation in Wastewater Systems*. IWA Publishing, ISBN 1900222833, 246p.
5. **Yuan, Z.** (1992) *Studies on Knowledge-Based Techniques for Fault Diagnosis in Dynamic Systems*, Ph.D thesis, Beijing University of Aeronautics and Astronautics

Book chapters

6. Ni, B.-J., Pan, Y., Guo, J., Viridis, B., Hu, S., Chen, X., **Yuan, Z.** (2016) Chapter 16: Denitrification Processes for Wastewater Treatment. *Metalloenzymes in Denitrification: Applications and Environmental Impacts* (Eds. Isabel Moura and José J. G. Moura; Co-Eds. Luisa Maia and Sofia R. Pauleta). Royal Society of Chemistry Metallobiology Series. Accepted on Jan 20.
7. Gutierrez, O., Jiang, G., Sharma, K. and **Yuan, Z.** (2016) Biofilm development in sewer pipes. In *Aquatic Biofilms: Ecology, Water Quality and Wastewater Treatment*. Editors: Anna M. Romani, Helena Guasch and M. Dolors Balaguer. Caister Academic Press, University of Girona, Spain, 200p. ISBN: 978-1-910190-17-3.
8. Olsson, G., **Yuan, Z.** and Kim C. (2014) Automation and control. In: Jenkins D. and Wanner, J. (ed.) *Activated Sludge – 100 Years and Counting*. IWA Publishing. ISBN 9781780404936 424p.
9. Viridis, B., Freguia, S., Rozendal, R. A., Rabaey, K., **Yuan, Z.**, and Keller, J. (2011) Microbial Fuel Cells. In: Wilderer P (ed.). *Treatise in Water Science*, vol. 1, pp. 641-665 Oxford: Academic Press.
10. Dutta, P. K., Keller, J., **Yuan, Z.**, Rozendal, R. A. and Rabaey, K. (2009) Conversion of sulfur species in bio-electrochemical systems. *Bio-electrochemical Systems: From Extracellular Electron Transfer to Biotechnological Application*. Editor(s): Korneel Rabaey, Lars Angenent, Uwe Schroder and Jurg Keller. Publication Date: 15 Jul 2009 ISBN: 9781843392330. pp. 243-262. IWA Publishing.
11. Olsson, G. Ingildsen, P., Jeppsson, U., Kim, C., Lynggaard-Jensen, A., Nielsen, M., Rosen, C., Spanjers, H., Vanrolleghem, P. and **Yuan, Z.** (2005) *Instrumentation, Control and Automation – Hidden Technologies in Water and Wastewater Treatment*. *Water Environment Management Series*.
12. Oehmen A, Yuan Z, Zeng RJ, Keller J. (2004). Performance of enhanced biological phosphorus removal systems enriched with different volatile acids. *Water and Environment Management Series - Young Researchers 2004*, Vol. 1, IWA Publishing. Wageningen, Netherlands, pp 69-78. 23-24 April 2004. ISBN: 9781843395058.
13. Blackburne, R., **Yuan, Z.**, Carvalho, G. and Keller, J. (2004) Selective production of nitrite using hydroxylamine as inhibitor of nitrite oxidation. *Water Environment Management Series*, 189-196. ISBN 1 84339 503 7.
14. **Yuan, Z.**, J. Keller and P. Lant (2003) Optimization and Control of Biological Nitrogen Removal Activated Sludge Processes: A Review of Recent Developments. *Biotechnology for the Environment: Wastewater Treatment and Modeling, WasteGas Handling, Focus on Biotechnology Series*, Vol.3C (Eds. Agathos, S.N. and Reineke, W.), Kluwer Academic Publishers, Dordrecht, The Netherlands. ISBN 1-4020-1131-8, 187-227.
15. **Yuan, Z.**, C. Wen, G. C. Vansteenkiste (1992) *Towards Formalism of Deep Model Descriptions of Dynamic Systems*, *Lecture Notes in Computer Science*, Vol.585, 307-322.

Refereed journal papers

(Journal papers published/in press/accepted with peer review)

16. Duan, H., Ye, L., Wang, Q., Zheng, M., Lu, X., Wang, Z. and **Yuan, Z.** (2019) Nitrite oxidizing bacteria (NOB) contained in influent deteriorate mainstream NOB suppression by sidestream inactivation. *Water Research*, 162: 331-338.
17. Zheng, M., Duan, H., Dong, Q., Ni, B-J., Hu, S., Liu, Y., Huang, X. and **Yuan, Z.** (2019) Effects of ultrasonic treatment on the ammonia-oxidizing bacterial (AOB) growth kinetics. *Science of The Total Environment*. 690, 629–635.
18. Li, X., O'Moore, L., Song, Y., Bond, P. L., **Yuan, Z.**, Wilkie, S., Hanzic, L., Jiang, G. (2019). The Rapid Chemically Induced Corrosion of Concrete Sewers at High H₂S Concentration. *Water Research*, accepted on June 23.
19. Wu, M., Liu, J., **Yuan, Z.**, Luo, J. H., Qian, G. and Guo, J. (2019) Microbial chromate reduction coupled with anaerobic oxidation of methane in a membrane biofilm reactor. *Environment International*, accepted on June 12.
20. Liu, S., Wang, Y., Lu, J., Song, H. L., **Yuan, Z.** and Guo, J. (2019) Copper nanoparticles and copper ions promote horizontal transfer of plasmid-mediated multi-antibiotic resistance genes across bacterial genera. *Environment International*. Accepted on May 21
21. Zhang, X., Xia, J., Pu, J., Tyson, G. W., **Yuan, Z.** and Hu, S. (2019) Biochar-mediated Anaerobic Oxidation of Methane. *Environmental Science and Technology*, accepted on 17/05/2019
22. Kulandaivelu, J., Gao, J., Song, Y., Shrestha, S., Li, X., Li, J., Doederer, K., Keller, J., **Yuan, Z.**, Mueller, J., Jiang, G. (2019) Removal of pharmaceuticals and illicit drugs from wastewater due to ferric dosing in sewers *Environmental Science and Technology*, accepted on May 9.
23. Cai, C., Shi, Y., Guo, J., Tyson, G., Hu, S., **Yuan, Z.** (2019) Acetate production from anaerobic oxidation of methane via intracellular storage compounds. *Environmental Science and Technology*, accepted on June 3.
24. Wu, M., Luo J. H., Hu, S. H., **Yuan, Z.** and Guo, J. (2019) Perchlorate Bio-reduction in a Methane-based Membrane Biofilm Reactor in the Presence and Absence of Oxygen. *Water Research* 157: 572-578.
25. Murali, M. K., Hipsey, M. R., Ghadouni, A. and **Yuan, Z.** (2019) The development and application of improved solids modelling to enable resilient urban sewer networks. *Journal of Environmental Management* 240: 219-230.
26. Wang, B., Ni, B. J., **Yuan, Z.** and Guo, J. (2019) Cometabolic Biodegradation of Cephalexin by Enriched Nitrifying Sludge: Process Characteristics, Gene Expression and Product Biototoxicity. *Science of the Total Environment*, accepted on 30/3/2019.
27. Gao, S. H., Ho, J. Y., Fan, L., Nouwens, A., Hoelzle, A. D., Schulz, B., Guo, J., Zhou, J., **Yuan, Z.** and Bond, P. L. (2019) A comparative proteomic analysis of *Desulfovibrio vulgaris* Hildenborough in response to the antimicrobial agent free nitrous acid. *Science of the Total Environment*, accepted on March 29th.
28. Zhong, H., Shi, Z., Jiang, G. and **Yuan, Z.** (2019) Development of microbially influenced corrosion on carbon steel in a simulated water injection system, *Materials and Corrosion*. Accepted on March 15.
29. Thai, P. K., O'Brien J. W., Banks, A. P. W., Jiang, G., Gao, J., Choi, P. M., **Yuan, Z.** and Mueller, J. F. (2019) Evaluating the in-sewer stability of three potential population biomarkers for application in wastewater-based epidemiology. *Science of the Total Environment*. Accepted on 15/03/2019.
30. Li, J., Gao, J., Thai, P., Shypanski, A. Nieradzik, L., Mueller, J., **Yuan, Z.** and Jiang, G. (2019) Experimental investigation and modelling of the transformation of illicit drugs in a pilot-scale sewer system. *Environmental Science and Technology*, accepted on March 11.
31. **Yuan, Z.**, Olsson, G., Cardell-Oliver, R., van Schagen, K., Marchi, A., Deletic, A., Urich, C., Rauch, W., Liu, Y., Jiang, G. (2019) Sweating the assets – the role of instrumentation, control and automation in urban water systems. *Water Research* 155:381-402.
32. Wu, J., Zeng, R. J., **Yuan, Z.** and Zhang F. (2019) Application of iron-crosslinked sodium alginate for efficient sulfide control and enhanced oil recovery. *Water Research*, accepted on Jan 27.
33. Chen, Z., Gao, S., Jin, M., Sun, S., Lu, J., Yang, P., Bond, P., **Yuan, Z.**, Guo, J. (2019) Physiological and transcriptomic analyses reveal CuO nanoparticle inhibition of anabolic and catabolic activities of sulfate-reducing bacterium. *Environment International*, accepted on 23th January, 2019.

34. Duan, H., Ye, L., Lu, X. and **Yuan, Z.** (2019) Overcoming nitrite oxidizing bacteria adaptation through alternating sludge treatment with free nitrous acid and free ammonia. *Environmental Science and Technology*, accepted in Jan 2019.
35. Duan, H., Ye, L., Lu, X., Batstone, D., **Yuan, Z.** (2019) Self-sustained nitrite accumulation at low pH greatly enhances volatile solids destruction and nitrogen removal in aerobic sludge digestion. *Environmental Science and Technology*. Accepted on Dec 25th, 2018. Second runner-up of the Best Paper of the Year.
36. Lu, P*, Liu, T*, B.J. Ni, Guo, J., **Yuan, Z#.** and Hu, S#. (2019) Growth kinetics of Candidatus 'Methanoperedens nitroreducens' enriched in a laboratory reactor. *Science of The Total Environment* 659: 442-450. *Joint first author; #joint corresponding author.
37. Gao, J., Li, J., Jiang, G., Shypanski, A., Nieradzick, L., **Yuan, Z.**, Mueller, J. F. and Thai, P. K. (2019) Systematic evaluation of biomarker stability in pilot scale sewer pipes. *Water Research*, accepted on Dec 17 2018.
38. Song, Y., Tian, Y., Li, X., Wei, J., Zhang, H., Bond, P., **Yuan, Z.** and Jiang, G. (2019) Distinct microbially induced concrete corrosion at the tidal region of reinforced concrete sewers. *Water Research*, 150: 392-402.
39. Zheng, M., Wu, S., Dong, Q., Huang, X., **Yuan, Z.** and Liu, Y. (2019) Achieving mainstream nitrogen removal via the nitrite pathway from real municipal wastewater using intermittent ultrasonic treatment. *Ultrasonics Sonochemistry* 51: 406-411.
40. Li, J., Sharma, K., Liu, Y., Jiang, G. and **Yuan, Z.** (2019) Real-time Prediction of Rain-impacted Sewage Flow for On-line Control of Chemical Dosing in Sewers. *Water Research*, 149: 311-321.
41. Zhang, L., Duan, H., Ye, L., Liu, L. Batstone, D. and **Yuan, Z.** (2019) Increasing capacity of an anaerobic sludge digester through FNA pre-treatment of thickened waste activated sludge. *Water Research*, 149: 406-413.
42. Lu, J., Wang, Y., Li, J., Mao, L, Nguyen, S. H., Da Silva Duarte, T. , Coin, L., Bond, P., **Yuan, Z.** and Guo, J. (2018) Environmentally Relevant Concentrations of Triclosan Promotes Horizontal Transfer of Multidrug Resistance Genes Within and Across Bacterial Genera. *Environmental International*. Accepted on Oct 20.
43. Chen, H., Zhai, L., Hu, S., **Yuan, Z.** and Guo, J. (2018) High-rate Production of Short-chain Fatty Acids from Methane in a Mixed-culture Membrane Biofilm Reactor" *Environmental Science and Technology Letters*, accepted on Oct 20, 2018.
44. Song, Y., Wightman, E., Tian, Y., Jack, K., Li, X., Zhong, H., Bond, P. L., **Yuan, Z.**, Jiang, G. (2019) Corrosion of Reinforcing Steel in Concrete Sewers. *Science of the Total Environment*. 649: 739-748.
45. Rebosura, MJR, Salehin, S., Pikaar, I., Sun, X., Keller, J., Sharma, K. and **Yuan, Z.** (2018) A comprehensive laboratory assessment of the effects of sewer-dosed iron salts on wastewater treatment processes. *Water Research*, accepted on 05/09/2018
46. Wang, Y., Lu, J., Mao, L., Li, J., **Yuan, Z.**, Bond P. and Guo, J. (2018) Antiepileptic drug carbamazepine promotes horizontal transfer of plasmid-borne multi-antibiotic resistance genes within and across bacterial genera" *The ISME Journal*, accepted on 26/08/2018
47. West, C., Kenway, S., Hassall, M. and **Yuan, Z.** (2018) Integrated project risk management for residential recycled water schemes - an Australian study. *ASCE Journal of Management in Engineering*, accepted on Aug. 23.
48. Jin, M., Lu, J., Chen, Z., Nguyen, S. H., Mao, L., Li, J., **Yuan, Z.** and Jianhua Guo (2018) Antidepressant fluoxetine induces multiple antibiotics resistance in Escherichia coli via ROS-mediated mutagenesis. *Environmental International*, 120: 421-430.
49. Zheng, M., Wu, S., Dong, Q., Liu, Y. Huang, X. and **Yuan, Z.** (2018) Achieving mainstream nitrogen removal via the nitrite pathway from municipal wastewater using intermittent ultrasonic treatment. *Ultrasonic Sonochemistry*. Accepted on 25/07/2018.
50. Duan, H., Wang, Q., Ye, L., Erler, D. and **Yuan, Z.** (2018) Effects of free nitrous acid treatment conditions on the nitrite pathway performance in mainstream wastewater treatment. *Science of the Total Environment*, 644: 360-370
51. Chen, X., **Yuan, Z.** and Ni, B.-J. (2018) Nitrite Accumulation inside Sludge Floccs Significantly Influencing Nitrous Oxide Production by Ammonium-Oxidizing Bacteria. *Water Research*, accepted on June 14.

52. Lu, J., Jin, M., Nguyen, S. H., Mao, L., Lia, J., Coin, L.J.M., **Yuan, Z.** and Guo, J. (2018) Non-antibiotic antimicrobial triclosan induces multiple antibiotic resistance through genetic mutation. *Environment International* 118, 257-265.
53. Zheng, M., Wu, S., Zuo, Z., Wang, Z., Qiu, Y., Liu, Y., Huang, X. and **Yuan, Z.** (2018) Predictions of the influent and operational conditions for partial nitrification with a model incorporating pH dynamics. *Environmental Science & Technology*. 52 (11), 6457-6465..
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