

Marc A. Deshusses, Ph.D., AAAS Fellow

Professor of Civil and Environmental Engineering, Director of the Energy Engineering Program
Research Professor, Duke Global Health Institute

Dept. of Civil and Environmental Engineering Phone (919) 660-5480 (919) 660-5219 Fax
127C Hudson Hall; Box 90287 Email: marc.deshusses@duke.edu
Duke University <http://www.deshusses.pratt.duke.edu/>
Durham, NC 27708-0287 <http://sanitation.pratt.duke.edu/>

RESEARCH INTERESTS

Dr. Deshusses' broad research interests are related to the design, analysis and application of sustainable processes for the remediation of contaminated air, water and solid wastes, anaerobic digestion and sanitation technologies for developing countries. A current focus is on novel reactors and sustainable processes for air, water and sewage. Applications include treatment of odors and air toxics, biogas production, and novel sanitation technologies. Research interests include bioenergy and waste to energy processes, biofilms, monitoring microorganisms in complex environments using biomolecular tools, indoor air quality, gas-phase sensors based on functionalized nanomaterials, advanced oxidation processes for waste treatment, and mathematical modeling of environmental processes.

EMPLOYMENT**DUKE UNIVERSITY**

Department of Civil and Environmental Engineering

Professor

2008 – Present

Pratt School of Engineering

Director, Energy Engineering Program

2012 - Present

Duke Global Health Institute

Research Professor

2014 - Present

UNIVERSITY OF CALIFORNIA, RIVERSIDE

Dept. of Chemical and Environmental Engineering

Adjunct Professor

2008 - 2011

Professor and Department Chair

2004 - 2008

Associate Professor

2001 - 2004

Assistant Professor

1994 - 2001

Faculty, Environmental Sciences Graduate Program

2000 - 2008

Faculty, Microbiology Graduate Program

1997 - 2008

Faculty, Environmental Toxicology Graduate Program

1996 - 2008

EDUCATION**SWISS FEDERAL INSTITUTE OF TECHNOLOGY ZURICH - ETHZ**

Postdoctoral studies (Biochemistry)

May - July 1994

(with Prof. G. Semenza)

SWISS FEDERAL INSTITUTE OF TECHNOLOGY ZURICH - ETHZ

Doctor of Philosophy, Technical Sciences

October 1990 - April 1994

Major Area: Chemical Engineering (Environmental Biotechnology)

(with Prof. G. Hamer, 90/92 EAWAG, I.J. Dunn, J. Bourne 92/94 ETH Zentrum)

SWISS FEDERAL INSTITUTE OF TECHNOLOGY LAUSANNE - ETHL

Chemical Engineering Degree

October 1985 - January 1990

Major Area: Chemical Engineering. Additional degree: Expert in Radioprotection
(diploma work with Prof. A. Renken)

SELECTED AWARDS AND RECOGNITIONS

2006 (Fall) Elected Fellow of the American Association for the Advancement of Science (AAAS)

1997/98 UC Riverside Bourns College of Engineering Outstanding Teaching Award

2001 UC Riverside Chancellor's Award for Excellence in Fostering Undergraduate Research

2002 Research Achievement Award from the Los Angeles Basin Section of the California Water Environment Association

2002 Research Achievement Award, Third Place overall California Water Environment Association.

Presented at the 75th Annual Conference of the CWEA, Ontario, California, April 22-25, 2003.

2003 Erskine Visiting Faculty Fellowship, University of Canterbury, Christchurch, New Zealand

2003 Featured in Science research highlights, Science Magazine, May 7, 2003

2003 Quality & Productivity Award of the City of Los Angeles for Environmental Marvels (Project Title: Biological Odor and Toxic Air Treatment)

2005 Keynote Speaker, Euro Summer School "Closing Water and Resources Cycles via Gas Treatment" June 26- July 1, 2005 Wageningen University, The Netherlands

2012 Cavanaugh & Associates & Duke, Grand Conceptor Award at American Council of Engineering Companies of NC for Loyd Ray Farms project (swine waste to energy management system)

2013 Bill Gates tweeted about our project "As part of @gatesfoundation's sanitation work, we funded a new toilet that turns waste into clean water: <http://b-gat.es/14EjOxh> "

RECENT AWARDS BY Dr. DESHUSSES' STUDENTS

2005 Graduate student X. Yu: Best Student Paper, 21st Annual International Conference on Soils, Sediments and Water, Amherst, MA., Oct 18-19, 2005.

2008 Graduate student Sudeep Papat: First Prize in the Graduate Student Category and Second Prize in the Sustainability Category with poster "Green technology for siloxane removal" Annual Meeting and Exhibition of the Air and Waste Management Association. Portland, OR, June 24-27, 2008.

2008 Undergraduate students (Lindsay Yee, Nichola Kinsinger, Christina Zapata, Quoc-Hung Phan): First Prize in the Undergraduate category with a poster titled "Power Plant NOx Control Using Bacterial Denitrification" Annual Meeting and Exhibition of the Air and Waste Management Association. Portland, OR, June 24-27, 2008.

2009 Graduate student Sudeep Papat: Graduate Student Fellowship, Air & Waste Manage. Association

2009 Graduate student Sudeep Papat: Travel Award, Air & Waste Manage. Assoc. - Mohave Desert Sect.

2009 Graduate student Sudeep Papat: Krieger & Stewart Award

2009 Graduate student Jennifer Shore, best poster award (student competition) American Water Works Assoc. and Water Environ. Assoc. Raleigh, NC, Nov. 16, 2009

SELECTED PROFESSIONAL OR UNIVERSITY ACTIVITIES

Director, Duke Pratt Energy Engineering Committee [2009 – Present]

Director, Duke Civil and Environmental Engineering Masters Studies [2015 - Present]

Member, Advisory Council for the Duke Center for Sustainability & Commerce [2011 – present]

Member, Duke Energy Initiative Educational Committee [2011 – Present]

Member, Duke Kunshan University, Liberal Arts in China Committee (LACC) [2012 – Present]

Member, Duke China Faculty Council (CFC) [2014 - Present]

Member, Duke Pratt Engineering, Budget Advisory Committee [2009 – 2011]

Department Chair, UC Riverside Department of Chemical and Environmental Engineering [04 - 08]

Chair, UC Riverside Chemical and Environmental Engineering Undergraduate Education Committee and Faculty Undergraduate Advisor for Chemical and Environmental Engineering [99 - 03]

Faculty Graduate Advisor for UC Riverside Chemical and Environmental Engineering [03 - 04]

Member [by invitation], External Advisory Committee, NASA Purdue Advanced Life Support Center NSCORT [03-06, Chair of that committee for 2003-2004]

Leader for ABET accreditation efforts for both UC Riverside Chemical Engineering and Environmental Engineering Programs [00-02 and 06-07] (both resulted in 6 years accreditation for both programs)

Editor: Chemical Engineering Journal (Environmental Chemical Eng. Section) [2007 - 2015].

Associate Editor: Biotechnology & Bioengineering [2010 - present].

Supervised >80 undergraduate research assistants, >30 graduate students, >15 postdoctoral researchers

JOURNAL PUBLICATIONS (see <http://www.deshusses.pratt.duke.edu/> for list and reprints)

110. Colón, J.; Forbis-Stokes, A. A.; Deshusses, M. A., Anaerobic digestion of undiluted simulant human excreta for sanitation and energy recovery in less-developed countries. *Energy for Sustainable Development*, **2015**, *29*, 57-64. <http://dx.doi.org/10.1016/j.esd.2015.09.005> (open access)
109. Ticknor, J. L.; Kucharzyk, K. H.; Porter, K. A.; Deshusses, M. A.; Hsu-Kim, H., Thiol-based selective extraction assay to comparatively assess bioavailable mercury in sediments. *Environ. Eng. Sci.*, **2015**, *32* (7), 564-573. <http://online.liebertpub.com/doi/abs/10.1089/ees.2014.0526>
108. Kucharzyk, K. H.; Deshusses, M. A.; Porter, K. A.; Hsu-Kim, H., Relative contributions of mercury bioavailability and microbial growth rate on net methylmercury production by anaerobic mixed cultures. *Environ. Sci.: Processes Impacts.*, **2015**, *17*, 1568-1577. (article is feature on the cover of the issue) <http://pubs.rsc.org/en/content/articlepdf/2015/EM/C5EM00174A>
107. Miller, A.; Espanani, R.; Junker, A.; Hendry, D.; Wilkinson, N.; Bollinger, D.; Abelleira-Pereira, J. M.; Deshusses, M. A.; Inniss, E.; Jacoby, W., Supercritical water oxidation of a model fecal sludge without the use of a co-fuel. *Chemosphere*, **2015**, *141*, 189-196. <http://dx.doi.org/10.1016/j.chemosphere.2015.06.076> (open access)
106. Shen, L.; Sun, Z.; Chu, Y.; Zou, J.; Deshusses, M. A., Novel sulfonated Nafion®-based composite membranes with pillararene as selective artificial proton channels for application in direct methanol fuel cells. *Int. J. Hydrogen Energy*, **2015**, *40*, (38), 13071-13079. <http://dx.doi.org/10.1016/j.ijhydene.2015.07.073>
105. Worley-Morse, T. O.; Deshusses, M. A.; Gunsch, C. K., Reduction of invasive bacteria in ethanol fermentations using bacteriophages. *Biotechnol. Bioeng.*, **2015**, *112*, (8), 1544-1553. <http://onlinelibrary.wiley.com/doi/10.1002/bit.25586/pdf>
104. Getzinger, G. J.; O'Connor, M. P. O.; Hoelzer, K.; Drollette, B. D.; Karatum, O.; Deshusses, M. A.; Ferguson, P. L.; Elsner, M.; Plata, D. L., Natural gas residual fluids: Sources, endpoints, and organic chemical composition after centralized waste treatment in Pennsylvania. *Environ. Sci. Technol.*, **2015**, *49*, (14), 8347-8355. (article was featured on ES&T web site) <http://pubs.acs.org/doi/abs/10.1021/acs.est.5b00471>
103. Xu, J.; Deshusses, M. A., Fermentation of swine wastewater-derived duckweed for biohydrogen production. *Int. J. Hydrogen Energy*, **2015**, *40*, (22), 7028-7036. <http://dx.doi.org/10.1016/j.ijhydene.2015.03.166>
102. Estrada, J. M.; Bernal, O. I.; Flickinger, M. C.; Muñoz, R.; Deshusses, M. A., Biocatalytic coatings for air pollution control: A proof of concept study on VOC biodegradation. *Biotechnol. Bioeng.*, **2015**, *112*, (2), 263-271. <http://onlinelibrary.wiley.com/doi/10.1002/bit.25353/epdf>
101. Zhang, T.; Kucharzyk, K. H.; Kim, B.; Deshusses, M. A.; Hsu-Kim, H., Net methylation of mercury in estuarine sediment microcosms amended with dissolved, nanoparticulate, and microparticulate mercuric sulfides. *Environ. Sci. Technol.*, **2014**, *48*, (16), 9133-9141.

100. Xu, J.; Vujic, T.; Deshusses, M. A., Nitrification of anaerobic digester effluent for nitrogen management at swine farms. *Chemosphere*, **2014**, *117*, 708-714.
99. Raut, A.S.; Cunningham, G. B.; Parker, C. B.; Klem, E. J. D.; Stoner, B. R.; Deshusses, M. A.; Glass, J. T., Disinfection of *E. coli* contaminated urine using boron-doped diamond electrodes. *J. Electrochem. Soc.*, **2014**, *161*, (12), G81-G85.
98. Zhang, L.; Deshusses, M. A., Application of finite difference method to model pH and substrate concentration in a double-chamber microbial fuel cell (DCMFC). *Environ. Technol.* **2014**, *35*, (9), 1064-1076.
97. Ticknor, J. L.; Hsu-Kim, H.; Deshusses, M. A., A robust framework to predict mercury speciation in combustion flue gases. *J. Haz. Mat.* **2014**, *264*, 380-385.
<http://dx.doi.org/10.1016/j.jhazmat.2013.10.052>
96. Wang, Y.; Jin, L.; Deshusses, M. A.; Matsumoto, M. R., The effects of various amendments on the biostimulation of perchlorate reduction in laboratory microcosm and flowthrough soil columns. *Chem. Eng. J.*, **2013**, *232*, 388-396. <http://dx.doi.org/10.1016/j.cej.2013.07.060>
95. Hsu-Kim, H.; Kucharzyk, K. H.; Zhang, T.; Deshusses, M. A., Mechanisms regulating mercury bioavailability for methylating microorganisms in the aquatic environment: A critical review. *Environ. Sci. Technol.*, **2013**, *47*, (6), 2441-2456. [ja95.pdf](#)
94. Mubeen, S.; Lai, M.; Zhang, T.; Lim, J. H.; Mulchandani, A.; Deshusses, M. A.; Myung, N. V., Hybrid tin oxide-SWNT nanostructures based gas sensor. *Electrochimica Acta*, **2013**, *92*, 484-490.
[ja94.pdf](#), [ja94SI.pdf](#)
93. Zhang, T.; Kim, B.; Leyard, C.; Reinsch, B. C.; Lowry, G. V.; Deshusses, M. A.; Hsu-Kim, H., Methylation of mercury by bacteria exposed to dissolved, nanoparticulate, and microparticulate mercuric sulfides. *Environ. Sci. Technol.*, **2012**, *46*, (13), 6950-6958. [ja93.pdf](#), [ja93SI.pdf](#)
92. Shore, J. L.; M'Coy, W. S.; Gunsch, C. K.; Deshusses, M. A., Application of a moving bed biofilm reactor for tertiary ammonia treatment in high temperature industrial wastewater. *Biores. Technol.*, **2012**, *112*, 51-60. [ja92.pdf](#)
91. Popat, S. C.; Zhao, K.; Deshusses, M. A., Bioaugmentation of an anaerobic biotrickling filter for enhanced conversion of trichloroethene to ethene. *Chem. Eng. J.*, **2012**, *183*, 98-103. [ja91.pdf](#), [ja91SI.pdf](#)
90. Kim, H.; Konnanath, B.; Sattigeri, P.; Wang, J.; Mulchandani, A.; Myung, N.; Deshusses, M. A.; Spanias, A.; Bakkaloglu, B., Electronic-nose for detecting environmental pollutants: signal processing and analog front-end design. *Analog Integr. Circuits Signal Process.*, **2012**, *70*, 15-32. [ja90.pdf](#)
89. Dixit, R. M.; Deshmukh, S. C.; Gadhe, A. A.; Kannade, G. S.; Lokhande, S. K.; Pandey, R. A.; Vaidya, A. N.; Mudliar, S. N.; Deshusses, M. A., Treatment of mixtures of toluene and n-propanol vapours in a compost/woodchip-based biofilter. *Environ. Technol*, **2012**, *33*, (7), 751-760. [ja89.pdf](#)
88. Gao, Y.; Deshusses, M. A., Adsorption of clofibric acid and ketoprofen on to powdered activated carbon: Effect of natural organic matter. *Environ. Technol*, **2012**, *33*, (7), 751-760. [ja88.pdf](#)
87. Mubeen, S.; Lim, J. H.; Srirangarajan, A.; Mulchandani, A.; Deshusses, M. A.; Myung, N. V., Gas sensing mechanism of gold nanoparticles decorated single-walled carbon nanotubes. *Electroanalysis*, **2011**, *23*, (11), 2687-2692. [ja87.pdf](#)
86. Fortuny, M.; Gamisans, X.; Deshusses, M. A.; Lafuente, J.; Casas, C.; Gabriel, D., Operational aspects of the desulfurization process of energy gases mimics in biotrickling filters. *Wat. Res.*, **2011**, *45*, 5665-5674. [ja86.pdf](#)

85. McNicholas, T. P.; Zhao, K.; Yang, C. H.; Hernandez, S. C.; Mulchandani, A.; Myung, N. V.; Deshusses, M. A., Sensitive detection of elemental mercury vapor by gold-nanoparticle-decorated carbon nanotube sensors. *Journal of Physical Chemistry C*, **2011**, *115*, (28), 13927-13931. [ja85.pdf](#)
84. Popat, S. C.; Deshusses, M. A., Kinetics and inhibition of reductive dechlorination of trichloroethene, cis-1,2-dichloroethene and vinyl chloride in a continuously fed anaerobic biofilm reactor, *Environ. Sci. Technol.*, **2011**, *45*, 1569-1578. [ja84.pdf](#)
83. Zhao, K.; Xiu, G.; Xu, L.; Zhang, D.; Zhang, X.; Deshusses, M. A., Biological treatment of mixtures of toluene and n-hexane vapors in a hollow fibre membrane bioreactor. *Environ. Technol.*, **2011**, *32*, (6), 617-623. [ja83.pdf](#)
82. Popat, S. C.; Yates, M. V.; Deshusses, M. A., Kinetics of inactivation of indicator pathogens during thermophilic anaerobic digestion. *Wat. Res.*, **2010**, *44*, (20), 5965-5972. [ja82.pdf](#)
81. Lai, M.; Mubeen, S.; Chartuprayoon, N.; Mulchandani, A.; Deshusses, M. A.; Myung, N. V., Synthesis of Sn doped CuO nanotubes from core-shell Cu/SnO₂ nanowires by the Kirkendall effect. *Nanotechnology*, **2010**, *21*, 295601 (5 pp) [ja81.pdf](#)
80. Lim, J. H.; Phiboolsirichit, N.; Mubeen, S.; Mulchandani, A.; Deshusses, M. A.; Myung, N. V., Electrical and gas sensing properties of polyaniline functionalized single-walled carbon nanotubes. *Nanotechnology*, **2010**, *21*, 075502 (7 pp) [ja80.pdf](#)
79. Lim, J. H.; Phiboolsirichit, N.; Mubeen, S.; Rheem, Y.; Deshusses, M. A.; Mulchandani, A.; Myung, N. V., Electrical and sensing properties of single-walled carbon nanotubes network: Effect of alignment and selective breakdown. *Electroanalysis*, **2010**, *22*, (1), 99-105. [ja79.pdf](#)
78. Mubeen, S.; Zhang, T.; Chartuprayoon, N.; Rheem, Y.; Mulchandani, A.; Myung, N. V.; Deshusses, M. A., Sensitive detection of H₂S using gold nanoparticle decorated single-walled carbon nanotubes. *Anal. Chem.* **2010**, *82*, (1), 250-257. [ja78.pdf](#)
77. Popat, S. C.; Deshusses, M. A., Analysis of the rate-limiting step of an anaerobic biotrickling filter removing TCE vapors. *Proc. Biochem.* **2010**, *45*,(4), 549-555. [ja77.pdf](#)
76. Popat, S. C.; Deshusses, M. A., Reductive dehalogenation of trichloroethene vapors in an anaerobic biotrickling filter. *Environ. Sci. Technol.* **2009**, *43*, (20), 7856-7861. [ja76.pdf](#)
75. Sakuma, T.; Hattori, T.; Deshusses, M. A., The effects of a lower irrigation system on pollutant removal and on the microflora of a biofilter. *Environ. Technol.* **2009**, *30*, (6), 621-627. [ja75.pdf](#)
74. Zhang, T.; Mubeen, S.; Yoo, B.; Myung, N. V.; Deshusses, M. A., A gas nanosensor unaffected by humidity. *Nanotechnology* **2009**, *20*, 255501 (5 pp). [ja74.pdf](#) (article was featured in *MaterialsToday* and in *Nanowerk.com* see <http://www.nanowerk.com/spotlight/spotid=11299.php>)
73. Prado, O. J.; Popat, S. C.; Chen, G. X.; Walker, S. L.; Lafuente, J.; Gabriel, D.; Deshusses, M. A., The effect of packing hydrophilization on bacterial attachment and the relationship with the performance of biotrickling filters. *Biotechnol. Bioeng.* **2009**, *103*, (6), 1060-1067. [ja73.pdf](#)
72. Lai, M.; Lim, J. H.; Mubeen, S.; Rheem, Y.; Mulchandani, A.; Deshusses, M. A.; Myung, N. V., Size-controlled electrochemical synthesis and properties of SnO₂ nanotubes. *Nanotechnology* **2009**, *20*, 185602 (6 pp). [ja72.pdf](#) (article was featured on the cover of the issue)
71. Shirsat, M. D.; Bangar, M. A.; Deshusses, M. A.; Myung, N. V.; Mulchandani, A., Polyaniline nanowires-gold nanoparticles hybrid network based chemiresistive hydrogen sulfide sensor. *Applied Physics Letters* **2009**, *94*, (083502). [ja71.pdf](#)
70. Kan, E.; Deshusses, M. A., Modeling of a Foamed Emulsion Bioreactor: II. Model Parametric Sensitivity. *Biotechnology and Bioengineering* **2009**, *102*, (3), 708-713. [ja66.pdf](#)

69. Popat, S. C.; Deshusses, M. A., Biological removal of siloxanes from landfill and digester gases: opportunities and challenges. *Environmental Science & Technology* **2008**, *42*, (22), 8510-8515. [ja70.pdf](#)
68. Sakuma, T.; Jinsiriwanit, S.; Hattori, T.; Deshusses, M. A., Removal of ammonia from contaminated air in a biotrickling filter - Denitrifying bioreactor combination system. *Water Research* **2008**, *42*, (17), 4507-4513. [ja69.pdf](#)
67. Gonzalez-Sanchez, A.; Revah, S.; Deshusses, M. A., Alkaline biofiltration of H₂S odors. *Environmental Science & Technology* **2008**, *42*, (19), 7398-7404. [ja68.pdf](#)
66. Zhang, T.; Mubeen, S.; Myung, N. V.; Deshusses, M. A., Recent progress in carbon nanotube-based gas sensors. *Nanotechnology* **2008**, *19*, (33). [ja67.pdf](#)
65. Fortuny, M.; Baeza, J. A.; Gamisans, X.; Casas, C.; Lafuente, J.; Deshusses, M. A.; Gabriel, D., Biological sweetening of energy gases mimics in biotrickling filters. *Chemosphere* **2008**, *71*, (1), 10-17. [ja65.pdf](#)
64. Kan, E.; Deshusses, M. A., Modeling of a foamed emulsion bioreactor: I. Model development and experimental validation. *Biotechnology and Bioengineering* **2008**, *99*, (5), 1096-1106. [ja64.pdf](#)
63. Park, H.; Ayala, P.; Deshusses, M. A.; Mulchandani, A.; Choi, H.; Myung, N. V., Electrodeposition of maghemite ($\gamma\text{-Fe}_2\text{O}_3$) nanoparticles. *Chemical Engineering Journal* **2008**, *139*, (1), 208-212. [ja63.pdf](#)
62. Hangarter, C. M.; Bangar, M.; Hernandez, S. C.; Chen, W.; Deshusses, M. A.; Mulchandani, A.; Myung, N. V., Maskless electrodeposited contact for conducting polymer nanowires. *Applied Physics Letters* **2008**, *92*, (7). [ja62.pdf](#)
61. Kim, S.; Deshusses, M. A., Determination of mass transfer coefficients for packing materials used in biofilters and biotrickling filters for air pollution control - 2: Development of mass transfer coefficients correlations. *Chemical Engineering Science* **2008**, *63*, (4), 856-861. [ja61.pdf](#)
60. Kim, S.; Deshusses, M. A., Determination of mass transfer coefficients for packing materials used in biofilters and biotrickling filters for air pollution control. 1. Experimental results. *Chemical Engineering Science* **2008**, *63*, (4), 841-855. [ja60.pdf](#)
59. Philip, L.; Deshusses, M. A., The control of mercury vapor using biotrickling filters. *Chemosphere* **2008**, *70*, (3), 411-417. [ja59.pdf](#)
58. Kan, E.; Kim, S.; Deshusses, M. A., Fenton oxidation of TCE vapors in a foam reactor. *Environmental Progress* **2007**, *26*, (3), 226-232. [ja58.pdf](#)
57. Moussavi, G.; Naddafi, K.; Mesdaghinia, A.; Deshusses, M. A., The removal of H₂S from process air by diffusion into activated sludge. *Environmental Technology* **2007**, *28*, (9), 987-993. [ja57.pdf](#)
56. Al-Awadhi, N.; Deshusses, M.A.; Hamer, G. Aerobic waste sewage sludge biotreatment for enhanced environmental safety. *Technology* **2007**, (2007 supplement on Sewage Sludge Technology and Management). 158-177. [ja56.pdf](#)
55. Zhang, T.; Mubeen, S.; Bekyarova, E.; Yoo, B. Y.; Haddon, R. C.; Myung, N. V.; Deshusses, M. A., Poly(m-aminobenzene sulfonic acid) functionalized single-walled carbon nanotubes based gas sensor. *Nanotechnology* **2007**, *18*, (16). [ja55.pdf](#)
54. Mubeen, S.; Zhang, T.; Yoo, B.; Deshusses, M. A.; Myung, N. V., Palladium nanoparticles decorated single-walled carbon nanotube hydrogen sensor. *Journal of Physical Chemistry C* **2007**, *111*, (17), 6321-6327. [ja54.pdf](#)

53. Yu, X. Y.; Amrhein, C.; Deshusses, M. A.; Matsumoto, M. R., Perchlorate reduction by autotrophic bacteria attached to zerovalent iron in a flow-through reactor. *Environmental Science & Technology* **2007**, *41*, (3), 990-997. [ja53.pdf](#)
52. Wang, X. L.; Deshusses, M. A., Biotreatment of groundwater contaminated with MTBE: interaction of common environmental co-contaminants. *Biodegradation* **2007**, *18*, (1), 37-50. [ja52.pdf](#)
51. Sakuma, T.; Hattori, T.; Deshusses, M. A., Comparison of different packing materials for the biofiltration of air toxics. *Journal of the Air & Waste Management Association* **2006**, *56*, (11), 1567-1575. [ja51.pdf](#)
50. Kan, E.; Deshusses, M. A., Scale-up and cost evaluation of a foamed emulsion bioreactor. *Environmental Technology* **2006**, *27*, (6), 645-652. [ja50.pdf](#)
49. Zhang, T.; Nix, M. B.; Yoo, B. Y.; Deshusses, M. A.; Myung, N. V., Electrochemically functionalized single-walled carbon nanotube gas sensor. *Electroanalysis* **2006**, *18*, (12), 1153-1158. [ja49.pdf](#)
48. Yu, X. Y.; Amrhein, C.; Deshusses, M. A.; Matsumoto, M. R., Perchlorate reduction by autotrophic bacteria in the presence of zero-valent iron. *Environmental Science & Technology* **2006**, *40*, (4), 1328-1334. [ja48.pdf](#)
47. Kan, E. S.; Deshusses, M. A., Cometabolic degradation of TCE vapors in a foamed emulsion bioreactor. *Environmental Science & Technology* **2006**, *40*, (3), 1022-1028. [ja47.pdf](#)
46. Kan, E.; Deshusses, M. A., Continuous operation of foamed emulsion bioreactors treating toluene vapors. *Biotechnology and Bioengineering* **2005**, *92*, (3), 364-371. [ja46.pdf](#)
45. Baquerizo, G.; Maestre, J. P.; Sakuma, T.; Deshusses, M. A.; Gamisans, X.; Gabriel, D.; Lafuente, J. A detailed-model of a biofilter for ammonia removal: Model parameters analysis and model validation. *Chemical Engineering Journal* **2005**, *113*, 205-214. [ja45.pdf](#)
44. Kim, S.; Deshusses, M. A. Understanding the limits of H₂S degrading biotrickling filters using a differential biotrickling filter. *Chemical Engineering Journal* **2005**, *113*, 119-126. [ja44.pdf](#)
43. Iranpour, R.; Coxa, H. H. J.; Deshusses, M. A.; Schroeder, E. D., Literature review of air pollution control biofilters and biotrickling filters for odor and volatile organic compound removal. *Environmental Progress* **2005**, *24*, (3), 254-267. [ja43.pdf](#)
42. Chen, W.; Mulchandani, A.; Deshusses, M. A., Environmental biotechnology: Challenges and opportunities for chemical engineers. *AIChE Journal* **2005**, *51*, (3), 690-695. [ja42.pdf](#)
41. Won, Y. S.; Lee, T. J.; Wu, Y. P. G.; Deshusses, M. A., An environmentally friendly method for controlling biomass in biotrickling filters for air pollution control. *Journal of Industrial and Engineering Chemistry* **2004**, *10*, (1), 60-65. [ja41.pdf](#)
40. Kang, S. T.; Subramani, A.; Hoek, E. M. V.; Deshusses, M. A.; Matsumoto, M. R., Direct observation of biofouling in cross-flow microfiltration: mechanisms of deposition and release. *Journal of Membrane Science* **2004**, *244*, (1-2), 151-165. [ja40.pdf](#)
39. Gabriel, D.; Deshusses, M. A. Technical and economical analysis of the conversion of a full-scale scrubber to a biotrickling filter for odour control *Water Science and Technology* **2004**, *50*, (4), 309-318. [ja39.pdf](#)
38. Gabriel, D.; Cox, H. H. J.; Deshusses, M. A., Conversion of full-scale wet scrubbers to biotrickling filters for H₂S control at publicly owned treatment works. *Journal of Environmental Engineering-ASCE* **2004**, *130*, (10), 1110-1117. [ja38.pdf](#)

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36. Converse, B. M.; Schroeder, E. D.; Iranpour, R.; Cox, H. H. J.; Deshusses, M. A., Odor and volatile organic compound removal from wastewater treatment plant headworks ventilation air using a biofilter. *Water Environment Research* **2003**, *75*, (5), 444-454. [ja36.pdf](#)
35. Kim, S.; Deshusses, M. A. Development and experimental validation of a conceptual model for biotrickling filtration of H₂S. *Environmental Progress*, **2003**, *22*, 119-128. [ja35.pdf](#)
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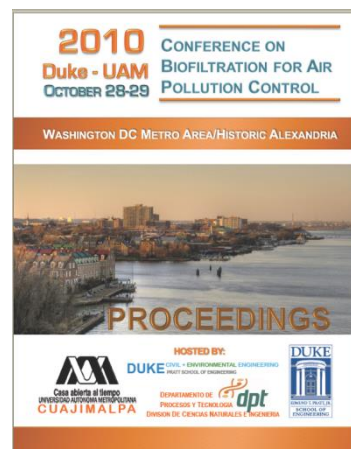
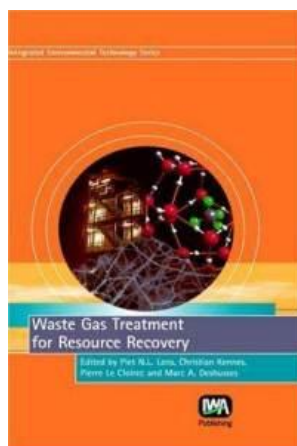
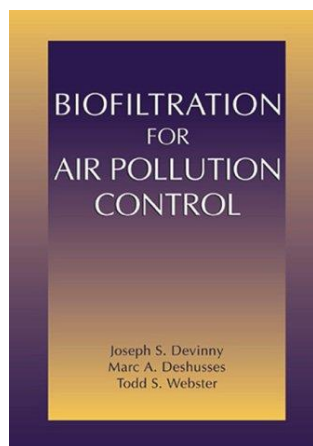
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