



Curriculum Vitae Huey-Min Hwang

Education and Training

B.Sci. Biology National Taiwan Normal University, Taipei, Taiwan, R.O.C. (1975)
Ph.D. Microbiology University of Georgia, Athens, GA, U.S.A. (1985)
Postdoctoral: Microbial Ecology, Department of Microbiology University of Georgia, Athens, GA, U.S.A. (1986-1989)

Professional Appointments

Professor, Biology Department, Jackson State University (07/1999- Present)
Director, Environmental Science M.S. and Undergraduate concentration programs, Jackson State University (07/2003-present)
Associate Professor, Biology Department, Jackson State University (07/1994- 06/1999)
Assistant Professor, Biology Department, Jackson State University (01/1990- 06/1994)

Research Interests

Aquatic microbial ecology
Bioremediation
Renewable energy-biofuels
Aquatic photochemistry/Photoinduced toxicity and degradation
Nanotoxicology
Green biotechnology

Professional affiliations

The Society of Environmental Toxicology and Chemistry (member)
Environmental Mutagen Society (member)
Mississippi Academy of Sciences (lifetime member)

Highlights of Professional Accomplishment

Outstanding Faculty honoree, Higher Education Appreciation Day Working for Academic Excellence (HEADWAE) Program, Mississippi State, 2002

Proposals Review Panel member, National Institutes of Health, MBRS (Score) and CSR Programs, 2002-2008

NSF's Merit Reviewer and proposal reviewer of NSF Chemistry of Life Processes program 2009-present

Member of Nature Publish Group, 2009-2010

Member of Mississippi Energy Policy Institute, August 2009-present

Board of Directors, Overseas Chinese Environmental Engineers and Scientists Association, 2009

Mississippi's Nutrient Technical Advisory Group, May 2010-present

Cited (in March 2011) as a Top 10 Articles Published (paid-download) in the Domain of BioMedLib in the topic of PAHs Bioremediation- Hwang HM, Hu X, Zhao X: Enhanced bioremediation of polycyclic aromatic hydrocarbons by environmentally friendly techniques. J Environ Sci Health C Environ Carcinol Ecotoxicol Rev; 2007 Oct-Dec;25(4):313-52

Member of the DOE/USDA Biomass R&D Technical Advisory Committee, May 2011-present

Recent/Ongoing Research

(1) TITLE: Nanomaterials: A Study of Toxicity Mechanism, Bioaccumulation Potential, and Application for Prediction Modeling

ROLE: CO-P.I. of the Center and P.I. of the nanotoxicity project

FUNDING SOURCE: NSF-CREST Program

DURATION: 5 years (10/01/2008 – 09/30/2013)

(2) TITLE: NSF SBIR Phase IIA Supplemental Project entitled "Development of Cadmium-Free, Water-Soluble and Multicolor Quantum Dots by Chemical Doping- Mechanism of the Toxicity of Ferric Oxide Nanoparticles and Selected Quantum Dots

ROLE: P.I.

FUNDING SOURCE: NSF-SBIR Program (funded)

DURATION: 7 months (04/01/2010- 07/31/2011)

(3) TITLE: Acquisition of an Inductively Coupled Plasma-Optical Emission Spectrometer (ICP-OES) for Environmental Studies

ROLE: CO-P.I.

FUNDING SOURCE: NSF Major Research Instrumentation (MRI) program (funded)

DURATION: 3 Years (03/01/2010- 02/28/2013)

(4) TITLE: Development of Laboratory Modules to Enhance Inquiry-guided Learning by Implementing Biofuel-related Experiments

ROLE: CO-P.I.

FUNDING SOURCE: NSFCCLI Biochemistry Lab Grant (funded)

DURATION: 3 Years (03/01/2010- 02/28/2013)

(5) TITLE: Mississippi Biomass Utilization: University-based R&D Project

ROLE: P.I. of the JSU project

FUNDING SOURCE: DOE/MRT/SBIR Program
DURATION: 08/01/2006 to 03/31/2008

Refereed Publications (2000-present; *Correspondence author; ^d: Ph.D. student; ^m: MS students; ^u: Undergraduate student)

Wang, Y., W. Aker^d, **H.-M. Hwang***, C. Yedjou, H. Yu, and P. Tchounwou. 2011. A study of the mechanism of *in vitro* cytotoxicity of metal oxide nanoparticles using catfish primary hepatocytes and human HepG2 cells. In Press. Sci. Total Environ. doi:10.1016/j.scitotenv.2011.07.039.

Puzyn, T., B. Rasulev, A. Gajewicz, X. Hu, T. Dasari^d, A. Michalkova, **H.-M. Hwang**, A. Toropov, D. Leszczynska, and J. Leszczynski*. 2011. Using nano-QSAR to predict the cytotoxicity of metal oxide nanoparticles. Nat. Nanotechnology. 6:175-178.

Wu, H.^d, M.Saeed^d, **H.-M. Hwang**, S. Zhao, Y.-M. Liu, and Md. A. Hossain*. 2011. Application of capillary electrophoresis in anion binding studies: Complexation and separation of nitrate and nitrite by an azacryptan. J. Phy. Chem. 24: 1-5.

Dasari, T.^d, and **H.-M. Hwang***. 2010. The effect of humic acids on the cytotoxicity of silver nanoparticles to a natural aquatic bacterial assemblage. Sci. Total Environ. 408: 5817-5823.

Ying, E., and **H.-M. Hwang***. 2010. *In vitro* evaluation of cytotoxicity of iron oxide nanoparticles with different coatings and different sizes in A3 human T lymphocytes. Sci. Total Environ. 408: 4475-4481.

Zhao, X., X. Hu, and **H.-M. Hwang***. A study of the toxicity of parathion and major degradation products. 2010. Int. J. Environ. Eng. Sci. 1: 49-56.

Hu, X., S. Cook^d, P. Wang, **H.-M. Hwang***, X. Liu, and Q. Williams. *In vitro* evaluation of cytotoxicity of engineered carbon nanotubes in selected human cell lines. 2010. Sci. Total Environ. 408: 1812-1817.

Cook, S.^d, W. Aker^d, B. Rasulev, **H.-M. Hwang***, J. Leszczynski, J. Jenkins^u, and V. Shockley^u. 2010. Choosing safe dispersing media for C₆₀ fullerenes by using cytotoxicity tests on the bacterium *Escherichia coli*. J. Hazard. Mater. 176: 367-373.

Liu, R., X. Jiang, H. Mou, H. Guan, **H.-M. Hwang**, and X. Li. 2009. A novel low-temperature resistant alkaline lipase from a soda lake fungus strain *Fusarium solani* N4-2 for detergent formulation". Biochem. Eng. J. 46: 265-270.

Hu, X., S. Cook^d, P. Wang^d, and **H.-M. Hwang***. 2009. *In vitro* evaluation of cytotoxicity of engineered metal oxide nanoparticles. Sci. Total Environ. 407: 3070-3072.

Hu, X., P. Wang^d, **H.-M. Hwang***. 2009. Oxidation of anthracene by immobilized laccase from *Trametes versicolor*. Bioresource Technol. 100: 4963-4968.

- Zhao, X., and **H.-M. Hwang***. 2009. A study of the degradation of organophosphorus pesticides in river waters and the identification of their degradation products with chromatography coupled with mass spectrometry. *Arch. Environ. Contam. Toxicol.* 56: 646-653.
- Wang, P^d, X. Hu, S. Cook^d, and **H.-M. Hwang***. 2009. Influence of silica derived nano-supporters on cellobiase after immobilization. *Appl. Biochem. Biotechnol.* 158: 88-96.
- Wang^d, P., X. Hu, S. Cook^d, M. Begonia, K.S. Lee, and **H.-M. Hwang***. 2008. Effect of culture conditions on the production of ligninolytic enzymes by white rot fungi *Phanerochaete chrysosporium* (ATCC 20696) and separation of its lignin peroxidase. *World J. Microbiol. Biotechnol.* 24:2205-2212.
- Wang^{d*}, P., X. Jiang, Y. Jiang, X. Hu, and **H.-M. Hwang**. 2008. Optimization of fermentation medium and conditions for mycelial growth and water-soluble exopolysaccharides production by *Isaria farinosa* B05". *Prep. Biochem. Biotechnol.* 38: 294-307.
- Aker^d, W.G., X. Hu, P. Wang^d, and **H.-M. Hwang***. 2008. Comparing the relative toxicity of malathion and malaoxon in blue catfish *Ictalurus furcatus*. *Environ. Toxicol.* 23: 548-554.
- Zhang, Y., J. Gao, J. Ntoni^d, M.F.T. Begonia, K.S. Lee, and **H.-M. Hwang***. 2008. Enhancing ethanol fermentability of an artificial acid hydrolyzate with anion exchange resin treatment. *Prep. Biochem. Biotechnol.* 38: 191-200.
- Zhao, X., Y. Zhang, X. Hu, and **H.M. Hwang***. 2007. Enhanced bio-mineralization by riboflavin photosensitization and its significance to detoxification of benzo[a]pyrene. *Bull. Environ. Contam. Toxicol.* 79: 319-322.
- Hwang*, H.M.**, X. Hu, and X. Zhao. 2007. Enhanced bioremediation of polycyclic aromatic hydrocarbons by environmental friendly techniques. *J. Environ. Sci. Health, part c- Environ. Carcinogenesis Ecotoxicol. Rev.* 25: 313-352.
- Zhao*, X., Y. Lu, D.R. Philips, **H.-M. Hwang**, and I.R. Hardin. 2007. Study of biodegradation products from azo dyes in fungal degradation by capillary electrophoresis/electrospray mass spectrometry. *J. Chromatogr A.* 1159: 217-224.
- Yang, X., X. Zhao, and **H.-M. Hwang***. 2007. Phototransformation of 2,4,6-trinitrotoluene: Sensitized by riboflavin under different irradiation spectral range. *J. Hazard. Mater.* 143: 271-276.
- Hu, X., Y. Zhang, X. Zhao, and **H.-M. Hwang***. 2007. Biodegradation of benzo[a]pyrene with immobilized laccase: genotoxicity of the products in HaCaT and A3 cells. *Environ. Mol. Mutagen.* 48: 106-113.

- Hu, X., X. Zhao, and **H.-M. Hwang***. 2007. Comparative study of immobilized *Trametes versicolor* laccase on nanoparticles and kaolinite. *Chemosphere*. 66: 1618-1626.
- Gao, J., Y. Zhang, J. Ntoni^d, M.F.T., Begonia, K.S. Lee, L. Hicks^u, W.W. Hwang^u, and **H.-M. Hwang***. 2006. Effects of Selected By-products of an Acid Hydrolyzate on Cell Growth and Ethanol Fermentation by *Saccharomyces cerevisiae*. *J. Mississippi Acad. Sci.* 51(4): 220-230.
- Zheng, Y., and **H.-M. Hwang***. 2006. Effects of temperature and microorganisms on malathion transformation in river water. *Bull. Environ. Contam. Toxicol.* 76 (4): 712-719.
- Hu^{*}, X., X. Jiang, and **H. Hwang**. 2006. Purification and characterization of an alginate lyase from marine bacterium *Vibrio* sp. mutant strain 510-64. *Curr. Microbiol.* 53(2): 135-140.
- Zhang, Y., **H.-M. Hwang***, and S. Ekunwe. 2006. Comparing cytotoxicity and genotoxicity in HaCat cells caused by 6-aminochrysene and 5,6-chrysenequinone under UVA irradiation. *Environ. Toxicol. Chem.* 25: 1920-1926.
- Zhao*, X., I.R. Hardin, and **H.-M. Hwang**. 2006. Biodegradation of a model azo dye by white rot fungus *Pleurotus ostreatus*. *Int. Biodeter. Biodegr.* 57: 1-6.
- Zhao, X., X. Hu, and **H.M. Hwang***. 2006. Effects of riboflavin on the phototransformation of benzo[a]pyrene. *Chemosphere*. 63: 1116-1123.
- Hu^{*}, X., X. Jiang, J. Gong, **H.-M. Hwang**, Y. Liu, and H. Guan. 2005. Antibacterial activity of lyase-depolymerized products of alginate. *J. Appl. Phycol.* 17(1): 57-60.
- Zhang, Y., **H.-M. Hwang***, M.F.T. Begonia, K. Lee, and K. Zeng^d. 2005. Effect of an acid hydrolyzate of southern pine softwood on the growth and fermentation ability of yeast *Saccaromyces cerevisiae*. *J. Mississippi Acad. Sci.* 50 (#2): 138-143.
- Quan, Z., Y. Song, G. Peters^u, M. Shenwu^u, Y. Sheng, **H.-M. Hwang**, and Y.-M. Liu*. 2005. Chiral CE separation of dopamine derived neurotoxins. *Anal. Sci.* 21(2): 115-119.
- Hwang***, **H.-M.**, N. McArthur^m, C. Ochs, B. Libman^d. 2005. Assessing interactions of multiple agrichemicals by using bacterial assemblages in a wetland mesocosm system. *Int. J. Environ. Res. Public Health* 2(2): 328-334.
- Hunter^m, R.D., S.I. N. Ekunwe*, D.E. Dodor, **H.-M. Hwang**, and L. Ekunwe. 2005. *Bacillus subtilis* is a potential degrader of pyrene and benzo[a]pyrene. *Int. J. Environ. Res. Public Health* 2(2): 267-271.

- Ekunwe*, S.I.N., R.D. Hunter, and **H.-M. Hwang**. 2005. Ultraviolet radiation increases the toxicity of pyrene, 1-aminopyrene and 1-hydroxypyrene to human keratinocytes. *Int. J. Environ. Res. Public Health* 2(1): 58-62.
- Zeng^d, K., **H.-M. Hwang***, Y. Zhang, and S. Cook^d. 2004. Assessing cytotoxicity of photosensitized transformation products of 2,4,6-trinitrotoluene (TNT) and atrazine with freshwater microbial assemblages. *Environ. Toxicol.* 19: 490-496.
- Wang, L., J. Yan, S. Wang^d, H. Cohly, P.P. Fu, **H.-M. Hwang**, and H. Yu*. 2004. Phototoxicity and DNA damage induced by the cosmetic ingredient chemical azulene in human Jurkat T-cells. *Mutat. Res.* 562: 143-150.
- Dodor*, D.E., **H.-M. Hwang**, and S.I.N. Ekunwe. 2004. Oxidation of anthracene and benzo[a]pyrene by immobilized laccase from *Trametes versicolor*. *Enzymes Microbial Technol.* 35(2/3): 210-217.
- Zheng, B., **H.-M. Hwang***, H. Yu, and S. Ekunwe. 2004. DNA damage produced in HaCaT Cells by combined fluoranthene exposure and ultraviolet A irradiation. 44(2), *Environmen.Mol. Mutagen.* 44(2): 151-155.
- Hu*, X., X. Jiang, **H.-M. Hwang**, S. Liu^m, and H. Guan. 2004. Antitumour activities of alginate-derived oligosaccharides and their sulfated substitution derivatives. *Eur. J. Phycol.* 39(1): 67-71.
- Zeng^d, K., **H.-M. Hwang***, S. Dong, X. Shi^m, K. Wilson^u, J. Green^u, Y. Jiao, and H. Yu. 2004. Photochemical transformation and phototoxicity of 1-aminopyrene. *Environ. Toxicol. Chem.* 23(6): 1400-1407.
- Wang, L., H. Cohly, J. Yan, B. Graham-Evans, **H.-M. Hwang**, and H. Yu*. 2004. UVA light-induced toxic effects of 1-hydroxypyrene on human Jurkat T-cells. *Bull. Environ. Contam. Toxicol.* 72(6): 1240-1246.
- Liu^{m*}, S., X. Jiang, X. Hu, J. Gong, **H.-M. Hwang**, and K. Mai. 2004. Effects of temperature on non-specific immune parameters in two scallop species: *Argopecten irradians* (Lamarck 1819) and *Chlamys farreri* (Jones & Preston 1904). *Aquac. Res.* 35: 678-682.
- Hwang***, **H.-M.**, A.L. Balarezo^d, V.N. Jones^u, and H. Yu. 2004. Effect of river humic acid on 1-aminopyrene ecotoxicity in a dynamic solar photolysis process. *Bull. Environ. Contam. Toxicol.* 72(5): 1059-1066.
- Hu*, X., X. Jiang^m, **H.-M. Hwang**, S. Liu, and H. Guan. 2004. Promotive effects of alginate-derived oligosaccharide on maize seed germination. *J. Appl. Phycol.* 16: 73-76.
- Zeng^d, K., **H.-M. Hwang***, Y. Zhang, and H. Yu. 2003. Identification of 6-aminochrysene photoproducts and study of the effect of a humic acid and riboflavin on its photolysis. *J. Photochem. Photobiol. B: Biol.* 72: 95-100.

- Glover^m, H., **H.-M. Hwang***, and K. Zeng. 2003. Effect of riboflavin photoproducts on microbial activity during photosensitization of atrazine transformation. *Environ. Toxicol.* 18: 361-367.
- Balarezo^d, A.L., V.N. Jones^u, H. Yu, and **H.-M. Hwang***. 2002. Influence of humic acid on 1-aminopyrene ecotoxicity during solar photolysis process. *Int. J. Mol. Sci.* 3: 1133-1144.
- Wu, Y.-S., G.-C. Fang, J. Moody, L.S.V. Tungeln, P.P. Fu*, **H.-M. Hwang**, and H. Yu. 2002. In vitro metabolism of dibenzo[*a,l*]pyrene, 2-chlorodibenzo[*a,l*]pyrene and 10-chlorodibenzo[*a,l*]pyrene - effects of chloro substitution. *Int. J. Mol. Sci.* 3: 1008-1018.
- Zeng^d, K., **H.-M. Hwang***, and H. Yu. 2002. Effect of dissolved humic substances on the photochemical degradation rate of 1-aminopyrene and atrazine. *Int. J. Mol. Sci.* 3: 1048-1057.
- Dong, S., S. Wang^m, G. Stewart^m, **H.-M. Hwang**, P.P. Fu, and H. Yu*. 2002. Effect of organic solvents and biologically relevant ions on the light-induced DNA cleavage by pyrene and its amino and hydroxy derivatives. *Int. J. Mol. Sci.* 3: 937-947.
- Dong, S., H. Yu*, **H.-M. Hwang**, and P.P. Fu. 2002. Effects of histidine on light-induced DNA single-strand cleavage by selected polycyclic aromatic hydrocarbons. *J. Polycycl. Aromat. Comp.* 22/3-4: 451-458.
- Zeng^d, K., **H.-M. Hwnag***, and H. Yu. 2002. Identification of 1-hydroxypyrene photoproducts and study of the effect of humic substances on its photolysis. *J. Polycycl. Aromat. Comp.* 22/3-4: 459-467.
- Hwang***, **H.-M.**, K. Zeng^d, S. Dong, and H. Yu. 2002. A study of photoinduced toxicity of 1-aminopyrene (1-AP) to microbial assemblages and the effect of humic substances (HS) on 1-AP photolysis. *J. Polycycl. Aromat. Comp.* 22/3-4: 611-620.
- Yu*, H., S. Dong, P.P. Fu, and **H.-M. Hwang**. 2002. UVA light-induced DNA single strand cleavage by hydroxybenzo[*a*]pyrenes. *J. Polycycl. Aromat. Comp.* 22/3-4: 861-870.
- Cui, H., **H.-M. Hwang***, K. Zeng^d, H. Glover^m, H. Yu, and Y. Liu. 2002. Riboflavin-photosensitized degradation of atrazine in a freshwater environment. *Chemosphere* 47/9: 991-999.
- Dong, S., P.P. Fu, R.N. Shirsat, **H.-M. Hwang**, J. Leszczynski, and H. Yu*. 2002. UVA light-induced DNA cleavage by isomeric methylbenz[*a*]anthracenes. *Chem. Res. Toxicol.* 15/3: 400-407.
- Hwang***, **H.M.**, X. Shi^m, I. Ero^u, A. Jayasinghe^m, S. Dong, and H. Yu. 2001. Microbial ecotoxicity and mutagenicity of 1-hydroxypyrene and its photoproducts. *Chemosphere* 45/4: 445-451.

- Cui, H., **H.-M. Hwang***, S. Cook^m, and K. Zeng^d. 2001. Effect of photosensitizer riboflavin on the fate of 2,4,6-trinitrotoluene in a freshwater environment. *Chemosphere*, 44/4: 621-625.
- Zappi*, M., K. White^d, **H.-M. Hwang**, R. Bajpai, and M. Qasim. 2000. The fate of hydrogen peroxide as an oxygen source for bioremediation activities within saturated aquifer systems. *J. Air Waste Manage.* 50: 1818-1830.
- Dong, S., **H.-M. Hwang**, X. Shi^m, L. Holloway^m, and H. Yu*. 2000. UVA-induced DNA single strand cleavage by 1-hydroxypyrene and formation of covalent adduct between DNA and 1-hydroxypyrene. *Chem. Res. Toxicol.* 13: 585-593.
- Hwang***, **H.-M.**, L. F. Slaughter^m, S. M. Cook^m, and H. Cui. 2000. Photochemical and microbial degradation of 2,4,6-trinitrotoluene (TNT) in a freshwater environment. *Bull. Environ. Contam. Toxicol.* 65: 228-235.
- Dong, S., **H.-M. Hwang**, C. Harrison^u, L. Holloway^m, X. Shi^m, and H. Yu*. 2000. UVA light-induced DNA cleavage by selected polycyclic aromatic hydrocarbons. *Bull. Environ. Contam. Toxicol.* 64: 467-474.