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EDUCATION

Ph.D., Chemical and Environmental Engineering
Department of Chemical and Environmental Engineering, University of California at Riverside, 2005

- Thesis Advisor: Professor Marc A. Deshusses (currently at Duke University)
- Dissertation: Development of a foamed emulsion bioreactor for air pollution control (Funded by US National Science Foundation)

PROFESSIONAL EXPERIENCES

2016 – Present: Associate Professor, Texas A&M AgriLife Research Center & Department of Biological and Agricultural Engineering, Texas A&M University (joint appointment with Tarleton State University)

2012 – 2016: Assistant Professor, Dept. Molecular Bioscience and Bioengineering, University of Hawaii at Manoa, Honolulu, Hawaii

2011 – 2012: Biochemical Research Engineer, Coskata Inc., Warrenville, Illinois

2008 – 2011: Assistant Professor, Dept. Chemical and Petroleum Engineering, United Arab Emirates University, Al-Ain, United Arab Emirates

2006-2008: Postdoctoral researcher at U.S. Environmental Protection Agency

1995-2000: Research Scientist, Hansol Paper Company, Seoul, Korea

RESEARCH AREAS

1) Development of municipal, agricultural, and industrial wastewater treatment processes

- Biological and physical-chemical processes for treatment of various wastewater
- Municipal wastewater, animal wastewater, paper mill wastewater and petrochemical wastewater

2) Treatment of contaminated groundwater

- In-situ remediation of contaminated groundwater
- Field demonstration for treatment of gas and oil-contaminated groundwater at Shell Oil's site in Los Angeles (2006-2008)

3) Conversion of agricultural and industrial wastes to value-added products

- Conversion of sewage sludge, animal manure and agricultural wastes to biochar, biofuels and biofertilizers

- Application of biochar as soil conditioner, biofertilizers and water filtering media

4) Biological greenhouse gas and VOC control via novel bioreactors
- Novel bioreactors: foam emulsion bioreactor, microbubble bioreactor
- Biological treatment of various VOCs
- Biological conversion of CO_2 (gas) to calcium carbonate via E. coil expressing carbonic anhydrase

SELECTED PUBLICATIONS (*: corresponding author)

Kan E*. 2018. Pyrolysis-Biochar for Sustainable Dairy Farms. Agricultural Research & Technology, 15: 1-2.

Choi YK, Jang HM, **Kan E***. 2018. Microalgal Biomass and Lipid Production on Dairy Effluent Using a Novel Microalga, *Chlorella sp*. Isolated from Dairy Wastewater. Biotechnology and Bioprocess Engineering. in-press.

Jang HM, Lee JW, Choi SK, Hin JG, **Kan E**, Kim YM. 2018. Response of antibiotic and heavy metal resistance genes to two different temperature sequences in anaerobic digestion of waste activated sludge. Bioresource Technology, in-press.

Bhatia S, Kim YG, Choi YK, **Kan E**, Yang YH. 2018. Microbial consortia: an ecotechnology approach for industrial products and bioremediation. Critical Reviews in Biotechnology. 2018. In-press.

Jang HM, Yoo SH, Choi YK, Park SK, **Kan E***. 2018. Adsorption isotherm, kinetic modeling and mechanism of tetracycline on Pinus taeda-derived activated biochar. 2018. Bioresource Technology, 259: 24-31.

Jang HM, Choi YK, **Kan E***. 2018. Effects of dairy manure-derived biochar on psychrophilic, mesophilic and thermophilic anaerobic digestions of dairy manure. Bioresource Technology. 250: 927-931.

Cho IK, Park BJ, Chung KH, Li QX, **Kan E***. 2017. Fenton Oxidation of Bisphenol A using an Fe3O4-coated Carbon Nanotube: Understanding of Oxidation Products, Toxicity and Estrogenic Activity. Korean J. Pestic. Sci., 21: 310-315.

Kim HJ, Jin JN, **Kan E**, Kim KJ, Lee SH. 2017. Bacterial cellulose-chitosan composite hydrogel beads for enzyme immobilization. Biotechnology and Bioprocess Engineering, 22: 89-94.

Kim JH, Park S, Kim H, Kim HJ, Yang Y, Kim YH, Jung S, **Kan E***, Lee S*. 2017. Alginate/bacterial cellulose nanocomposite beads prepared using *Gluconacetobacter xylinus* and their application in lipase immobilization. Carbohydrate Polymers, 157: 137–145.

Cho, I. K., H. S. Nam, Y. J. Jun, S. P. S Park, T. W. Na, B. J. Kim, and **E. Kan**. 2016. Residue Study for Bisphenol A in Agricultural Reservoirs. Korean J Environ Agric. 35:270-277.

Kim JR, **Kan E***. 2016. Heterogeneous photocatalytic degradation of sulfamethoxazole in water using a biochar-supported TiO2 photocatalyst. Journal of Environmental Management, 180: 94–101.

Watson SK, Han Z, Su WW, Deshusses MA, **Kan E***. 2016. Carbon dioxide capture using Escherichia coli expressing carbonic anhydrase in a foam bioreactor. Environmental Technology 37: 3186-3192.

Kim SH, Park S, Yu H, Kim JH, Kim HJ, Yang Y, Kim YH, Kim KJ, **Kan E**, Lee SH. 2016. Effect of deep eutectic solvent mixtures on lipase activity and stability. Journal of Molecular Catalysis B: Enzymatic, 128: 65–72.

Hoh DH, Watson SK, **Kan E***. 2016. Algal biofilm reactors for integrated wastewater treatment and biofuel production: a review. Chemical Engineering Journal, 287: 466 – 473.

Watson SK, **Kan E*.** 2015. Effects of Novel Auto-Inducible Medium on Growth, Activity and CO2 Capture Capacity of Escherichia coli Expressing Carbonic Anhydrase. Journal of Microbiological Methods, 117: 139–143.

Kim JR, Huling SG, **Kan E***. 2015. Effects of temperature on adsorption and oxidative degradation of bisphenol A in a surface modified iron-amended granular activated carbon. Chemical Engineering Journal, 262: 1260-1267.

Kim JR, **Kan E***. 2015. Heterogeneous photo-Fenton oxidation of methylene blue using CdS-carbon nanotube/TiO_2 under visible light. Journal of Industrial and Engineering Chemistry. 21: 644-652.

Cleveland V, Bingham JP, **Kan E***. 2014. Heterogeneous Fenton Degradation of Bisphenol A by Carbon Nanotube-supported Fe_3O_4. Separation and Purification Technology, 133:388-395.

Kim JR, Santiano B, Kim HS, **Kan E*.** 2013. Heterogeneous Oxidation of Methylene Blue with Surface-Modified Iron-Amended Activated Carbon. American Journal of Analytical Chemistry, 4:115-122. Google-based impact factor: 1.12.

Kan E*. 2013. Effects of pretreatment of anaerobic sludge and culture conditions on hydrogen productivity in dark anaerobic fermentation. Renewable Energy, 49: 227–231.

Huling SG, **Kan E**, Wingo C, Park SH. 2012. Pilot study of Fenton-driven regeneration of MTBE-spent granular activated carbon. Journal of Hazardous Materials, 205/206: 55-62.

Huling SG, Ko SB, Park S, **Kan E**. 2011. Persulfate oxidation regeneration of spent granular activated carbon. Journal of Hazardous Materials 192: 1484-1490.

Huling SG, **Kan E,** Wingo C. 2009. Fenton-driven regeneration of MTBE-spent granular activated carbon – Effects of particle size and Iron Amendment Procedures. Applied Catalysis B: Environmental, 89: 651-658.

Kan E, Huling SG. 2009. Effects of temperature and acidic pre-treatment on Fenton-driven oxidation of MTBE-spent granular activated carbon. Environmental Science and Technology, 43 (5): 1493-1499.

Kan E, Deshusses MA. 2009. Modeling of the foamed emulsion bioreactor for air pollution control. II. Process and parametric sensitivity studies. Biotechnology and Bioengineering, 102: 708-713.

Kan E, Deshusses MA. 2008. Modeling of the foamed emulsion bioreactor for air pollution control. I. Model development and experimental validation. Biotechnology and Bioengineering, 99: 1096-1106.

Kan E, Kim S, Deshusses MA. 2007. Fenton oxidation of TCE vapors in a foam reactor. Environmental Progress, 26(3): 226-232.

Kan E, Deshusses MA. 2006. Cometabolic degradation of TCE vapors in a foamed emulsion bioreactor. Environmental Science and Technology, 40: 1022 -1028.

Kan E, Deshusses MA. 2005. Continuous operation of foamed emulsion bioreactors treating toluene vapors. Biotechnology and Bioengineering, 92: 364-371.

Kan E, Deshusses MA. 2003. Development of foamed emulsion bioreactor for air pollution control. Biotechnology and Bioengineering, 84:240-244.

Kan E, Park CB, Lee SB. 1997. Optimization in culture conditions of hyperthermophilic Sulfolobus solfataricus. Korean Journal of Biotechnology and Bioengineering, 12: 121-126.

HONORS, AWARDS, FELLOWSHIP AND SCHOLARSHIP

- U.S. National Research Council Research Associateship Award (National Research Council and U.S. Environmental Protection Agency, 2006-2008)
- "Outstanding research projects in 2008" at U.S. Environmental Protection Agency
- Distinguished Chancellor Fellowship (University of California at Riverside, USA, 2000-2005)
- High Honors, First in Graduating Class (Inha University, Korea, 1992)