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EDUCATION

- Ph.D.**, Environmental Engineering, May 2006, Department of Civil and Environmental Engineering, University, USC,
Doctoral Dissertation: "Membrane Bioreactor Technology for Purification of Natural Waters Contaminated with Petroleum Hydrocarbons: Modeling and Process Design."
M.S., Civil and Environmental Engineering, May 2006, USC
M.S., Chemical Engineering, March 1984, University of California, Santa Barbara.
Master's Thesis: Mathematical Modeling of the Cycling Zone Extraction Process
B.S., Chemical Engineering, July 1981, Indian Institute of Technology (IIT), Madras, India.

WORK EXPERIENCE

- **Research Scientist and Lecturer**, Sep. 2004 – present, Environmental Engineering Program, Department of Civil Engineering, University of Southern California;
- **Lecturer and Research Assistant**, Sep. 1995 – Aug. 2004, Environmental Engineering Program, Department of Civil Engineering, University of Southern California;
- **Research/Teaching Assistant**, Sep. 1984 - Aug. 1995, University of Southern California.
- **Research/Teaching Assistant**, Sep. 1981 - Jan. 1984, University of California, Santa Barbara.
- **Process Engineer**, May - Sep. 1981, Carborundum Universal, Ltd., Madras, India.
- **Junior Engineer**, May - Jul. 1980, Addison Paints and Chemicals (subsidiary of Simpson's Group), Product Development Division, Madras, India.

COURSES TAUGHT AT USC

- o CE 453, Water Quality Control
- o CE 463L, Water Chemistry and Analysis
- o CE 513L, Instrumental Methods for Environmental Analysis
- o CE 514A, Advanced Water Treatment Design
- o CE 523, Physicochemical Processes in Environmental Engineering.

ACADEMIC HONORS AND AWARDS

- **Best Paper Award, American Water Works Association, Technical Meeting**, Long Beach, California October 1997: with Williams, M.D., Tu, S.C., Tsai, H.H., Badriyha, B.N., and Pirbazari, M. "Removal of MTBE from Contaminated Water Using a Membrane Bioreactor Process."
- **David Wilson & Associates Scholarship**; University of Southern California, Spring 1997, Fall 1996.
- **Chi Epsilon**, the National Civil Engineering Honor Society, 1992 -- present.
- **Outstanding Teaching Assistantship Award**; University of Southern California, Fall 1988.
- **Graduate Fellowship Award (Norman Topping Award)**; University of Southern California, Spring 1988.
- **Sir Chandrasekara Raman Award for Creative Research**; "Laser-induced stimulation of chemical reactions and analysis of reaction mechanisms," Indian Institute of Technology, Madras, India; 1981 (Chairman of the Award Committee: Professor John Bardeen, Co-recipient of the Nobel Prize in Physics for the years 1956 and 1973)
- **Carborundum Universal Research Award and Fellowship**; Indian Institute of Technology, Madras, India; 1980-1981.
- **National Mathematics Talent Scholarship Exam for High Schools in India**; awarded First Rank, 1974-75.
- **Science Talent Scholarship Exam for High Schools in India**; awarded Second Place in India, 1974-75
- **Royal Institute of Chemistry Examination for High Schools and Junior Colleges**; awarded Third Place, 1975 (International Examination).
- **International Essay Competition**, Government of Great Britain and BBC; awarded First Prize (International), 1975-76.

AREAS OF RESEARCH INTEREST

- Integrated hybrid membrane bioreactor technologies for water and wastewater treatment
- Membrane transport theory for organic and inorganic solutes
- Membrane Surface characterization using techniques including Fourier-transform infra-red spectroscopy, atomic force microscopy, and X-ray photoelectron spectroscopy
- Process upscaling using dimensional analysis and similitude
- Incineration and pyrolysis technologies for destruction of hazardous wastes, and their associated free-radical chemistry
- Mathematical modeling and scaling of bio-physico-chemical processes for water and wastewater treatment
- Biofilm degradation and modeling in water treatment and water reclamation applications
- Advanced oxidation processes and free radical chemistry for the destruction of organic contaminants in water

- Air pollution control technologies for toxic gas streams using biofiltration and biotrickling filtration
- Reduction of air pollution by catalysis in combustion and other thermal processes
- Chelation and adsorption integrated process for toxic metal removal from waters and wastewaters

SELECTED RESEARCH PUBLICATIONS

1. Ersever, I., Ravindran, V., and Pirbazari, M. "Biological Denitrification of Reverses Osmosis Brine: I. Batch Reactor and Chemostat Studies," *Journal of Environmental Engineering and Science* (in press).
2. Ersever, I., Ravindran, V., and Pirbazari, M. "Biological Denitrification of Reverses Osmosis Brine: II. Bioactive Fluidized bed Adsorber Studies," *Journal of Environmental Engineering and Science* (in press).
3. Den, W., Ravindran, V., and Pirbazari, M (2006). "Photooxidation and Biotrickling Filtration for Controlling Industrial Emissions of Trichloroethylene and Perchloroethylene." *Chemical Engineering Science*, **61**(24), 7909-7923.
4. Tu, S.C., Ravindran, V., and Pirbazari, M. (2005). "A Pore Diffusion Model for Forecasting the Performance of Membrane Processes," *Journal of Membrane Science*, **265**(1-2), 29-50.
5. Tsai, H.H., Ravindran, V., and Pirbazari, M (2005). "Model for Predicting the Performance of Membrane Bioreactor Process in Water Treatment Applications ," *Chemical Engineering Science*, **60**(20), 5620-5636.
6. Tsai, H.H., Ravindran, V., Williams, M.D., and Pirbazari, M. (2004). "Membrane Bioreactor Process for the Denitrification of Water, *Journal of Environmental Engineering and Science*, **3**(6), 507-521.
7. Song, W., Ravindran, V., Koel, B.E., and Pirbazari, M. (2004). "Nanofiltration of Natural and Synthetic Organic Compounds with H₂O₂/UV Pretreatment: Fouling Mitigation and Membrane Surface Characterization," *Journal of Membrane Science*, **241**(1), 143-160.
8. Badriyha, B.N., Ravindran, V., Den, W., and Pirbazari. (2003) "Bioadsorber Efficiency, Design, and Performance Forecasting for Alachlor Removal," *Water Research*, **37**(17), 4051-4072.
9. Tu, S.C., Ravindran, V., Den, W., and Pirbazari, M. (2001). "Predictive Membrane Transport Model for Nanofiltration Processes in Water Treatment," *AIChE Journal*, **47**(6), 1346-1362.
10. Ravindran, V., Stevens, M.R., Badriyha, B.N., and Pirbazari, M. (1999). "Modeling the Sorption of Toxic Metals on Chelant-Impregnated Adsorbent," *AIChE Journal*, **45**(5), 1135-1146.
11. Ravindran, V., Badriyha, B.N., Pirbazari, M., Evans, D.H., and Benson, S.W., "Thermal Destruction of Chlorinated Hydrocarbons by Reductive Pyrolysis," *Combustion Science and Technology*, **122**(1-6), 183-213 (1997).
12. Ravindran, V., Badriyha, B.N., Kim, S.H., and Pirbazari, M. (1997). "Predictive Modeling for Bioactive Fluidized Bed and Stationary Bed Adsorbers: Application to Dairy Wastewater," *Environmental Technology*, **18**(9), 861-881.
13. Ravindran, V., Wong, S.P., Bariyha, B.N., and Pirbazari, M. (1997). "Activated Carbon Adsorption of Natural and Synthetic Organic Chemicals," *Scientia Iranica: International Journal of Science and Technology*, **3**(1), 57-69.
14. Kitto, A.M., Pirbazari, M., Badriyha, B.N., Ravindran, V., Tyner, R., and Synolakis, C.E. (1997). "Emissions of Volatile and Semi-Volatile Organic Compounds and Particulate Matter from Hot Asphalts," *Environmental Technology*, **18**(2), 121-138.
15. Pirbazari, M., Ravindran, V., Badriyha, B.N., and Kim, S.H. (1996). "Hybrid Membrane Filtration Process for Leachate Treatment," with Pirbazari, M., Kim, S.H., and Badriyha, B.N. *Water Research*, **30**(11), 2691-2706 (1996).
16. Ravindran, V., Badriyha, B.N., Pirbazari, M., and Kim, S.H. (1996). "Modeling of Bioactive Carbon Adsorbers: A Hybrid Weighted Residual-Finite Difference Numerical Technique," *Applied Mathematics and Computation*, **76**(2-3), 99-131 (1996).
17. Pirbazari, M., Ravindran, V., Badriyha, B.N., Craig, S., and McGuire, M.J. (1993). "GAC Adsorber Design Protocol for the Removal of Off-Flavors," *Water Research*, **27**(7), 1153-1166.
18. Pirbazari, M., Badriyha, B.N., and Ravindran, V. (1992). "Microfiltration-Powder Activated Carbon (MF-PAC) for the Treatment of Waters Containing Natural and Synthetic Organics," with Pirbazari, M., and Badriyha, B.N. *Journal of American Water Works Association*, **84**(12), 95-103.
19. Pirbazari, M., Borow, H.S., Ravindran, V., Lalezary-Craig, S., and McGuire, M.J. (1992). "Physical-Chemical Characterization of Five Earthy-Musty Organic Compounds," with *Water Science and Technology*, **24**(6), 76-82.
20. Pirbazari, M., Ravindran, V., Wong, S.P., and Stevens, M.R. (1989). "Adsorption of Micropollutants on Activated Carbon," with *Aquatic Humic Substances: Influence on Fate and Treatment of Pollutants*; Suffet, I.H., and McCarthy, P., Eds.; Advances in Chemistry Series, Vol. 219, pp. 549-578, American Chemical Society, Washington, D.C.
21. Karimi, A.A., Ravindran, V., and Pirbazari, M. (1988). "A Laboratory Experiment and Predictive Model for Evaluating Landfill Cover Controls of Emissions of Volatile Organic Chemicals to Air," with *Hazardous Waste and Hazardous Materials*, **5**(3), 203-218.

PAPER PRESENTATIONS

Over 75 papers presented in major national and international conferences.