

Curriculum Vitae: Dong WU

Current Position and Contact Information:

3rd year PhD Student (project near finishing)

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Projects, Awards & Honors

- ***Commissioned by*** National Natural Science Foundation of China:
Project No. 31370510 (majorly involved); Project No. 31311197
(Doctorate project)
- ***Commissioned by*** East China Normal University (**self-applied, PI**):
Project No. PY2015034
- ***Commissioned by*** Shanghai Key Laboratory for Urban
Ecological Processes and Eco-Restoration (**self-applied, PI**):
Project No. 13903-412213-14067
- ✓ **2011** China National Endeavour Scholarship (3.0 – 5.0%, rate of
granting)
- ✓ **2015** China National Scholarship (1.0 - 2.0%)
- ✓ **2015** National Graduate Students Environment Forum (3rd Grade
Award, 10%)
- ✓ **2015** Symposium of Chinese Society for Microbiology (Best oral

- presentation)
- ✓ **2016** China National Scholarship (1.0 - 2.0%)
 - ✓ **2016** National Graduate Student Environment Forum (3rd Grade Award, 10%)
 - ✧ *Granted by Shanghai Tongji Gao-Tingyao Environmental Protection & Development Foundation: 2017 Distinguished Young PhD student Fellowship*
 - ✧ *Granted by China Scholarship Council: 2017 High Level International Co-cultivation PhD Fellowship*
 - ✧ *Granted by Shanghai City Council & East China Normal University: 2015 – 2017 Outstanding Doctorate Cultivation Fellowship*
 - ✧ *Granted by East China Normal University: 2015 Outstanding Student*
 - ✧ *Granted by Newcastle University: 2013 1st Honor MSc Graduate*
 - ✧ *Granted by Department of Education, Henan Province: 2012 Outstanding Graduate/Honored Degree*

Publication Lists

First author/Co-first author:

- ✚ Wu, D.; Wang, C.; Dolfing, J.; Xie, B., Short tests to couple N₂O emission mitigation and nitrogen removal strategies for landfill leachate recirculation. *Science of the Total Environment* 2015, 512-513, 19-25; doi:10.1016/j.scitotenv.2015.01.021
- ✚ Wu, D.; Huang, Z.; Yang, K.; Graham, D.; Xie, B., Relationships between antibiotics and antibiotic resistance gene levels in municipal solid waste leachates in Shanghai, China.

Environmental Science & Technology 2015, 49, (7), 4122-8;
doi:10.1021/es506081z

- ✚ Wu, D.; Wang, T.; Huang, X.; Dolfing, J.; Xie, B., Perspective of harnessing energy from landfill leachate via microbial fuel cells: novel biofuels and electrogenic physiologies. *Applied Microbiology and Biotechnology* 2015, 99, (19), 7827-36; doi:10.1007/s00253-015-6857-x
- ✚ Xu, W.; Wu, D.; Wang, J.; Huang, X.; Xie, B., Effects of oxygen and carbon content on nitrogen removal capacities in landfill bioreactors and response of microbial dynamics. *Applied Microbiology and Biotechnology* 2016, 100, (14), 6427-34; doi:10.1007/s00253-016-7460-5
- ✚ Bundy, C. A.; Wu, D.; Jong, M.; Edwards, S.R.; Ahammad, Z.S.; Graham, D.W.; Enhanced denitrification in Downflow Hanging Sponge reactors for decentralised domestic wastewater treatment. *Bioresource Technology* 2017, 226, 1-8, doi: 10.1016/j.biortech.2016.11.122
- ✚ Wu, D.; Chen, G.; Zhang, X.; Yang, K.; Xie, B.; Change in microbial community in landfill refuse contaminated with antibiotics facilitates denitrification more than the increase in ARG over long-term. *Scientific Reports* 2017, 7, 41230, doi: 10.1038/srep41230

Co-authored paper & High-level Academic Conferences:

- ✚ Wang, X.; Xie, B.; Wu, D.; Hassan, M.; Huang, C., Characteristics and risks of secondary pollutants generation during compression and transfer of municipal solid waste in Shanghai. *Waste Management* 2015, 43, 1-8; doi:10.1016/j.wasman.2015.07.005
- ✚ Hassan, M.; Wang, X.; Wang, F.; Wu, D.; Hussain, A.; Xie, B., Coupling ARB-based biological and photochemical (UV/TiO₂ and UV/S₂O₈²⁻) techniques to deal with sanitary landfill leachate.

Waste Management 2016; doi:10.1016/j.wasman.2016.09.003

- ✓ Impacts of antibiotic residuals on denitrification and antibiotic resistance development in municipal solid wastes landfill, **Poster: ISME – 2016**
- ✓ Variation of antibiotics and antibiotics in municipal wastes processing Chain. Oral presentation, **Symposium of Chinese Society for Microbiology – 2015**

Education & Research Experience:

1. *PhD. Student* (Environmental Engineering; East China Normal University, China (2014.10 – Now)

My nearly accomplishing doctorate includes two projects, which means I indeed worked twice harder than my peer PhD colleagues. One is tackling recalcitrant-N in landfill leachates with low energy input. Another one is about investigating, modeling and controlling the AMR risks in landfill systems. The study and research during this period needs a combined knowledge of statistics, molecular microbiology (e.g. PCR, clone, sequencing, and microbial culturing) and engineering (increasing efficiencies of human waste treatment systems). And meanwhile, research projects application, business cooperation, patent/intellectual property application and liaison with research patterns are all being commissioned, with satisfactory results.

2. *Part-time Researcher* (Environmental Science; East China Normal University, China (2014.5 – 2014.10)

I was pre-recruited by my PhD project supervisor for a temporal research on nitrogen oxides emissions from the operating landfills.

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Apart from routine lab works, operational reports writing, experiment data processing and paper publication related jobs were also included during this stage.

3. *Part-time Researcher* (Environmental Engineering; Newcastle University, UK (2013.9 – 2013.12))

I was employed by my MSc project supervisor for continuing the operation of my bioreactors in four parallel. Apart from routine lab works, operational reports writing and data processing were also included. This work has been now expanded to pilot-scale and operated in both China and UK with my involvement. Partial research results have recently been published in the Journal of Bioresource Technology.

4. *M.Sc Environmental Engineering* (1st Class Honored Degree; Newcastle University, UK (2012.9 – 2013.9))

Study of core courses in environmental engineering: Water/wastewater Treatment Technology, Hydraulics, Air Pollution, Solid Waste Management, Soil Contamination and Remediation. During this stage, one wastewater treatment system design course and one graduate research project were accomplished with high quality. My graduate project was about constructing a bench-scale decentralized wastewater treatment system and optimizing its treatment efficiency.

5. *B.Eng Environmental Engineering*. (Honored Degree, Province-level; Anyang Institute of Technology, China (2008 - 2012))

Basic learning: advanced mathematics and statistics,

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engineering drawing and conceptual designs of waste treatment systems. During this stage, environmental science and chemical engineering related subjects like Introduction to Environmental Science, Environmental Microbiology, Inorganic/Organic Chemistry, Physical Chemistry and Principles of Chemical Engineering were studied. The graduate project was about modeling adsorption behaviors of emerging contaminants in river water by wheat straw powder.

Research Interests and Lab Techniques

Given my engineering and microbiology background, I am interested to decipher the interactions among microbes in engineered systems. I am fascinated by the seemingly promiscuous dissemination patterns of antibiotic resistance genes. The existence of practically meaningful models describing their distribution to “opportunistic microbes” is deeply rooted in my belief. And the key elements may hide under those cross-talks that can be engineered via our proper intervention. Therefore, researches with initiatives to reduce AMR risks in human waste treatment systems or to curtail drug-resistant infections in clinical setting would be appealing to me and stimulate myself to a great effort.

My current research needs skills to explore microbial bioactivity, emerging contaminants and their relationships. Apart from conventional techniques (listed below), I have gained very essential knowledge of bioinformatics and related advanced statistical and data visualization methods. R (on Windows platform) is my main tool.

Molecular test. DGGE, PCR, q-PCR, Primer design, Genome DNA

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extraction, Strain Isolation/bacteria culturing (e.g. *Fecal Coli*, *E. Coli*, Total bacteria)

Chemical analysis: conventional water/wastewater pollutants, antibiotics extraction (by solid phase extraction) and measurement

Instruments & Software: HPLC – MS/MS, IC, UV-Spectro; Rstudio (frequently), SPSS (often), OriginPro (sometimes), Canoco (sometimes), Endnote (routine), Microsoft Office (routine).