

COLLEGE OF ENGINEERING BIOGRAPHICAL DATA1. Name CLARK, Mark Michael Date of Birth 6/2/51Citizenship U.S.2. Present Academic Rank Clinical Professor

3. Tenure Status

4. Administrative Title none5. Degrees

B.S.	Civil Engineering	Missouri-Columbia	1974
M.S.	Environmental Engineering	Missouri-Columbia	1978
Ph.D.	Environmental Engineering	Johns Hopkins	1985

6. Academic Positions Held

1987-1993	Assistant Professor of Civil Engineering, UIUC
1993-1999	Associate Professor of Civil Engineering, UIUC
1999-2008	Professor of Civil and Environmental Engineering, UIUC
2008-present	Clinical Professor of Civil and Environmental Engineering, Northwestern

7. a. Other Related Professional Employment

1976;1978	Environmental Engineer, Missouri Department of Natural Resources, Hazardous Wastes Program, Jefferson City, Missouri
1984-1985	Graduate Hydrology and Hydraulics Instructor, Johns Hopkins University Evening College, Baltimore, Maryland
1986-1987	Research Scientist, Lyonnaise des Eaux, Le Pecq, France
1986-1987	Post-doctoral Researcher, Ecole Nationale Supérieure des Industries Chimiques, Nancy, France
1993-1994	Sabbatical, Lyonnaise des Eaux, Le Pecq, France
Summer 1999	Sabbatical, Laboratoire de Génie Chimique, Université Paul Sabatier, Toulouse, France

b. Major Consulting Activities

1985-1986	Consultant on ocean shelf hydraulics, Tetra Tech, Inc., Arlington, Virginia
1987-1992	Consultant on mixing and membrane processes, Montgomery-Watson- Harza Consulting Engineers, Pasadena, California
1989-1990	Consultant on mixing and transport studies, Metropolitan Water District of Southern California
1993-2000	Consultant on mixing and transport studies, John Carollo Engineering, Walnut Creek, California
1996-1999	Consultant on membrane and coagulation technology, NSF International, Ann Arbor, Michigan
1997-1999	Consultant on membrane technology, Malcolm-Pirnie, Inc., San Antonio, Texas

1997-1999 Consultant on membrane technology, US Army Construction Engineering
Research Laboratory, Champaign, Illinois.
2000 Consultant on membrane technology, Savannah River Technology Center,
Westinghouse Corporation, Aiken, SC.

c. Professional Registrations

1997-present American Chemical Society
1998-present North American Membrane Society
1997-1999 American Institute of Chemical Engineers, Member
1978 Missouri EIT-23135-E, Engineer-in-training
1985-1994 American Society of Civil Engineers, Associate Member
1987-present American Water Works Association
1987-present Association of Environmental Engineering and Science Professors, Member
1990-1994 Sigma Xi

8. Honors, Recognition and Outstanding Achievements

(a) Teaching

UIUC Engineering Council Advisors List, 1990, 1991, 1999 and 2006
List of University of Illinois Teachers Ranked as Excellent by Their Students, fall 1996.

(b) Research

Invited Gordon Conference presentations, 2006 and 1997, Andover and New London,
New Hampshire
Associate, Center for Advanced Study, University of Illinois, 1999-2000.
Junior Xerox Award for Faculty Research, 1990
Presidential Young Investigator Award, 1990
Best Poster Award, American Water Works Research Foundation, 1992
Research Initiation Award, National Science Foundation, June 1988
Graduate Fellow, Environmental Engineering, The Johns Hopkins University,
1980-1985

(c) Public Service

FACTUAL INFORMATION

A. Resident Instruction and Continuing Education

1. Resident Instruction

3. Other Instructional Activities

Preliminary Exams: (UIUC)	Il Won Seo (<i>Hydro</i>) Issam Najm Hernan Quinodoz (<i>Hydro</i>) Fred Cannon Ravi Srivastava Mark Waer Mark Nanny	Shaoying Qi Samer Adham Detlef Knappe Carlos Espinoza (<i>Hydro</i>) Joel Ducoste Martha Cardona (<i>Hydro</i>) Louis LeRoux (<i>Food Science</i>)
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Timothy Kramer	Yonghun Lee
Carlos Campos	Jennifer Miller
Miquel Restrepo (<i>NRES</i>)	Doug Eppich
Dan Oerther	Kerry Howe
Cheema Chomsurin	Chad Knutson
Darren Lytle	Renchi Raju (<i>TAM</i>)
Thomas Willingham	John Went (<i>Mechanical</i>)
Chaoyi Ba (<i>Materials</i>)	Won-Young Ahn
David Ladner	Manish Kumar

Final Exams (UIUC):	Il Won Seo (<i>Hydro</i>)	Shaoying Qi
	Issam Najm	Samer Adham
	Hernan Quinodoz (<i>Hydro</i>)	Detlef Knappe
	Fred Cannon	Carlos Espinoza (<i>Hydro</i>)
	Ravi Srivastava	Joel Ducoste
	Mark Nanny	Louis LeRoux (<i>Food Science</i>)
	Timothy Kramer	Martha Cardona (<i>Hydro</i>)
	Jennifer Miller	Yonghun Lee
	Peggy Mano (<i>France</i>)	Christelle Guigui (<i>France</i>)
	Dan Oerther	Kerry Howe
	Denis Bouyer (<i>France</i>)	Cheema Chomsurin
	C. Nuengjamnong (<i>Korea</i>)	Pierre-Jean Remize (<i>France</i>)
	Chad Knutson	Darren Lytle
	Thomas Willingham	John Went (<i>Mechanical</i>)
	Doug Eppich	David Ladner
	Won-Young Ahn	Manish Kumar

New course development: CE 498 (UIUC), "Mixing in Environmental Engineering Processes," Spring 1988.
CE 498 (UIUC), "Membrane Processes in Environmental Engineering," Spring 1997.

4. Undergraduate Advising, current year only

- a) academic advising
- b) student organizations
- c) design teams
- d) other

Twenty-six undergraduate Civil and Chemical Engineers have been included in research activities. Students were J. Bradley, C. Nieman, K. Myenkar, K. Jones (now Professor at Howard U.), J. Prepejchal, K. Kannen, D. Song, D. Knappe (now Professor at NC State University), L. Reingold, S. Ferlaak, K. Lee, S. Tieman, H. Lee, A. Westbrook, J. Yan, S. Downey, B. Harrison, G. Sandhu, B. Araya, C. Chan, B. Finnegan, N. Lester, P. St. Aubyn, D. Vardon, John Jurevis, and Esvina Seng. Students received independent study credit and/or hourly wages on research grants, or participated in NSF Research

Experiences for Undergraduates award, UIUC SURE and SROP programs, minority supplement to ACS-PRF award, or CIC Summer Research Opportunities Program.

B. Research, Creative, and Other Scholarly Activities

1. Publications

a₁. Books Authored or Co-Authored, Original Editions

1. Clark, M.M., *Transport Modeling for Environmental Engineers and Scientists*, Wiley-Interscience, New York, 1996.

a₂. Books Authored or Co-Authored, Revisions

1. Clark, M.M. *Transport Modeling for Environmental Engineers and Scientists – Second Edition*, John Wiley & Sons, New York, 2009.

b₁. Books Edited or Co-Edited, Original Editions

1. Amirtharajah, A., M.M. Clark, and R. Trussell (eds.), *Mixing in Coagulation and Flocculation*, American Water Works Association Research Foundation, Denver, CO, 1991.

b₂. Books Edited or Co-Edited, Revisions

c. Chapters in Books

- ** 1. Clark, M.M. and F. Fiessinger, "Mixing and Scale-up," In *Mixing in Coagulation and Flocculation*, pp. 282-308, American Water Works Association Research Foundation, February, 1991.
- ** 2. Nauman, E. B. and M.M. Clark, "Residence Time Distributions," In *Mixing in Coagulation and Flocculation*, pp. 127-169, American Water Works Association Research Foundation, February, 1991.
- ** 3. David, R. and M.M. Clark, "Micromixing," In *Mixing in Coagulation and Flocculation*, pp. 170-216, American Water Works Association Research Foundation, February, 1991.
- ** 4. Clark, M.M., "Ultrafiltration of Lake Water: Optimization of TOC Removal and Flux," Chapter 23 of *Influence and Removal of Organics in Drinking Water*, Lewis Publishers, May 1992.
- ** 5. Clark, M.M., I. Baudin, I., and C. Anselme, "Membrane-Powdered Activated Carbon Reactors," in *Membrane Processes in Water Treatment*, McGraw-Hill, New York, 1996.

d. Monographs [longer than an article, but shorter than a book]

e₁. Articles in Journals

- * 1. Snodgrass, W., M.M. Clark, and C. O'Melia, "Particle Formation and Growth in Aluminum Solutions," *Water Research*, 18, pp. 479-488, 1982.
- * 2. Clark, M.M., "A Critique of Camp and Stein's R.M.S. Velocity Gradient," *Journal of Environmental Engineering* (ASCE), EE6, pp. 741-754, December 1985.
- * 3. Clark, M.M., "Drop Breakup in a Turbulent Flow: II. Experiments in a Small Mixing Vessel," *Chemical Engineering Science*, 43, pp. 681-692, 1988. (based on Ph.D.)
- * 4. Clark, M.M., "Drop Breakup in a Turbulent Flow: I. Conceptual and Modeling Considerations," *Chemical Engineering Science*, 43, pp. 671-679, 1988. (based on Ph.D.)
- * 5. Wiesner, M. and M.M. Clark, "Membrane Filtration of Coagulated Suspensions," *Journal of Environmental Engineering*, 115, EE1, 1989.
- * 6. Laîné, J.M., J.P. Hagstrom, M.M. Clark, and J. Mallevialle, "Effect of Ultrafiltration Membrane Composition," *Journal of American Water Works Association*, 81:11, pp. 61-67 (1989).
- * 7. Laîné, J-M., M.M. Clark, and J. Mallevialle, "Ultrafiltration of Lake Water: Effect of Pretreatment on Organic Partitioning, THMFP, and Flux," *Journal American Water Works Association* 82:12, pp. 82-87 (1990).
- 8. Clark, M.M. and K.S. Heneghan, "Ultrafiltration of Lake Water for Potable Water Production," special issue of *Desalination*, 80, pp. 243-249 (1991).
- * 9. Clark, M.M., J.M. Laîné, M.R. Wiesner, and J. Mallevialle, "Hydrodynamic Conditioning of Aluminum-Humic Acid Floc," *Fluid/Particle Separation Journal*, 4:3, pp. 154-161 (1991).
- * 10. Adham, S.S., V.L. Snoeyink, M.M. Clark, and J.L. Bersillon, "Prediction and Verification of the Performance of Powdered Activated Carbon for Removal of Organic Compounds in the PAC/UF Process," *Journal of the American Water Works Association*, 83:12, pp. 81-89 (1991).
- * 11. Clark, M.M., and J.R.V. Flora, "Floc Restructuring in Varied Turbulent Mixing," *Journal Colloid and Interface Science*, 147:2, pp. 407-421 (1991).
- * 12. Adham, S.S., V.L. Snoeyink, M.M. Clark, and C. Anselme, "Predicting and Verifying TOC Removal by PAC in Pilot-Scale UF Systems," *Journal of the American Water Works Association*, 85:12, pp. 58-68 (1993).
- * 13. Jones, K.L., E.S. Odderstol, G.E. Wetterau, G.E., and M.M. Clark, "Using a Hydraulic Model to Predict Hollow-Fiber UF Performance," *Journal of American Water Works Association*, 85:10, pp. 87-97 (1993).
- * 14. Clark, M.M., R. Srivastava, and R. David, "Mixing and Aluminum Precipitation," *Environmental Science and Technology*, 27:10, pp. 2181-2189 (1993).

- * 15. Jucker, C. and M.M. Clark, "Adsorption of Aquatic Humic Substances on Hydrophobic Ultrafiltration Membranes," *Journal of Membrane Science*, 97, pp. 37-52 (1994).
- * 16. Kramer, T.A. and M.M. Clark, "The Measurement of Particles Suspended in a Stirred Vessel Using Microphotography and Digital Image Analysis," *Particles and Particle Systems Characterization*, 13, 3-9 (1996).
- * 17. Wetterau, G.E., M.M. Clark, and C. Anselme, "A Dynamic Model for Predicting Fouling During the Ultrafiltration of a Natural Water," *Journal of Membrane Science*, 109, 185-204 (1996).
- * 18. Kramer, T.A. and M.M. Clark, "Influence of Strain Rate on Coagulation Kinetics," *J. Environmental Engineering (ASCE)*, 123, 5: 444-452 (1997).
- * 19. Ducoste, J.J., M.M. Clark, and R.J. Weetman, "Turbulence in Flocculators: Effect of Tank Size and Impeller Type," *AIChE Journal*, 43, 2: 328-338 (1997).
- * 20. Lee, Y. and M.M. Clark, "A Numerical Model of Flux Decline Behavior During the Crossflow Ultrafiltration Membrane Process," *Desalination*, 109, 241-251 (1997).
- * 21. Clark, M.M., and Lucas, P., "Diffusion and Partitioning of Humic Acid in a Porous Ultrafiltration Membrane," *Journal of Membrane Science*, 143, 13-25 (1998).
- * 22. Atenas, M, Clark, M.M., and V. Lazarova, "Characterization of Bubbles in a Rectangular Air-Lift Bioreactor," *Particles and Particle Systems Characterization*, 15, 191-199 (1998).
- * 23. Ducoste, J.J., and M.M. Clark, "The Influence of Tank Size and Impeller Geometry on Turbulent Flocculation: I. Experimental," *Environmental Engineering Science*, 15, 3: 215-224 (1998).
- * 24. Ducoste, J.J., and M.M. Clark, "The Influence of Tank Size and Impeller Geometry on Turbulent Flocculation: II. Model," *Environmental Engineering Science*, 15, 225-235 (1998).
- * 25. Jack, A.M., and Clark, M.M., "PAC/UF to Treat a Low Quality Surface Water," *J. American Water Works Association*, 90, 11: 83-95 (1998).
- * 26. Lee, Y., and Clark, M.M., "Modeling of Flux Decline during Crossflow Ultrafiltration of Colloidal Suspensions," *J. Membrane Science*, 149, 181-201 (1998).
- * 27. Combe, C., Molis, E., Lucas, P., Riley, R., and Clark, M., "The Effect of CA Membrane Properties on Adsorptive Fouling by Humic Acid," *Journal of Membrane Science*, 154, 73-87 (1999).
- * 28. Atenas, M, Clark, M.M., and V. Lazarova, "Holdup and Liquid Circulation Velocity in a Rectangular Air-Lift Bioreactor," *Industrial and Engineering Chemistry Research*, 38, 944-949 (1999).

- * 29. Ducoste, J.J., and M.M. Clark, "Turbulence in Flocculators: Comparison of Measurements and CFD Simulations," *AIChE Journal*, 45, 2:432-436 (1999).
- * 30. Kramer, T.A., and M.M. Clark, "Incorporation of Aggregate Breakup in the Simulation of Orthokinetic Coagulation," *Journal of Colloid and Interface Science*, 216, 116-126 (1999).
- * 31. Kramer, T.A., and M.M. Clark, "Modeling Orthokinetic Coagulation in Spatially Varying Laminar Flow," *Journal of Colloid and Interface Science*, 227, 251-261 (2000).
- * 32. Wang, Y., Combe, C., and M.M. Clark, "The Effects of pH and Calcium on the Diffusion Coefficient of Humic Acid," *Journal of Membrane Science*, 183, 49-60 (2001).
- * 33. Howe, K.J. K.P. Ishida, and M.M. Clark, "Use of ATR/FTIR Spectrometry to Study Fouling of Microfiltration Membranes by Natural Waters," *Desalination*, 147, 251-255 (2002).
- * 34. Howe, K.J. and M.M. Clark. "Fouling of Microfiltration and Ultrafiltration Membranes by Natural Waters," *Environmental Science and Technology*, 36, 3571-3576 (2002).
- * 35. Menniti, A, Rajagopalan, K., Kramer, T., and M.M. Clark, "An Evalaution of the Colloidal Stability of Metal Working Fluid," *Journal of Colloid and Interface Science*, 284, 477-488 (2005).
- * 36. Koh, M., Clark, M.M., Howe, K.J., "Filtration of Lake Natural Organic Matter: Adsorption Capacity of a Polypropylene Microfilter," *Journal of Membrane Science*, 256, 169-175 (2005).
- * 37. Clark, M.M. Ahn, W.Y., Li, X., Sternisha, N. and Riley, R.L., "Formation of Polysulfone Colloids for Adsorption of Natural Organic Foulants," *Langmuir*, 21, 7207-7213 (2005).
- 38. Koh, M., Clark, M.M., K. P. Ishida. "Adsorptive Fouling of a Polypropylene Microfiltration Membrane with Dissolved Natural Organic Matter: Do Membranes Possess an Adsorption Capacity?" *Water Science and Technology*, 6, 2: 25-30, (2006).
- * 39. Howe, K., and M.M. Clark, "Effect of Coagulation Pretreatment on Membrane Filtration Performance," *J. American Water Works Association*, 98, 4: 133-146 (2006).
- * 40. Koh, L.C, Ahn, W-J., and M.M. Clark, "Selective Adsorption of Natural Organic Foulants by Polysulfone Colloids: Effect on Ultrafiltration Fouling," *J. Membrane Science*, 281, 1-2: 472-479 (2006).
- * 41. Ladner, D., Lee, B., and Clark, M.M., "Laser Scanning Cytometry for Fluorescent Microsphere Enumeration," *J. American Water Works Association*, 99, 3: 110 (2007).
- * 42. Kumar, M., Grzelakowski, M., Zilles, J., Clark, M., and W. Meier, "Highly Permeable Polymeric Membranes based on the Incorporation of the Functional Water Channel Protein Aquaporin Z," *Proc. National Academy of Sciences*, 104, 52: 20723-20728 (2007).

- * 43. Ahn, W.-Y., Kalinichev, A.G, and M. M. Clark, "Effects of Background Cations on the Fouling of Polyethersulfone Membranes by Natural Organic Matter: Experimental and Modeling Study," *J. Membrane Science*, 309, 128-140 (2008).
- 44. D.A. Ladner, A. Subramani, M. Kumar, S.S. Adhan, and M.M. Clark, "Bench-scale evaluation of seawater desalination by reverse osmosis," *Desalination* 250, 490-499 (2010)..
- 45. D.R. Vardon, D.A. Ladner, and M.M. Clark. Laser scanning cytometry for algal monitoring in seawater desalination plant feedwater. Submitted to *Water Research*.
- 46. D.A. Ladner, D.R. Vardon, and M.M. Clark. Effects of shear on microfiltration and ultrafiltration fouling by marine algae. *J. Membr. Sci.* 356, 33-43 (2010).
- 47. Kalinichev, A.G., E. Iskrenova-Tchoukova, W-Young Ahn, M. M. Clark, R. J. Kirkpatrick, "Effects of Ca²⁺ on Supramolecular Aggregation of Natural Organic Matter in Aqueous Solutions: A Comparison of Molecular Modeling Approaches," *Geoderma*: in press, 2010

e₂. Articles in Conference Proceedings (indicates an invited submission)**

1. Eigner, J., and M.M. Clark, "Hazardous Wastes and Energy Recovery," *Proceedings of the Third Annual UMR-MEC Conference on Energy*, University of Missouri, Rolla, Missouri, 1976.
2. Clark, M., "Turbulence Structure in a Small Mixing Vessel," *Proceedings of National Conference on Environmental Engineering* (ASCE), Los Angeles, California, June 25, 1984.
3. Clark, M.M., "Scale-up of Laboratory Flocculation Results," *Proceedings of American Water Works Association Annual Conference*, Denver, Colorado, June 22-26, 1986.
4. Wiesner, M. and M.M. Clark, "Membrane Filtration of Coagulated Suspensions," *Proceedings of the American Water Works Association Annual Conference*, Kansas City, Missouri, June 14-17, 1987.
5. Clark, M.M., R. David, and M. Wiesner, "Effect of Micromixing on Product Selectivity in Rapid Mix," *Proceedings of the American Water Works Association Annual Conference*, Kansas City, Missouri, June 14-17, 1987.
6. Clark, M.M., J.-M. Laîné, M. Wiesner, and J. Mallevialle, "Hydrodynamic Conditioning of Aluminum - Humic Acid Flocc," *Proceedings of the American Water Works Association Annual Conference*, Orlando, Florida, June 19-23, 1988.
- ** 7. Clark, M.M., "Ultrafiltration of Lake Water: Optimization of TOC Removal and Flux," proceedings of the *First Macau Workshop on Water Treatment*, Macau, November 3-4, 1989.

8. Srivastava, R., C. Nieman, and M.M. Clark, "Fast Hydrolysis Kinetics of Aluminum and the Impact of Mixing on Product Speciation," *Proceedings of the American Water Works Association Annual Conference*, Cincinnati, Ohio, June (1990).
- ** 9. Clark, M. M., "Treatment Research Summary," invited research summary, U.S. Environmental Protection Agency Workshop on "Membranes for Drinking Water Treatment," Cincinnati, Ohio, August 6, 1990.
10. Clark, M.M., and K.S. Heneghan, "Ultrafiltration of Lake Water for Potable Water Production," *Proceedings of the 1990 International Conference on Membranes and Membrane Processes*, Chicago, Illinois, August 20-24, 1990.
11. Heneghan, K. and M.M. Clark, "Surface Water Treatment by Combined Ultrafiltration/PAC Adsorption/Coagulation for Removal of Natural Organics, Turbidity, and Bacteria," *Proceedings of the American Water Works Association Membrane Processes Conference*, Orlando, Florida, March 10-13, 1991.
12. Adham, S.S., V.L. Snoeyink, M.M. Clark, and J-L. Bersillon, "Ultrafiltration of Groundwater with Powdered Activated Carbon Pretreatment for Organics Removal," *Proceedings of the American Water Works Association Conference on Membrane Technologies in the Water Industry*, Orlando, Florida, March 10-13, 1991.
13. Trussell, R.R., J.S. Lang, L. McCollum, G. Zfira, D. Bailey, and M.M. Clark, "Testing the Performance of Vertical Flocculation Impellers," *Proceedings of the Annual Meeting of the American Water Works Association*, Vancouver, B.C., June 18-22, 1992.
14. Clark, M.M., and C. Jucker, "Interactions between Hydrophobic Ultrafiltration Membranes and Humic Substances," *Proceedings of the AWWA Membrane Technology Conference*, Baltimore, MD, August 1-4 (1993).
15. Adham, S.S., V.L. Snoeyink, M.M. Clark, D. Anselme, and I. Baudin, "Predicting and Verifying Organic Removal by Powdered Activated Carbon in Full-scale Ultrafiltration Systems," *Proceedings of the AWWA Membrane Technology Conference*, Baltimore, MD, August 1-4 (1993).
16. Kramer, T.A. and M.M. Clark, "Particle Size Measurement in Turbulent Suspensions using Microphotography and Digital Image Analysis," *Proceedings of the American Filtration and Separations Society*, Vol. 9, 1995.
17. Ducoste, J.J., M.M. Clark, and R.J. Weetman, "The Evaluation of the Fluid Mechanics Generated in the Flocculation Process: Effects of Tank Size and Impeller Type," *Proceedings of the Annual Meeting of the American Water Works Association*, Anaheim, CA, June 18-22, 1995.
18. Lee, J., M.M. Clark, and B.J. Kim, "Removal of Colloidal Materials from NC Wastewater Using UF/MF Membrane: Characterization of NC Wastewater and Minimization of Fouling," *Proceedings of the 1995 Membrane Technology Conference*, Reno, NV, August 13-16, 1995.

19. Wetterau, G.E., M.M. Clark, and C. Anselme, "A Dynamic Model for Predicting Fouling during the Ultrafiltration of a Natural Water," *Proceedings of Membrane Technology Conference*, Reno, NV, August 13-16, 1995.
20. Kramer, T.A., and Clark, M.M., "Coagulation Modeling in a Dynamic Fluid Flow: Theory and Criticism," *Proceedings of the Annual Meeting of the American Water Works Association*, Toronto, Ontario, June 22-26, 1996.
21. Clark, M.M., and Jucker, C., "Diffusion and Partitioning of Humic Acid in a Hydrophobic UF Membrane," extended abstract published in *Proceedings of American Chemical Society National Meeting*, Orlando, FL, August 25-29, 1996.
22. Lee, Y., Clark, M.M., and Kim, B.J., "A Numerical Model for Flux Decline During Crossflow Ultrafiltration," extended abstract published in *Proceedings of American Chemical Society National Meeting*, Orlando, FL, August 25-29, 1996.
23. Marriott, W.D., and Clark, M.M., "Piloting for Optimal Operation of Ultrafiltration," *Proceedings of the AWWA 1997 Membrane Technology Conference*, New Orleans, LA, February 23-26, 1997.
24. Lee, Y., and Clark, M.M., "Modeling of Flux Decline during Cross-flow Ultrafiltration of Colloidal Suspensions," *Proceedings of North American Membrane Society Meeting*, Baltimore Maryland, June 1-5, 1997.
25. Ducoste, J.J., and Clark, M.M., "The Influence of Tank Size and Impeller Type on Floc Size Distribution," *Proceedings of the AWWA Annual Conference*, Atlanta, Ga, June 15-18, 1997.
26. Hagstrom, J., Crozes, G., Reddy, S., Vergnes, V., Clark, M., Ducoste, J., and Burns, C., "The Use of Computational Fluid Dynamics for Improving Clearwell Design for CT Compliance," *Proceedings of the AWWA Annual Conference*, Atlanta, Ga, June 15-18, 1997.
27. Ducoste, J.J., and Clark, M.M., "A Population Balance Model for Turbulent Flocculation," *Proceedings of the AWWA Water Quality Technology Conference*, Denver, CO, November 8-11, 1997.
28. Kramer, T.A., and M.M. Clark, "Coagulation in Spatially Varying Laminar Flow," Johns Hopkins Conference in Environmental Fluid Mechanics, The Johns Hopkins University, April 2-4, 1998.
29. C. Combe, E. Molis, R. Riley, P. Lucas, and M. Clark, "Relationship of CA Membrane Surface Properties to Fouling by Natural Organic Matter," 10th Annual Meeting of the North American Membrane Society, Cleveland, Ohio, May 16-20, 1998.
30. Hagstrom, J., Crozes, G., Clark, M., and C. Burns, "Modeling and Enhancement of Disinfection Contactor Hydromechanics using Computational Fluid Dynamics," *Proceedings of the AWWA Annual Conference*, Dallas, TX, June 20-25, 1998.

31. Hackman, B., Clark, M.M., and K. Carns, "Removal of Nitrates and Pesticides from a Midwestern Water Supply with Reverse Osmosis," *Proceedings of the AWWA 1999 Membrane Technology Conference*, Long Beach, CA, February 27 to March 3, 1999.
32. Lee, Y., Combe, C., Kumar, M., Wang, Y., Riley, R., and M.M. Clark, "Characterization and Fouling of SPEES/PES-PS UF Membranes," 11th Annual Meeting of the North American Membrane Society, Boulder, Colorado, May 23-27, 2000.
33. Wang, Y., Combe, C., and M.M. Clark, "Measuring Diffusivity of Humic Acid and Modeling Adsorptive Fouling of Ultrafiltration Membranes by Humic Acid," extended abstract, 220th American Chemical Society (ACS) National Meeting, Washington, DC, August 20-25, 2000.
34. Clark, M.M., Kim, K-S., and Y. Lee, "Visualization of Colloidal Deposition and Cake Formation on Membrane Surfaces," extended abstract, 220th American Chemical Society (ACS) National Meeting, Washington, DC, August 20-25, 2000
35. Howe, K.J., Clark, M.M., and Y. Wang, "Effect of Coagulation on Ultrafiltration Membrane Performance," *Proceedings 2001 AWWA Membrane Technology Conference*, San Antonio, TX, March 4-7, 2001.
36. Clark, M.M., Kim, K.S., Choi, Y.K., and Y. Lee, "Visualization of Colloidal Particles Near Membrane Surfaces," *Proceedings 2001 AWWA Membrane Technology Conference*, San Antonio, TX, March 4-7, 2001
37. Howe, K.J. and M.M. Clark. "Integrating Coagulation Pretreatment with Membrane Filtration: Mechanisms for Fouling by Dissolved Organic Matter." In *Proceedings of the 2001 AWWA Annual Conference*, Washington D.C. June, 2001.
38. Howe, K.L., Clark, M.M., and K.P. Ishida, "Use of ATR/FTIR Spectrometry to Study Fouling of Microfiltration Membranes by Natural Waters," *Proceedings of the International Conference on Membranes and Membrane Processes*, Toulouse, France, July 7-12, 2002.
39. Clark, M.M., Li, X., and R.L. Riley, "Polymer Colloid Adsorbent for Limiting Membrane Fouling by Natural Organic Matter," extended abstract, 226th American Chemical Society (ACS) National Meeting, New York, NY, September 7-11, 2003.
40. Lee, B.E., Clark, M.M., Ahn, K-H., and S.H. Lee, "Membrane Integrity: Direct Monitoring of Bacteria in Permeate Using Fluorescence Detection," AWWA WQTC: Water Quality Technology Conference & Exposition, Philadelphia, PA, November 2 – 6, 2003.
41. Ladner, D., Thompson, K., Lee, B., and M.M. Clark, "Indirect membrane integrity monitoring using online fluorescence based bacteria detection," 15th Annual Meeting of the North American Membrane Society, Honolulu, Hawaii, June 26-30, 2004.
42. Ahn, W.Y., Sternisha, N., Li, X., Clark, M.M., and Riley, R.L., "Development of polysulfone colloid adsorbent to reduce membrane fouling by natural organic matter

(NOM),”15th Annual Meeting of the North American Membrane Society, Honolulu, Hawaii, June 26-30, 2004.

43. Clark, M.M., Li, X, Ahn, W.Y, Sternisha, N., Sandhu, G., and R.L. Riley,” Adsorption of natural organic matter by a tunable polymer colloid,” extended abstract, 228th American Chemical Society (ACS) National Meeting, Philadelphia, PA, August 22-26, 2004.
 44. Melvin Koh, Mark M. Clark, Kenneth P. Ishida. “Adsorptive fouling of a polypropylene microfiltration membrane with dissolved natural organic matter: Do membranes possess an adsorption capacity?” Conference Proceedings, 1st International Water Association - Asia Pacific Regional Group (IWA-ASPIRE) Conference and Exhibition, Singapore, July 10-15, 2005.
 45. Ladner, D. and M.M. Clark, “Bench-Scale Studies to Characterize Organic Foulants in Seawater Reverse Osmosis Desalination,” Proceedings 17th Annual Meeting of the North American Membrane Society, Chicago, IL, May 14-16, 2006.
 46. W -Y. Ahn, A. G. Kalinichev, M. M. Clark, “Molecular dynamics simulations of the NOM adsorption on polymeric membrane surface in the presence of metal ions,” extended abstract, 233rd ACS National Meeting, Chicago, IL, March 25-29, 2007.
 47. Ladner, D., Vardon, D., Kumar, M., and M.M. Clark, “Fouling by alogogenic organic matter in seawater reverse osmosis desalination,” American Water Works Association Annual Conference, Atlanta, GA (2008).
 48. Y. Ahn, A. G. Kalinichev, M. M. Clark, “Supramolecular Aggregation of Natural Organic Matter (NOM) Promoted by Complexation with Ca^{2+} , Mg^{2+} , and Na^{+} Ions in Aqueous Solutions,” ACS National Meeting, New Orleans, April 6-10, 2008.
 49. W-Y. Ahn, A. G. Kalinichev, M. M. Clark, “Supramolecular aggregation of natural organic matter promoted by complexation with Ca^{2+} , Mg^{2+} , and Na^{+} ions in aqueous solutions,” Goldschmidt-2008 Conference, Vancouver, BC, July 2008.
 50. Ladner, D., Jurevis, J., and M.M. Clark, “Characterization of a highly fouling fraction of algogenic organic matter in low- and high-pressure membrane filtration,” American Water Works Association Water Quality Technology Conference, Seattle, WA (2009).
 51. D. A. Ladner, D. R. Vardon, and M. M. Clark. 2009. Effects of shear on microfiltration and ultrafiltration fouling by bloom-forming algae in a seawater desalination treatment train. AWWA Membrane Technology Conference, Memphis, TN.
 52. D. A. Ladner, D. R. Vardon, M. Kumar, and M. M. Clark. 2008. Fouling by Algogenic Organic Matter in Seawater Reverse Osmosis Desalination. AWWA Annual Conference and Exhibition, Atlanta, GA
- f. Publications in above categories that have been submitted for publication but not yet accepted**
- 1. Kumar, M; Grzelakowski, M; Clark, M; Meier, W; Zilles, J. 2009. Biological role for bacterial aquaporin gating discovered in block copolymer membranes (submitted)

g. Invited lectures

1. Clark, M.M. and F. Fiessinger, "Scale-up and Flocculation," invited lecture to Sunday Seminar, Annual Meeting of the American Water Works Association, Cincinnati, Ohio, June 17, 1990.
2. Clark, M.M., "Optimization of Ultrafiltration Pretreatment for TOC/THMFP Removal," invited lecture at symposium on the "Removal and Transformation of Organic Matter in Drinking Water," University of Illinois at Urbana-Champaign, April 4, 1990.
3. Clark, M.M., and J.G. Jacangelo, "Microfiltration and Ultrafiltration," invited lecture to the American Water Works Association Membrane Processes Conference, Orlando, Florida, March 10-13, 1991.
4. Clark, M.M., "Micromixing and Aluminum Precipitation," seminar, Department of Civil Engineering, Massachusetts Institute of Technology, Cambridge, MA., May 1991.
5. Clark, M.M., "Floc Restructuring in Varied Turbulent Mixing," seminar, Department of Chemical Engineering, Ecole Nationale Supérieure des Industries Chimiques, Nancy, France, January 1992.
6. Clark, M.M., "Mixing: Should We Really Ignore It?" invited lecture, Association of Environmental Engineering Professors, Annual Meeting of the American Water Works Association, Vancouver, B.C., June 18-22, 1992.
7. Clark, M.M., "Adsorption of Humic Substances on Hydrophobic Ultrafiltration Membranes," invited lecture, AIChE Annual Meeting, Miami Beach, FL, November (1995).
8. Clark, M.M., "Fouling of Ultrafiltration Membranes by Natural Waters," World Environmental Congress, London, Ontario, Canada (1995).
9. Clark, M.M., "A Journey in Understanding Mixing and Flocculation," workshop lecture, Virginia AWWA Research Committee Annual Seminar, Williamsburg, Virginia, September 16, 1996.
10. Clark, M.M., "Adsorption of Humic Substances on Hydrophobic Ultrafiltration Membranes," invited lecture, Ecole Nationale Supérieure de Géologie Appliquée, Nancy, France, June 3, 1996.
11. Clark, M.M., "A Journey in Understanding Mixing and Flocculation," invited seminar, Department of Chemical and Environmental Engineering, Illinois Institute of Technology, March 26, 1997.
12. Clark, M.M., "Diffusion and Partitioning of Humic Acid in a Porous Ultrafiltration Membrane," invited seminar, Department of Civil and Environmental Engineering, Northwestern University, April 9, 1997.

13. Clark, M.M., "Diffusion and Partitioning of Humic Acid in a Porous Ultrafiltration Membrane," invited seminar, Department of Civil and Environmental Engineering, Virginia Tech University, April 14, 1997.
14. Clark, M.M., "Membrane Surfaces and Adsorption of Humic Acid," invited seminar, Department of Environmental Engineering, Korean Institute of Construction Technology, July 7, 1997.
15. Clark, M.M., "Fouling of UF Membranes in Natural Water Filtration," invited lecture, 1997 Gordon Conference on Membranes, August 3-8, Andover, New Hampshire
16. Clark, M.M., "A Journey in Understanding Mixing and Flocculation," invited seminar, Department of Environmental Science and Engineering, Rice University, Houston, Texas, November, 1997.
17. Clark, M.M., "Membrane Processes in Water and Wastewater Treatment," invited lecture, European Membrane Society, XV Annual Summer School, Department of Chemical Engineering, Toulouse, France, July 6-10, 1998.
18. Clark, M.M., "Trends in Microfiltration and Ultrafiltration," invited lecture, Canadian Ministry of the Environment, Toronto, Canada, October 1, 1998.
19. Clark, M.M., "Microfiltration and Ultrafiltration," invited lecture, Microfiltration II, sponsored by the National Water Research Institute, City of San Diego, and the US Bureau of Reclamation, San Diego, California, November 12-13, 1998.
20. Clark, M.M., "Natural Organic Matter Fouling: Observations, Characterization, Modeling, and Development of Fouling Resistant Membranes," invited seminar, Department of Geography and Environmental Engineering, Johns Hopkins University, Baltimore, MD, February 10, 1999.
21. Clark, M.M., "What I've Learned So Far," Environmental Engineering and Science program seminar, Department of Civil and Environmental Engineering, University of Illinois, March, 23, 2000.
22. Clark, M.M., Wang, Y., Combe, C., Kumar, M., and Y. Lee, "Natural Organic Matter Fouling: Observations, Characterization, Modeling, and Development of Fouling Resistant Membranes," Korean Research Institute of Chemical Technology, Taejon, Korea, May 8, 2000.
23. Clark, M.M., "Trends in Membrane Application to Water and Wastewater Treatment: Research Issues," invited lecture, Korean Institute of Environmental Engineers, Seoul, Korean, May 13, 2000.
24. Clark, M.M, Howe, K., and Y. Wang, "Role of Coagulation in Microfiltration and Ultrafiltration Fouling and Optimization," Department seminar, Laboratoire de Génie Chimique, Université Paul Sabatier, Toulouse, France, December 21 2000.
25. Clark, M.M., and K.J. Howe, "Organic Fouling of Membranes," Sunday Workshop at 2001 AWWA Membrane Technology Conference, San Antonio, TX, March 4-7, 2001.

26. Clark, M.M., "When Bad Polymers Go Good: A Basic Science Love Story," department Seminar, Civil and Environmental Engineering, University of Houston, April 4, 2002.
27. Clark, M.M., "When Bad Polymers Go Good: A Basic Science Love Story," Department seminar, Myongji University, Department of Environmental Engineering and Biotechnology, Seoul Korea, November 5, 2002.
28. Clark, M.M., and J. Ducoste "A Journey in Understanding Mixing and Flocculation," Technical University of Krakow, Krakow Poland, December 16, 2002.
29. Clark, M.M., "When Bad Polymers Turn Good: A Basic Science Love Story," Technical University of Krakow, Krakow Poland, December 17, 2002.
30. Clark, M.M. "Polysulfone Colloids: Characterization, Stability and Performance in Water Treatment," Department seminar, Laboratoire de Génie Chimique, Université Paul Sabatier, Toulouse, France, December 19, 2002.
31. Clark, M.M., "Adsorption on Natural Organic Matter by a Tunable Colloidal Polymer Material," Department seminar, Department of Civil Engineering, University of Minnesota, February 27, 2004.
32. Clark, M.M., "Experimental Characterization of Membranes and Membrane Fouling," CAMPWS workshop on Membranes in Water Treatment, Stanford University, Feb 27-28, 2004.
33. Clark, M.M., Li, X., Ahn, W.Y., Sternisha, N., Sandhu, G. and Riley, R.L.; "Adsorption of Natural Organic Matter by a Tunable Polymer Colloid," 12th IHSS Conference, Sao Pedro, Brazil, July 26-30, 2004.
34. Clark, M.M., "Adsorption of Micropollutants and Membrane Foulants by Microporous Polymer Particles and Polymer Aggregates," keynote lecture, China-US-Japan Joint Conference on Chemical Engineering, Beijing, China, October 11-13, 2005.
35. Clark, M.M., "Formation of Nanoparticulate Polymer and Composite Sorbents and Catalysts," Gordon Conference, Colby-Sawyer College, New London, NH, August 6-11, 2006.
36. Clark, M.M., Ahn, W.-Y., Koh, M., and Kalinichev, A., "Interaction of NOM with Membrane Surfaces: New Insights from Molecular Modeling." Department of Civil and Environmental Engineering, Northwestern University, Evanston, IL, October 26, 2007.

h. Other

1. Clark, M.M., "Brownian Motion Coagulation of Clay Hydrosols," Masters Thesis, University of Missouri, Columbia, Missouri, (1978).
2. Clark, M.M., Discussion of "Forces Acting on Floc and Strength of Floc," by Tamonori Matsuo and Kideaki Unno, *Journal of the Environmental Engineering Division* (ASCE), Volume 108, Number EE3, June (1982).

3. Clark, M.M., "Resuspension of Sediments on the Ocean Shelf," internal report, Tetra Tech, Inc., Arlington, Virginia, (1986).
4. Charles, P., V. Turcaud, M.M. Clark, and M. Wiesner, "Influence des Conditions de Melange Initial sur la Coagulation," presented at AGHTM, Nice, France, (1987).
5. Clark, M., J.-M. Laîné, and M. Wiesner, M., "Mixing and Floc Structure," presented at Spring National Meeting, American Institute of Chemical Engineers, New Orleans, Louisiana, March 6-10, 1988.
6. Laîné, J.-M., M.M. Clark, and J. Mallevialle, "Optimization of Organic Removal in the Ultrafiltration of Natural Waters," presented at the American Water Works Association Annual Conference, Los Angeles, California, June 19-22, 1989.
7. Clark, M.M., "Selection and Design of Mixing Processes for Coagulation," poster presented at the Annual Meeting of the American Water Works Association, Vancouver, B.B., June 18-22, 1992.
8. Contributor to "Committee Report: Membrane Processes in Potable Water Treatment," American Water Works Association Membrane Technology Research Committee, published in *Journal American Water Works Association*, 84, 1:59-67 (1992).
9. Clark, M.M., and C. Jucker, "Adsorption of Humic Substances on Hydrophobic Membranes and Effect on Membrane Surface Properties," delivered at American Filtration Society Annual Meeting, Chicago, IL, February (1993).
10. Clark, M.M., R.M. Srivastava, J.S. Lang, R.R. Trussell, L.J. McCollum, D. Bailey, J.D. Christie, and G. Stolarik, "Selection and Design of Mixing Processes for Coagulation," final project report published by the American Water Works Association Research Foundation, Denver, Colorado, (1994).
11. Clark, M.M., and Lucas, P., "Membrane Surfaces and Adsorption of Humic Acid," AWWA Membrane Technology Conference, New Orleans, LA., February 23-26, (1997).
12. Kim, B.J., Clark, M.M., and Lee, Y., "Comparative Evaluation of Ultrafiltration/Microfiltration for Removal of Nitrocellulose (NC) Fines from Wastewater," US Army Corps of Engineers Technical Report 97/116, July 1997.
13. Hackman, B., Clark, M.M., and K. Carns, "Membrane Technologies for Nitrate and Atrazine Removal from a Surface Water Source," EPRI final report, publication #TR-111650, Palo Alto, California, 1998.
14. Crozes, G., Hagstron, J., Clark, M. Ducoste, J., and C. Burns, "Improving Clearwell Design for CT Compliance" final project report published by the American Water Works Association Research Foundation, Denver, Colorado, (1998).
15. Contributor and main editor for "Membrane Processes for Potable Water Treatment: Research Needs," American Water Works Association Membrane Technology Research Committee, *Journal American Water Works Association*, 90, 4 (1998).

16. Wang, Y., Combe, C., and M.M. Clark, "Measuring Diffusivity of Humic Acid and Modeling Adsorptive Fouling of Ultrafiltration Membranes by Humic Acid," 220th American Chemical Society (ACS) National Meeting, Washington, DC, August 20-25, 2000.
17. Clark, M.M., Kim, K-S., and Y. Lee, "Visualization of Colloidal Deposition and Cake Formation on Membrane Surfaces," 220th American Chemical Society (ACS) National Meeting, Washington, DC, August 20-25, 2000.
18. Choi, Y-K, Haye, R., Clark, M.M., and B-Y Kim, "Feasibility Study for the Concentration of TNT and RDX from Pink Water Using Equilibrium Dialysis with Nonionic and Cationic Surfactant Micelles," 221th American Chemical Society (ACS) National Meeting, San Diego, CA, April 1-5, 2001.
19. Amy, G., Cho, J., Yoon, Y., Wright, S., Clark, M., Molis, E., Combe, C., Wang, Y, Lucas, P., Lee, Y, Kumar, M., Howe, K., and K. Kim, "NOM Rejection by, and Fouling of, NF and UF Membranes," final project report published by American Water Works Research Association Foundation, Denver, CO, 2001.
20. Howe, K.J. and M.M. Clark. "Coagulation Pretreatment for Membrane Filtration," final project report, published by AWWA and American Water Works Research Association Foundation, Denver, CO, 2003.
21. Clark, M.M., and R.L. Riley, "Water Purification by Polymer Colloids," United States Patent and Trademark Office, 6,669,851 B2, December, 2003.
22. Won-Young Ahn, Li Liu, and Mark M. Clark, "Preparation of a porous polymer adsorbent and its effect on membrane fouling by NOM", International Congress on Membranes, Seoul, Korea, August 21-22, 2005.
23. Kumar, M; Meier, W.; Zilles, J.; Clark, M.; Grzelakowski, M.; Nehring, R. Highly permeable polymer membranes, US Provisional Patent number 60992660, filed Dec 5th, 2007, Assignee: University of Illinois
24. Kumar, M., Clark M and Zilles, J., Biomimetic desalination membranes, poster presented at the Gordon Research Conference (Graduate Research Symposium) – Membranes and Materials, New London, New Hampshire, August 2008.
25. Kumar, M., Grzelakowsky, M., Meier, W., Clark, M., and J. Zilles, "Bioinspired membranes for environmental applications, poster presented at Association of environmental Engineering and science Professors, Iowa City, IA, July, 2009
26. Kumar, M., Grzelakowski, M., Clark, M., Meier, W. and Zilles, J. pH Gating of the Escherichia coli Water Channel Protein, Aquaporin Z, poster presented at the American Society for Microbiology meeting, Philadelphia, May 2009

2. Grants and Contracts and gifts received for your research and teaching (in chronological order up to past 10 years)

a. For Research

Year	Brief Title or Description	Source of Funds	# of PIs
1990-1992	Selection and Design of Mixing Processes for Coagulation	American Water Works Association; \$200,000	1
1990-1993	Ultrafiltration of Illinois Groundwater Using Powdered Activated Carbon Pre-treatment (co-PI with V.L. Snoeyink)	Lyonnaise des Eaux, Le Pecq, France; \$217,777	2
1990-1996	Presidential Young Investigator Award	National Science Foundation; \$312,600.	1
1993-1995	Removal of Colloidal Material from Nitrocellulose Wastes Using Ultra-filtration: Characterization of Waste-water & Minimization of Fouling	U.S. Army Corps of Engineers; \$100,000	1
1993-1996	Modeling of Flux Decline Phenomena in Ultrafiltration Processes	Lyonnaise des Eaux, Le Pecq, France; \$75,000	1
1995-1996	Influence of Corrosion and Hydrodynamics on Chlorine Decay in Distribution Systems	Lyonnaise des Eaux, Le Pecq, France; \$30,251	1
1995-1996	Improving Clearwell Design for CT Compliance	John Carollo Engineers (AWWARF); \$42,000	1
1995-1997	Use of Membranes to Help Small Communities Reliably Meet Safe Drinking Water Requirements (co-PI with V. Snoeyink)	Illinois Water Resources Center, Urbana, IL; \$40,000	2
1995-1997	Measurement and Modeling of Liquid Circulation and Mass Transfer in an Air-Lift Bioreactor	Lyonnaise des Eaux, Le Pecq, France; \$75,000	1
1996-1998	Development and Characterization of UF Membranes and Relation of Membrane Properties to Adsorptive Fouling	National Water Research Institute; US Bureau of Reclamation; Lyonnaise des Eaux, University of Illinois, \$226,250	1

Year	Brief Title or Description	Source of Funds	# of PIs
1996-1998	Decatur/Danville Nitrate/Pesticide Removal Project	EPRI/Illinois Power/Illinois Hazardous Wastes Research and Information Center; \$95,000	1
1996-1998	Natural Organic Matter Rejection by, and Fouling of, Nanofiltration and Ultrafiltration Membranes: Bench-Scale and Pilot-Scale Evaluations (co-PI with G. Amy)	American Water Works Association Research Foundation; \$225,000	2
1998-1999	Structure and Evolution of Environmental Interfaces (co-PI with S. Granick)	Critical Research Initiatives, University of Illinois and CE Department, \$13,000	2
1998-2001	Colloidal and Macromolecular Transport in Thin Layers Near Microporous Membrane Surfaces (co-PI with M. Cheryan)	CNRS-UIUC collaborative research project, \$100,000	2
1999-2001	Visualization of Colloidal Phenomena Near Membrane Surfaces	U.S. Bureau of Reclamation, \$87,635	1
1999-2001	Role of Coagulation in Microfiltration and Ultrafiltration Fouling and Flux Optimization (co-PI with Mr. Kerry Howe)	AWWA Research Foundation, \$149,915	2
2000-2001	Membrane Separation of Bioscrubber Scrubbing Wastewater	US Army Construction Engineering Research Lab, \$25,000	1
2001-2005	Development of Colloidal Polymer Adsorbent for Selective NOM Removal	National Water Research Institute, Fountain Valley, CA, IBHE, and College of Engineering \$170,000.	1
2000-2002	Metal Working Fluid Recycling by Centrifugation, Filtration and Pasteurization: Assessing Environmental Benefits and Implications for Worker Health and Safety (co-PI with R. Sanford)	Illinois Waste Management and Research Center, Champaign, Illinois, \$222,419	2
2000-2005	On-Line Integrity Monitoring for	Korean Institute of Science	1

Year	Brief Title or Description	Source of Funds	# of PIs
	Membrane Systems Used in Water Treatment	and Technology, \$250,000	
2002-2004	Fouling of Membranes Filters by Natural Waters (co-PI with Mr. Kerry Howe)	AWWA Research Foundation and UIUC, \$184,500	2
2003-2004	Polymer Colloid Adsorbents for Water Treatment: Structure, Mechanism and Performance	Center of Advanced Materials for Purification of Water with Systems (NSF-STC), \$101,000	1
2007-2008	Biomimetic Membranes for Next Generation Desalination and Contaminant Removal Applications	Grainger Emerging Technologies Program, UIUC College of Engineering (declined, to be resubmitted), \$100,000	2
2005-2007	Characterization of organic foulants in microfiltration, ultrafiltration, and reverse osmosis integrated membrane desalination systems (Co-PI with Mr. David Ladner)	US Bureau of Reclamation, \$121,000	2
2005-2008	Rapid Pathogen Detection via Laser Scanning Cytometry (with Roderick Mackie and Mr. David Ladner)	US EPA STAR application (declined, to be resubmitted), \$600,000	3
2007-2009	Characterization of US Seawaters and Development of Standardized Protocols for Evaluation of Foulants in Seawater Reverse Osmosis Desalination (co-PI with MWH Engineers, Pasadena, CA)	WaterReuse Foundation, \$100,000	3
2007-2008	Aerobiology of the Indoor Air Environment in Nursing and Long-term Health Care Facilities (co-PI with Rod Mackie, Paul Francisco, and Yuanhui Wang)	CIRS seed grant, UIUC (declined, to be resubmitted, \$300,000)	3
2008-2009	Phytoplankton (Red Tide) Fouling of Pretreatment and Reverse Osmosis Membranes in Seawater Desalination	AWWA Research Foundation and UIUC, \$150,000	2
2008-2011	Development of Highly Efficient Aquaporin based Membranes for Desalination	National Science Foundation (\$400,000)	2
2008-2011	Investigation of the transport properties		

Year	Brief Title or Description	Source of Funds	# of PIs
	of the Sodium Iodide channel protein using a synthetic polymer system.	US Army Construction Engineering Research Laboratory (\$100,000)	3

b. For Instruction**3. Areas of Research**

Aquaporin-Based Membranes for Aqueous Separations
Surface properties of membranes
Modeling of mass transport in membranes
Membrane filtration of natural water
Fluid mechanics of coagulation
Effects of mixing on the precipitation of aluminum
Structure of flocculent particles
Scale-up of the flocculation process
Treatment of industrial wastes with membrane processes

3. Graduate Thesis Research Advising (list co-advisor, if any)

Year Granted or Anticipated	MS Thesis Student
1989	J.M Laîné
1989	J.P. Hagstrom
1990	J. Flora
1990	L. Diez
1990	A. Ocker
1991	M. Miller
1992	K. Heneghan
1992	K. Jones
1992	E. Odderstal
1992	Y. Lee
1992	M. Mylin
1993	L. Skubal
1993	C. Jucker
1994	G. Wetterau
1995	C. Wilson
1996	E. Compton
1996	W. Marriott
1996	R. Bernard
1997	A. Jack
1997	M. Atenas
1998	P. Lucas
1998	C. Burns
1998	B. Hackman
1998	G. Koch
1999	E. Mossbrugger
2000	M. Kumar
2000	Y. Wang
2003	A. Minetti
2003	B. Lee
2004	X. Li
2004	D. Ladner
2004	K. Thompson
2005	M. Koh
2005	K. Koh
2004	X. Li
2004	D. Ladner
2004	K. Thompson
2005	M. Koh
2005	L. Koh

Year Granted or Anticipated	PhD Thesis Student
1992	R. Srivastava
1993	S. Adham (w. V.L. Snoeyink)
1996	J. Ducoste (Assoc. Prof., NC State U.)
1997	T. Kramer (Assoc. Prof., Texas A&M, <i>deceased</i>)
1998	Y. Lee (Assist. Prof., Sungkyunkwan U, Korea)
2001	K. Howe (Assist. Prof., U. New Mexico)
2008	W-Y. Ahn
2008	D. Ladner
2010	M. Kumar

5. Current Editorships of Journals or Other Learned Publications

6. Post-doctoral Associates and Visiting Scientists (>3 months stay) in the past three years

Kerry Howe, Post-doctoral Associate (former PhD student). Worked on fundamental investigation of membrane fouling, 2001-2002.

Sang-Min Lee, Korean Institute of Science and Technology, Seoul, Korea. Worked on a biological method for monitoring membrane integrity, 2001-2002.

Young-Kook Choi, Post-Doctoral Associate, Advanced Chemical Technology Division, Korean Institute of Chemical Technology. Worked on micelle-enhanced ultrafiltration and visualization of colloidal fouling of membranes, 2000-2001.

Yonghun Lee, Post-doctoral Associate (former PhD student). Worked on mathematical modeling and visualization of colloidal fouling of membranes, 12/98 to 2/00.

Corine Combe, Post-Doctoral Associate, Laboratoire de Génie Chimique, Université Paul Sabatier, Toulouse, France. Worked on membrane surface characterization and mathematical modeling of fouling, 11/20/97 to 11/20/98.

Elisabeth Molis, Post-Doctoral Associate, Ecole National Supérieure de Géologie, INPL, Nancy, France. Worked on membrane surface characterization, 1/14/97 to 9/20/97.

Sankararamkrishnan Nalini, Visiting Scientist, Indian Institute of Technology -- Madras, October - December 1996. (Worked on characterization of diffusivity of humic substances.)

7. Other Scholarly Activities

Organized Committee of 20 UIUC researchers and local nursing home administrators to prepare research proposals on remediation of nursing home odors and the effects of indoor air quality on nursing home residents and staff. Led to submission of two research proposals to UIUC CIRS program (2006-present).

Panelist, Nanoscale Technology Program, National Science Foundation, Arlington, VA, 2005.

Panelist, IGERT Program, National Science Foundation, Arlington, VA, 2005

Panelist, Nanoscale Technology Program, National Science Foundation, Arlington, VA, 2004.

Site Visit Team Member, Nanoscale Science and Engineering Center for "Biological and Environmental Nanotechnology" (National Science Foundation), Rice University, Houston TX, June 10-12, 2003.

Panelist, Shell Center for Sustainability, Rice University, March 12-13, 2003.

Hosted and funded Australian engineering student during the summer 2003 as part of the IAESTE program.

Served as “Rapporteur” for PhD oral examination of Mr. Denis Bouyer, L’Institut National des Science Appliquees de Toulouse, Toulouse, France, December 20, 2002.

With Dr. Kerry Howe, organized workshop on “Organic Fouling of Membranes,” Sunday Workshop at 2001 AWWA Membrane Technology Conference, San Antonio, TX, March 4-7, 2001.

Served as “Rapporteur” for PhD oral examination of Ms. Christelle Guigui, Laboratoire de Génie Chimique, L’Université Paul Sabatier, Toulouse, France, December 20, 2000.

Editor, “Membrane Processes for Potable Water Treatment: Research Needs,” American Water Works Association Membrane Technology Research Committee, published in Journal American Water Works Association, 90, 4 (1998).

Served as “Rapporteur” for PhD oral examination of Ms. Peggy Mano, Laboratoire de Génie Chimique, L’Université Paul Sabatier, Toulouse, France, December, 1998.

Advised and supported French engineering students Karin Dasass and Maryline Laugier, College of Engineering exchange program with Institute National Polytechnic de Lorraine, Nancy, France, 1996-99.

Reviewer for Critical Research Initiatives proposals, Office of Vice Chancellor for Research and Graduate College, 1996-1997.

Co-chairman of Environmental research session, Ninth Annual Meeting of the North American Membrane Society, Baltimore, MD, May 31-June 4, 1997.

Attended NSF Forum for PYIs, NYIs and PFFs in Environmental Engineering, Duke University, Durham, NC, May 28-30, 1997.

Faculty sponsor for Miller Visiting Professor (Illinois Center for Advanced Study), awarded to Nikolai M. Kocherginsky, Department of Chemical Engineering, National University of Singapore, May-June, 1997.

Co-organizer, AWWA Membrane Technology Conference, New Orleans, LA, February 23-26, 1997.

Organized a Sunday Seminar on "Membrane Surface Science: Membrane Polymers, Surface Characterization, and Surface Modification" at the 1997 AWWA Membrane Technology Conference, February 23-26, New Orleans, LA

Chair, Membrane Technology Research Committee, American Water works Association, 1995-1998.

Co-organizer of symposium, "Fundamentals of Membrane Separation Processes in Aquatic Systems," Division of Environmental Chemistry, American Chemical Society National Meeting, Orlando, Florida, August 25-29, 1996.

Faculty Senator and member Educational Policy Subcommittee, UIUC Senate, 1995-1998.

Mentored PhD student Tim Kramer as “Civil Engineering Alumni Teaching Fellow,” Fall 1996.

Appointed to Campus Alliance for Success Task Force (Minority Recruitment), 1989-1997.

Appointed to University Fellowship Board, Minority Programs Subcommittee, 1994-1997.

Co-Chair of Departmental task force to discuss: How can we establish and Maintain Leadership in Research, 1996-1997.

Member Civil and Environmental Engineering Department Beautification Committee (1996-1998), Curriculum Committee (1994-1996; 2005-2006), and Program Review Committee (1995-1996).

Organized symposium on the “Removal and Transformation of Organic Matter in Drinking Water,” University of Illinois at Urbana-Champaign, April 4, 1990.

Panelist, review of proposals for NSF Research Initiation Award, National Science Foundation, Arlington, Virginia, 1989.

Reviewer for research articles submitted to Biotechnology and Bioengineering, Langmuir, AIChE Journal, Chemical Engineering Science, Chemical Engineering Communications, Physics of Fluids, Journal of Colloid and Interface Science, Separation Science and Technology, International Journal of Heat and Mass Transfer, Environmental Science and

Technology, Journal of Membrane Science, Journal American Water Works Association, Journal of Environmental Engineering, Water Research, Environmental Engineering Science, and Journal Nanoparticle Research (1987-present).

Reviewer of several environmental transport modeling textbooks for John Wiley and Sons, 1997 to 1998.

Reviewer of proposals submitted to National Science Foundation, National Water Research Institute, US Environmental Protection Agency, National University of Singapore, and Illinois Waste Management and Research Center (1988-present).

C. Service

1. Professional Society

Co-chair, Young Membrane Scientist Forum and Poster Session North American Membrane Society Annual Meeting, Chicago, IL,	2006
Co-organizer session entitled, "Development of Adsorbents for Air and Water Treatment," 226 th American Chemical Society National Meeting, New York, NY Sept 7-12, 2003. (Co-organizer was James Economy, Materials Science and Eng., UIUC.)	2003
Co-organizer session entitled, "Amphiphilic Assemblies in Separation Processes," symposium on "Membranes: Surfaces and Performance," ACS National Meeting, San Diego, CA, April 1-5, 2001. (Co-organizer was Kathleen Stebe, Chem. Eng., Johns Hopkins U.)	2001
Co-organizer of symposium, "Membrane Separation Processes in Aquatic Systems" Division of Environmental Chemistry, 220th American Chemical Society National Meeting, Washington, DC, August 20-25, 2000. (Co-organizers were Menachem Elimelech, Chem. Eng, Yale U, and Gary Amy, Environ. Eng., Colorado U.)	2000
Inaugural Member, Research Advisory Board, National Water Research Institute, Fountain Valley, California	1991-present
Member of Particulates and Membrane Technology Research Committees, American Water Works Association	1986-present
Member of numerous Technical Advisory Committees and Project Advisory Committees for research projects funded by the American Water Works Association Research Foundation	1989-present

2. UIUC

Member Technical Advisory Committee, Transportation Research and Engineering Laboratory (ATREL), Rantoul, IL	2006-2007
UIUC Senate	2004-2006
Chair, Curriculum Subcommittee of Human Resources Development Committee, Water CAMPWS (an NSF Science and Technology Center)	2003-2004
Member, Environmental Council, UIUC.	2001-2004
Headed College of Engineering ad hoc committee to consider new Mechanical, Engineering course, "Computational Process Modeling."	2001-2002
Co-organizer of Illinois-CNRS workshop on research collaborations, Paris, France, September 9-10, 1997.	1997-2000
Member of Study Abroad Committee, Office of International Programs and Studies	1996-1999
UIUC Senate	1996-1999

Department Advisory Committee	2000-2002
A hoc committees (3) for faculty promotion cases	2000-2003
Coordinator of graduate admissions, Environmental Engineering and Science Program	1996-1999
Graduate Affairs Committee	
1996-1999	

3. Federal and State

Mentor, Urbana Middle School, Urbana, Illinois	1999-2001
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4. Other Outside Service

Member of Blue Ribbon Panel to review Research and Development program of the US Bureau of Reclamation, Denver, Colorado, September 21-22, 1998.

Improvement Activities (UIUC)

Attended Dean's Seminar, "Seven Principles for Good Practice in Undergraduate Education"	October 1994
Attended Dean's Seminar, "Implementing Effective Instruction"	January 1993
Dean's First Symposium on Teaching Development, UIUC	March 1988
Retreat for Tenure Track Faculty, UIUC	March 1988
Dean's Second Symposium on Teaching Development, UIUC	April 1988
Individual consulting with Instructional and Management Services Office, including analysis of class videotape.	April 1988