

ERIC M.V. HOEK

Curriculum Vitae

ADDRESS

Civil & Environmental Engineering
5732-G Boelter Hall
University of California
Los Angeles, CA 92521

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EDUCATION

- Ph.D., Environmental/Chemical Engineering; *Yale University* (2002)
- M.S., Chemical Engineering; *Yale University* (1999)
- M.S., Environmental Engineering; *UCLA* (1996)
- B.S., Civil Engineering; *Penn State University* (1995)

RESEARCH INTERESTS

Environmental Nanoscience and Nanotechnology; Desalination and Membrane Technology; Advanced Materials; Aquatic Colloidal Chemistry; Transport and Interfacial Phenomena

HONORS AND AWARDS

- Outstanding Graduate Student Paper (co-author with student Arun Subramani) at the North American Membrane Society Annual Meeting, Providence, RI, 2005
- Outstanding Graduate Student Paper (co-author with student Sunny Wang) at the North American Membrane Society Annual Meeting, Honolulu, HI, 2004
- ACS Certificate of Merit for Oral Presentation (co-author with graduate student Sunny Wang) at 227th American Chemical Society National Meeting, Anaheim, CA, 2004
- 2nd Place Award in Student Paper Contest, (co-author with student Gaurav Agarwal) at the North American Membrane Society Annual Meeting, Jackson Hole, WY, 2003
- CH2M Hill/AEESP Doctoral Thesis Award
- ACS Certificate of Merit for Oral Presentation (co-author with Menachem Elimelech) at 220th American Chemical Society National Meeting, Washington, DC, 2001
- Euromembrane Conference Fellowship (2000)
- NAMS International Travel Fellowship (2000)
- ACS Environmental Chemistry Division Graduate Student Award (1999)
- Yale Faculty of Engineering Graduate Fellowship (1998)
- Yale University Graduate School of Arts and Sciences Fellowship (1998)
- University of California, Los Angeles Graduate Fellowship (1995)
- Chi Epsilon (XE) National Civil Engineering Honor Society (1994)

PROFESSIONAL ASSOCIATIONS & CERTIFICATIONS

- Association of Environmental Engineering and Science Professors (AEESP), since 2002
- American Water Works Association (AWWA), since 1994
- American Society of Civil Engineers (ASCE), since 1992
- American Chemical Society (ACS), since 1998
- North American Membrane Society (NAMS), since 1999
- American Institute of Chemical Engineers (AIChE), since 2001
- Engineer-In-Training (EIT) Certificate, ID# 135093141, earned in 1995

PROFESSIONAL EXPERIENCE

- 2005 – pres. *Member, Water Technology Research Center*
UCLA Henry Samueli School of Engineering and Applied Science
- 2005 – pres. *Member, California NanoSystems Institute*
University of California, Los Angeles
- 2004 – pres. *Assistant Professor, Department of Civil and Environmental Engineering*
University of California, Los Angeles
- 2005 – pres. *Adjunct Assistant Professor, Department of Chemical and Environmental Engineering*
University of California, Riverside
- 2002 – 2004 *Assistant Professor, Department of Chemical and Environmental Engineering*
University of California, Riverside
- 1998 – 2001 *Graduate Research Assistant, Department of Chemical Engineering*
Yale University Environmental Engineering Program
- 1996 – 1998 *Sales Engineer, Contech Construction Products Inc. (CA, AZ, NV)*
Design, marketing, and sale of engineered construction products
- 1995 – 1996 *Graduate Research Assistant, University of California, Los Angeles*
Department of Civil and Environmental Engineering
- 1994 – 1995 *Undergraduate Research Assistant, Penn State University*
Department of Civil and Environmental Engineering
- 1993 – 1995 *Environmental Engineering Intern, Merck & Co., Inc. (NJ, PA)*
Solid/hazardous waste management, water quality, and regulatory compliance

CONSULTING EXPERIENCE

- 2005 – pres. *NanoH₂O, LLC*, Chairman of the Scientific Advisory Board and Principle Consultant on development of thin film nano-composite reverse osmosis membranes for seawater desalination, wastewater recycling, and brackish water reclamation.
- 2005 *Alameda County Water District*, Surface analysis of fouled and scaled reverse osmosis membranes for project entitled, “Evaluation of Methods of Scale Control in Reverse Osmosis Units Treating Brackish Groundwater,” funded by the California Energy Commission.
- 2002 – 2004 *The City of San Diego*, Served as Technical Advisor to Montgomery-Watson-Harza Int’l for project entitled, “Simultaneous Pilot Evaluation of Conventional and Membrane Pretreatment for Seawater Reverse Osmosis,” funded by the United States Bureau of Reclamation, Oct. 2002-Oct. 2004.
- 1996 – 2002 *DCI Environmental Services*, Conducted and reviewed limited and phase-I environmental site assessments for residential, commercial, and industrial facilities on a contractual basis.

CONTRACT AND GRANT ACTIVITY

Active Reimbursable Funds: **\$1,950,000**
Total Reimbursable Funds: **\$2,601,172**

Title: *Desalination Research and Innovation Project*
PI(s): Yoram Cohen (UCLA) and Eric M.V. Hoek (UCLA)
Agency: *California Department of Water Resources*
Funds: \$1,000,000 (reimbursable); \$2,600,000 (total award)
Status: Awarded; Awaiting contract from CA DWR

Title: *Development of Low Energy Thin Film Nanocomposite Membranes*

PI(s): Eric M.V. Hoek (UCLA)

Agency: NanoH₂O, LLC

Funds: \$507,000 (reimbursable)

Status: Funded; In progress

Title: *Selective Removal of Calcium from Water via Polymer Enhanced Membrane Filtration*

PI(s): Eric M.V. Hoek (UCLA)

Agency: Metropolitan Water District of Southern California/United States Environmental Protection Agency

Funds: \$200,000 (reimbursable)

Status: Awarded; Awaiting contract from MWDSC

Title: *Reverse Osmosis Desalination Brine Reduction via Tunable Biopolymers*

PI(s): Eric M.V. Hoek

Co-PI(s): Wilfred Chen, Ashok Mulchandani, and Mark Matsumoto (UC Riverside)

Agency: Metropolitan Water District of Southern California/United States Environmental Protection Agency

Funds: \$200,000 (reimbursable)

Status: Funded; Research Completed – Final Report in preparation

Title: *Direct Observation of Biofouling in Cross-flow Membrane Filtration*

PI(s): Eric M.V. Hoek

Co-PI(s): Marc A. Deshusses and Mark Matsumoto (UC Riverside)

Agency: Metropolitan Water District of Southern California/United States Environmental Protection Agency

Funds: \$243,000 (reimbursable)

Status: Funded; In progress

Title: *Laboratory, Modeling, and Pilot Studies of Agricultural Drainage Water Reclamation*

PI(s): Mark Matsumoto (UC Riverside) and Eric M.V. Hoek

Agency: Metropolitan Water District of Southern California/California Department of Water Resources

Funds: \$345,000 (reimbursable)

Status: Funded; Research Completed – Final Report in preparation

Title: *Initial Adhesion of Microorganisms to Polymeric Membranes*

PI(s): Eric M.V. Hoek*

*Chemical & Environmental Engineering, University of California, Riverside, CA

Agency: University of California, Riverside Academic Senate

Funds: \$700 (reimbursable)

Status: Funded; Project Completed, June 2004

Title: *A Standard Method to Predict MF/UF Membrane Performance*

PI(s): Eric M.V. Hoek (UC Riverside)

Agency: University of California, Riverside Academic Senate

Funds: \$1,500 (reimbursable)

Status: Funded; Project Completed, June 2003

Title: *Theoretical and Experimental Methods of Fouling Control in Agricultural Water Reclamation*

PI(s): Mark Matsumoto (UC Riverside) and Eric M.V. Hoek (UC Riverside)

Agency: *Metropolitan Water District of Southern California/California Energy Commission*
Funds: \$50,080 (reimbursable)
Status: Funded; Project Completed, June 2005

Title: *Establish Correlations between Membrane Fouling and Water Composition*
PI(s): Tom Knoell, Orange County Water District, Fountain Valley, CA
Co-PI(s): Eric M.V. Hoek and Mark Matsumoto (UC Riverside)
Agency: *Metropolitan Water District of Southern California/California Energy Commission*
Funds: \$53,892 (reimbursable)
Status: Funded; Project Completed, June 2005

TEACHING EXPERIENCE

UCLA

- C&EE 155 – Unit Operations and Processes; *Civil & Environmental Eng*
- C&EE 255A – Physical and Chemical Processes; *Civil & Environmental Eng*
- C&EE 258A – Membrane Separations; *Civil & Environmental Eng*

UC Riverside

- ENVE 142 – Water Quality Engineering; *Chemical & Environmental Eng*
- ENVE 146 – Water Quality Systems Design; *Chemical & Environmental Eng*
- CHE 114 – Fluid Mechanics; *Chemical & Environmental Eng*
- CEE 132/232 – Green Engineering; *Chemical & Environmental Eng*
- CEE 225 – Physical & Chemical Separation Processes; *Chemical & Environmental Eng*

ADVISING EXPERIENCE

Postgraduate

Department of Civil and Environmental Engineering, UCLA

- Dr. Asim Ghosh, Postdoctoral Fellow, Summer 2005 - present
- Dr. Suhan Kim, Postdoctoral Fellow, Fall 2004 – Summer 2005
- Dr. Byeong-Heon Jeong, Postdoctoral Fellow, Fall 2004 – present

Department of Chemical and Environmental Engineering, UC Riverside

- Dr. Byeong-Heon Jeong, Postdoctoral Fellow, Spring 2004 – Summer 2004
- Dr. Suhan Kim, Postdoctoral Fellow, Fall 2003 – Summer 2004
- Dr. Seoktae Kang, Postdoctoral Fellow, Summer 2002 – Summer 2003
- Ozlem Tuli, Research Associate, Spring 2002 to Spring 2005

Graduate

Department of Civil and Environmental Engineering, UCLA

- Greg Guillen, M.S./Ph.D., Fall 2005 – present
- Dian Tanuwidjaja, Ph.D., Fall 2005 – present
- Anna Jawor, Ph.D., Fall 2004 – present
- Xiaofei Huang, Ph.D., Fall 2004 – present

Department of Chemical and Environmental Engineering, UC Riverside

- Jeffrey Wayne Allred, M.S., Winter 2002 – present
- Arun Subramani, Ph.D., Fall 2002 – present
- Anna Jawor, Ph.D., Fall 2003 – Summer 2004

- Sunny Wang, M.S., Fall 2002 – Summer 2004
- Gaurav K. Agarwal, M.S., Fall 2002 – Spring 2004
- Jaques Andre, M.S., Fall 2002 – Spring 2004

Graduate – External co-advisement or examination committee membership

- Doug Ellis, Ph.D. exam committee, Earth Sciences, *UC Riverside*
- Kanchan Joshi, Ph.D. exam committee, Chemical and Environmental Eng., *UC Riverside*
- Eunsung Kan, Ph.D. exam committee, Chemical and Environmental Eng., *UC Riverside*
- Seong Kim, Ph.D. exam committee, Chemical and Environmental Eng., *UC Riverside*
- Ma Guangyu, Ph.D. exam committee, Chemistry, *UC Riverside*
- Nazmul Rahmani, Ph.D. exam committee, Chemical and Materials Eng., *Univ. of Alberta*

Undergraduate

- Gil Hurwitz, Chemical Engineering, UCLA, Fall 2004 – present
- Greg Guilen, Environmental Engineering, UC Riverside, 2003 – Spring 2005
- Jonathan Manion, Chemical Engineering, UC Riverside, summer 2003
- Sonia Baltazar, Environmental Engineering, UC Riverside, 2003–2004
- Terrence Cai, Chemical Engineering, UC Riverside, 2002–2004
- Stephanie Tanguilig, Environmental Engineering, UC Riverside, 2002–2003

High School

- Alfredo Godinez, UC Riverside Upward Bound program, Summer 2003
- Erica Garcia, UC Riverside Upward Bound program, Summer 2003

PROFESSIONAL SERVICE ACTIVITIES

Research Proposal Review

- National Science Foundation (United States)
- National Science and Engineering Research Council (Canada)
- Science and Engineering Research Council (Singapore)

Journal Manuscript Review

- Advances in Colloid and Interface Science
- American Institute of Chemical Engineers Journal
- Colloids and Surfaces B: Biointerfaces
- Desalination
- Environmental Engineering Science
- Environmental Science and Technology
- Industrial and Engineering Chemistry Research
- Journal of Colloid and Interface Science
- Journal of Environmental Engineering - ASCE
- Journal of Membrane Science
- Journal of Physical Chemistry
- Langmuir
- Separation Science and Technology
- Water Environment Research
- Water Research

Conference Session/Workshop Organization

- Desalination Workshop (co-Organizer with Isabel Escobar), *American Water Works Association Membrane Technology Conference*, Phoenix, AZ, March 5-9, 2005.
- Oral Session Organizer, “Membrane-Based Processes for Water Treatment, Reclamation and Remediation (#144),” *ACS Pacificchem*, Honolulu, HI, December 15-20, 2005.

- Oral Session co-Organizer with Dibakar Bhattacharyya, “Novel Membranes and Membrane Processes for Recovery/Recycle,” *American Institute of Chemical Engineers 2004 Annual Meeting*, San Antonio, TX, November 7-12, 2004.
- Oral Session co-Organizer with Sotira Yiacomou, “Colloidal and Interfacial Phenomena in Environmental Systems,” *78th American Chemical Society Colloid and Surface Science Symposium*, New Haven, CT, June 20-23, 2004.
- Poster Session co-Chair with A.S. Kim, *North American Membrane Society Annual Meeting*, Honolulu, HI, June 26-30, 2004.
- Oral Session Co-Chair with N. Savage, “Membranes in Environmental Applications II,” *American Institute of Chemical Engineers Annual Meeting*, San Francisco, CA, November 16-21, 2003.
- Oral Session Co-Chair with N. Narkis, “Colloids and Interfaces in the Environment: Surface Sorption, Separation, and Control – II,” *77th American Chemical Society Colloid and Surface Science Symposium*, Atlanta, GA, June 15-18, 2003.
- Poster Session co-Chair with D. Bhattacharyya, *Engineering Conferences International Symposium on Water Purification and Re-use*, Potsdam, Germany, June 8-13, 2003.

Campus and Departmental Service

- Organized Department of Chemical and Environmental Engineering Graduate Colloquium, 2002, 2003, 2004
- Member, Department of Chemical and Environmental Engineering Faculty Search Committee, 2003, 2004
- Member, College of Engineering Executive Committee, 2003/2004
- Member, Department of Chemical and Environmental Engineering Graduate Committee, 2002, 2003

Community Outreach

- Sponsored and mentored two high-school student research assistants during Summer of 2003 as part of the University of California, Riverside *Upward Bound* program.
- Presenter for UCR Outreach program for local 7th and 8th grade students. Spoke about Engineering at UCR and about Opportunities for Undergraduates in Water Quality Research at UCR, 2003, 2004
- Presenter for UCR Outreach program for San Bernardino High School students of Native American descent. Spoke about Engineering at UCR and about Opportunities for Undergraduates in Water Quality Research at UCR, 2003, 2004

INVITED SEMINAR/WORKSHOP PRESENTATIONS

1. “Modeling of Full-Scale Desalination Plants,” *American Water Works Association Membrane Technology Conference – Desalination Workshop*, Phoenix, AZ, March 5-9, 2005.
2. Hoek, E.M.V., “Experimental Advances for Water Recycling Technologies,” *RMIT-UCLA Water Workshop: Water for a Sustainable Future – the Role of Recycling*, RMIT University, Melbourne, Australia, February 10-12, 2005.
3. “Understanding and Controlling Biofouling in Membrane Processes,” *Department of Civil and Environmental Engineering*, Rice University, Houston, TX, November 21, 2004.
4. “Direct Observation of Biofouling in Membrane Filtration Processes,” *Department of Civil and Environmental Engineering*, University of Southern California, Los Angeles, CA, October 15, 2004.
5. “Exploring the Effects of Nanometer Scale Surface Roughness on Colloid- Membrane Interactions,” *Hydranautics*, City of Oceanside, CA, July 14, 2004.
6. “Biofouling in Environmental Membrane Separations,” *Department of Civil and Environmental Engineering*, University of California, Los Angeles, CA, March 10, 2004.

7. "Role of Interfacial Properties on Desalination Membrane Performance," *Department of Chemical and Materials Engineering*, University of Alberta, Canada, December 5, 2003.
8. "Understanding the Performance of Full-Scale Desalination Membrane Processes," *Department of Civil and Environmental Engineering*, Korean Advanced Institute of Science and Technology (KAIST), Korea, November 7, 2003.
9. "Biofouling Prevention in Dead-End Microfiltration Processes," *Department of Environmental Engineering and Science*, Kwangju Institute of Science and Technology (KJIST), Korea, November 5, 2003.
10. "Increasing RO Recovery with Tunable Biopolymers," *Desalination Research Innovation Partnership (DRIP) Annual Workshop* – sponsored by the *United States Environmental Protection Agency*, Orange County Water District, Fountain Valley, CA, October 29, 2003.
11. "Direct Observation of Membrane Biofouling," *Desalination Research Innovation Partnership (DRIP) Annual Workshop* – sponsored by the *United States Environmental Protection Agency*, Orange County Water District, Fountain Valley, CA, October 29, 2003.
12. "Fouling of Desalination Membranes," *Department of Civil and Environmental Engineering*, Univ. of Nevada, Reno, CA, October, 2003.
13. "Observation of Biofouling in Cross-flow Membrane Filtration," *Department of Chemical Engineering*, Univ. of Nevada, Reno, CA, October, 2003.
14. "Fouling Mechanisms for Desalination Membranes," *Water Environment Federation WEFTEC 2003 Workshop No. 120: Innovations in the Design of Membrane Plants for Water Reuse*, Los Angeles, CA, October 12, 2003.
15. "Role of Colloidal and Interfacial Phenomena in Membrane Processes," *Department of Civil and Environmental Engineering*, Univ. of California, Davis, CA, February, 2003.
16. "Role of Colloidal and Interfacial Phenomena in Fouling of Salt Rejecting Membranes," *Department of Civil and Environmental Engineering*, Univ. of California, Irvine, CA, January, 2003.
17. "Salt Removal Technologies for Agricultural Drainage Water Reclamation," *Desalination Research Innovation Partnership (DRIP) Annual Workshop* – sponsored by the *California Energy Commission*, West Basin Municipal District, El Segundo, CA, October 8, 2002.
18. "Mechanisms of Colloidal Fouling in Reverse Osmosis and Nanofiltration," *Osmonics, Inc.*, Vista, CA, January, 2002.
19. "Colloidal Fouling in Cross-flow Membrane Filtration," *Department of Chemical and Environmental Engineering*, Univ. of California, Riverside, CA, April, 2001.
20. "Colloidal Fouling in Cross-flow Membrane Filtration," *Department of Civil and Environmental Engineering*, Univ. of California, Los Angeles, CA, April, 2001.
21. "Colloidal Fouling in Cross-flow Membrane Filtration Processes," *Department of Civil and Environmental Engineering*, *Arizona State University*, Tempe, AZ, March, 2001.

BOOKS/BOOK CHAPTERS/REVIEWS

1. Hoek, E.M.V., "Water Desalination, Reclamation, and Recycling: Southern Californian Experiences with RO Processes," *Australian Water Journal* (2005) accepted.
2. Gabelich, C.J.; Yun, T.I.; Williams, M.D.; Knoell, T.; Pearce, W.; Daniel, U.; Cohen, Y.; Hoek, E.M.V.; Matsumoto, M.R.; Sangines-Uriate, L.; John, P.; Scherzinger, R.; Mofidi, A.A. 2006. Applied Research for Large-Scale Desalting Applications: The Desalination Research and Innovation Partnership. In *Desalination of Seawater and Brackish Water* (in press). Amer. Wat. Works. Assoc., Denver, CO, 2005.
3. Ahmad, R.; Begum, S.; Hoek, E.M.V.; Karanfil, T.; Genceli, E. A.; Yadav, A.; Trivedi, P.; Zhang, C. *Physicochemical Processes*, Water Environment Research Literature Review [CD-ROM], 2004.
4. Hoek, E.M.V. and A. Jawor, "Nanofiltration Separations," in *Encyclopedia of Nanoscience and*

Nanotechnology, 1st Edition, Marcel Dekker, Inc., 2003.

- Schäfer, A.I., R. Sheikholeslami, E.M.V. Hoek, R. Schneider, M. Nyström, "Membrane Fouling," in *Nanofiltration – Principles and Applications*, Edited by A. Schaefer, A. G. Fane, T. D. Waite, Ian D. East, Elsevier Science Ltd., Oxford, UK, 2004.

REFERREED JOURNAL PUBLICATIONS (submitted and in preparation)

- Jawor, A., J. Allred, S. Kim, M. Matsumoto, and E.M.V. Hoek, "Predicting Performance of a Brackish Water RO Membrane Process," *Journal of Environmental Engineering – ASCE* (2005) in preparation.
- Kim, S., O. Tuli, A. Subramani, and E.M.V. Hoek, "Mechanisms of Colloidal Fouling in Reverse Osmosis and Nanofiltration Processes," *Environmental Science & Technology* (2005) in preparation.
- A. Jawor, S. Kim, and E.M.V. Hoek, "Effect of Feed Water Temperature on RO/NF Membrane Performance," *Desalination* (2005) in preparation.
- Subramani, A., O. Tuli, and E.M.V. Hoek, "Direct Observation of Microbial Deposition onto Salt Rejecting Membranes," *Journal of Membrane Science* (2005) in preparation.
- Jeong, B.H., Y. Yan, and E.M.V. Hoek, "Thin Film Nano-Composite Membranes: The Next Generation of Reverse Osmosis Membranes?" *Journal of Membrane Science* (submitted January 2006).
- Allred, J., T. Knoell, and E.M.V. Hoek, "Modeling the Performance of a Reverse Osmosis Wastewater Reclamation Pilot Process," *Desalination* (submitted January 2006).
- Kim, S., M. Marion, and E.M.V. Hoek, "Predicting Flux Decline in Cross-Flow Membrane Filtration of Interacting Nanoparticle Suspensions," *Journal of Nanoparticle Research* (submitted January 2006).

REFERREED JOURNAL PUBLICATIONS (published, in press, and accepted)

- Hoek, E.M.V., and G.K. Agarwal, "Extended DLVO Interactions between Spherical Particles and Rough Surfaces," *Journal of Colloid and Interface Science* (2005) accepted.
- Kim, S. and Eric M.V. Hoek, "Interactions between Organic Foulants and Reverse Osmosis Membranes," *Desalination* (2005) accepted.
- Lee, S., S. Kim, E.M.V. Hoek, and J. Cho, "Natural Organic Matter (NOM) Fouling due to Foulant-Membrane Physicochemical Interactions," *Desalination* (2005) accepted.
- Subramani, A., S. Kim, and E.M.V. Hoek, "Pressure, Flow, and Concentration Profiles in Open and Spacer-Filled Membrane Channels," *Journal of Membrane Science* (2005) in press.
- Kim, S., and E.M.V. Hoek, "Modeling Concentration Polarization in Reverse Osmosis Processes," *Desalination* 186 (2006) 111-128.
- Wang, S., G. Guillen, and E.M.V. Hoek, "Direct Microscopic Observation of Microbial Adhesion to Membranes," *Environmental Science & Technology* 39 (2005) 6461-6469.
- Escobar et al., "Committee Report: Recent Advances and Research Needs in Membrane Fouling," *Journal American Water Works Association*, 97 (2005) 79-89.
- Ahmad R, Begum S, Hoek EMV, Karanfil T, Genceli EA, Yadav A, Trivedi P, Zhang CL, "Physico-chemical Processes," *Water Environment Research*, 76 (2004) 823-1002.
- Kang, S., A. Subramani, E.M.V. Hoek, M.A. Deshusses, and M.R. Matsumoto, "Direct Observation of Biofouling in Cross-flow Microfiltration," *Journal of Membrane Science*, 244 (2004) 151-165.

post – Ph.D.

Ph.D. – related

- Hoek, E.M.V. and M. Elimelech, "Cake-Enhanced Concentration Polarization: A New Fouling

- Mechanism for Salt Rejecting Membranes," *Environmental Science and Technology* 17 (2003) 5581-5588.
11. Hoek, E.M.V., S. Bhattacharjee, and M. Elimelech, "Effect of Surface Roughness on Colloid-Membrane DLVO Interactions," *Langmuir* 19 (2003) 4836-4847.
 12. Hoek, E.M.V., A.S. Kim, and M. Elimelech, "Influence of Crossflow Membrane Filter Geometry on Colloidal Fouling of Reverse Osmosis Membranes," *Environmental Engineering Science* 19 (2002) 357-372.
 13. Kim, A.S. and E.M.V. Hoek, " Investigation of Cake Structures in Dead-End Membrane Filtration: NPT Monte Carlo Study," *Environmental Engineering Science* 19 (2002) 373-386.
 14. Walker, S.L., S. Bhattacharjee, E.M.V. Hoek, and M. Elimelech, "A Novel Asymmetric Clamping Cell for Measuring Streaming Potential of Flat Surfaces," *Langmuir* 18 (2002) 2193-2198.
 15. Vrijenhoek, E.M., M. Elimelech, and S. Hong, "Influence of Membrane Surface Properties on Initial Colloidal Fouling Rate of Reverse Osmosis and Nanofiltration Membranes," *Journal of Membrane Science* 118 (2001) 28-45.
 16. Vrijenhoek, E.M. and J.J. Waypa, "Arsenic Removal from Drinking Water by a 'Loose' Nanofiltration Membrane," *Desalination* 130 (2000) 265-277.
 17. Childress, A.C., E.M. Vrijenhoek, M. Elimelech, T.S. Tanaka, and M.D. Beuhler, "Particulate and THM precursor removal with ferric chloride," *Journal of Environmental Engineering-ASCE* 125 (1999) 1054-1061.
 18. Vrijenhoek, E.M., A.E. Childress, M. Elimelech, T.S. Tanaka, and M.D. Beuhler, "Removing particles and THM precursors by enhanced coagulation," *Journal American Water Works Association* 90 (1998) 139-150.

CONFERENCE PROCEEDING PAPERS

1. Kim, S. and E.M.V. Hoek, "Interactions between Organic Foulants and Reverse Osmosis Membranes," IWA Specialty Conference on Wastewater Reclamation & Reuse for Sustainability, Jeju, Korea, November 7-11, 2005.
2. Jeong, B-H., Y. Yan, and E.M.V. Hoek, "Hydrophilic and Antibiotic RO Membranes for Wastewater Reclamation," *American Water Works Association Membrane Technology Conference*, Phoenix, AZ, March 5-9, 2005.
3. Wang, S.Y.C. and E.M.V. Hoek, "Low Fouling Microfiltration of Agricultural Drainage Waters," *American Water Works Association Membrane Technology Conference*, Phoenix, AZ, March 5-9, 2005.
4. Allred, J., T. Knoell, and E.M.V. Hoek, "Modeling and Testing A Pilot-Scale Wastewater Reclamation Plant," *American Water Works Association Membrane Technology Conference*, Phoenix, AZ, March 5-9, 2005.
5. Jawor, A. and E.M.V. Hoek, "Desalination Membrane Scaling in Agricultural Drainage Water Reclamation," *American Water Works Association Membrane Technology Conference*, Phoenix, AZ, March 5-9, 2005.
6. Subramani, A. and E.M.V. Hoek, "Direct Observation of Biofouling on NF/RO Membranes in Wastewater Reclamation," *American Water Works Association Membrane Technology Conference*, Phoenix, AZ, March 5-9, 2005.
7. Kim, S. and E.M.V. Hoek, "Reverse Osmosis Membrane Fouling in Agricultural Drainage Water Reclamation," *American Water Works Association Membrane Technology Conference*, Phoenix, AZ, March 5-9, 2005.
8. Hoek, E.M.V., "Direct Observation of Biofouling in Environmental Membrane Processes," in *Proceedings of the 228th American Chemical Society National Meeting*, Philadelphia, PA, August 22-26, 2004.

9. Wang, S. and E.M.V. Hoek, "Microfiltration Membrane Fouling Reduction in Reclamation of Agricultural Drainage Water," *American Water Works Association Annual Conference*, Orlando, FL, June 13-17, 2004.
10. Hoek, E.M.V. and G.K. Agarwal, "Interaction Forces Governing Fouling of Polymeric Membranes," in *Proceedings of the 227th American Chemical Society National Meeting*, Anaheim, CA, March 28-April 1, 2004.
11. Wang, S.Y.C., and E.M.V. Hoek, "Back-Pulse Optimization for Fouling Free Microfiltration," in *Proceedings of the 227th American Chemical Society National Meeting*, Anaheim, CA, March 28-April 1, 2004.
12. Kim, S. and E.M.V. Hoek, "A New Concentration Polarization Model for Reverse Osmosis Separations," in *Proceedings of the 227th American Chemical Society National Meeting*, Anaheim, CA, March 28-April 1, 2004.
13. Kang, S., A. Subramani, E.M.V. Hoek, M.A. Deshusses, and M.R. Matsumoto, "Measuring Initial Microbial Adhesion Rates on Membrane Surfaces," in *Proceedings of Topical Conference on Advanced Membrane-Based Separations, American Institute of Chemical Engineers Annual Meeting*, San Francisco, CA, November 16-21, 2003.
14. Brant, J., G. Agarwal, A.E. Childress, and E.M.V. Hoek, "Assessing Colloid-Surface Interfacial Forces Relevant to Environmental Membrane Separations," in *Proceedings of Topical Conference on Advanced Membrane-Based Separations, American Institute of Chemical Engineers Annual Meeting*, San Francisco, CA, November 16-21, 2003.
15. Kang, S., E.M.V. Hoek, M.A. Deshusses, and M.R. Matsumoto, "Role of Hydrodynamic Interactions in Initial Adhesion of Microorganisms on Membrane Surfaces," in *Water Science and Technology* as a proceeding paper from the IWA Asia-Pacific Regional Conference, Bangkok, Thailand, October 19-23, 2003.
16. Kang, S., E.M.V. Hoek, and M.A. Deshusses, "A Novel Quantification of Initial Adhesion of Microorganisms on a Membrane Surface," in *Proceedings of the AWWA Annual Conference*, Anaheim, CA, June 15-19, 2003.
17. Hoek, E.M.V., S. Kang, and M.A. Deshusses, "Observation, Measurement, and Modeling of Biocolloid Deposition in Crossflow Membrane Filtration," in *Preprints of Extended Abstracts of the 225th American Chemical Society (ACS) National Meeting*, Vol. 43 No. 1, New Orleans, LA, March 23-27, 2003.

post – Ph.D.

Ph.D. – related

18. Hoek, E.M.V., "Colloid-Membrane DLVO Interactions for Rough and Smooth Membranes," in *Preprints of Extended Abstracts of the 223rd American Chemical Society (ACS) National Meeting*, Orlando, FL, April 7-12, 2002.
19. Hoek, E.M.V., "Relative Importance of Membrane Properties, Cake Resistance, and Osmotic Pressure in Colloidal Fouling of RO/NF Membranes," in *Proceedings of the 223rd American Chemical Society (ACS) National Meeting*, Orlando, FL, April 7-12, 2002.
20. Hoek, E.M.V. and M. Elimelech, "Influence of Membrane Surface Morphology on Colloidal Interactions in Membrane Systems," in *Proceedings of the American Institute of Chemical Engineers Annual Meeting*, Reno, NV, November 4-9, 2001.
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CONFERENCE PRESENTATIONS (* indicates presenter)

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2. Subramani*, S. and E.M.V. Hoek, "Application of Direct Observation of Biofouling (DOB) Technique to Quantify Initial Adhesion of Microorganisms on NF/RO Membranes," *North American Membrane Society Annual Meeting*, Providence, Rhode Island, 2005
3. Hoek*, E.M.V., "Understanding and Controlling Biofouling in Environmental Membrane Processes," *WaterCAMPWS Annual Symposium*, Atlanta, GA, April 13-15, 2005.
4. Jeong*, B-H., Y. Yan, and E.M.V. Hoek, "Hydrophilic and Antibiotic RO Membranes for Wastewater Reclamation," *American Water Works Association Membrane Technology Conference*, Phoenix, AZ, March 5-9, 2005.
5. Wang*, S.Y.C. and E.M.V. Hoek, "Low Fouling Microfiltration of Agricultural Drainage Waters," *American Water Works Association Membrane Technology Conference*, Phoenix, AZ, March 5-9, 2005.
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