

Curriculum Vitae

Wen-Yi (Winnie) Shih

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Professional Objective

Research and development position that deals with materials and polymer science, surface engineering and membrane technology

Education

- Ph.D.** in Chemical Engineering, University of California, Los Angeles
"Surface Crystallization of Mineral Salts on Surrogate Surfaces and RO Membranes" 06/2006
Ph.D. Advisor: Dr. Yoram Cohen
- B.S.** in Chemical Engineering, University of Washington, Seattle 06/2000
Minor: Chemistry

Research Experience

Graduate Student Researcher

(Dept. Chemical Engineering, University of California, Los Angeles) 09/2000- present

- Developed a novel experimental protocol for antiscalant ranking with respect to effectiveness in retarding RO membrane scale formation, now implemented by Metropolitan Water District, CA.
- Elucidated mineral scale formation on RO membrane surfaces and developed experimental method for assessing RO membrane scaling propensity with regards to tenacious scale formation
- Designed surface crystallization experiment module for characterizing surface chemical interactions
- Constructed polymer multilayer films with varying chemical functionalities and topologies for studying fundamental surface crystallization kinetics
- Participated in testing and evaluation of reverse osmosis membranes for agricultural drainage and drinking water desalination
- Reviewed and prepared research reports for Department of Water Resources (DWR), Commission for Environmental Cooperation (CEC) and Environmental Protection Agency (EPA)

Training and Student Supervision

(Dept. Chemical Engineering, University of California, Los Angeles) 2000-2004

- Interviewed undergraduate candidates for laboratory assistant positions
- Supervised and guided undergraduate students who participated in the UCLA undergraduate student research program (SRP)
- Trained incoming students and users from various departments on use of the atomic force microscope, quartz crystal microbalance and homogeneous crystallization dual-probe system

Technical Skills

- Experienced in surface analytical techniques/tools, including: scanning electron microscopy, energy dispersive x-ray spectrometry, atomic force microscopy, dynamic light scattering, quartz crystal microbalance, ellipsometry, contact angle analysis and profilometry
- Skilled in experimental/analytical techniques, including: Fourier Transform Infrared Spectroscopy, UV-VIS spectroscopy, self-assembled monolayers, polyelectrolyte multilayer coating

Work Experience

Teaching Assistant

2001-2004

- (Dept. Chemical Engineering, University of California, Los Angeles)
- Prepared course curricula; prepared and graded homework assignments, laboratory reports, exams and quizzes
- Evaluated and monitored student performance and assigned student grades
- Conducted weekly student discussions to clarify and re-emphasize concepts taught in the lecture sessions
- Classes taught including: Advanced Chemical Reaction Engineering (Graduate), Mass Transfer (Undergraduate), and Chemical Engineering Laboratory (Undergraduate)

Nanolab Superuser

(UCLA Nanoelectronics Research Facility, NRF)

2002- present

- Certified Nanolab Superuser. Trained new industry and university users on the operation of high resolution scanning electron microscope

North American Membrane Society (NAMS)

2002 and 2004

Organizing Committee/Events Coordination

- Prepared the programs and proceedings for NAMS 2002 conference at Long Beach, CA
- Provided conference organization assistance for both NAMS 2002, Long Beach, CA and NAMS 2004, Honolulu, HI

Formosa Plastics Corporation, PVC Plant, Ren-Wu, Taiwan

Summer 1999

Summer Intern

- Translated the PVC department's ISO 9001 Standard Operating Procedure from Chinese to English
- Interned in the manufacturing and QA/QC department

Awards

- Recipient of the International Desalination Association Scholarship 2002-2003
- Dean's List (University of Washington, Seattle, WA) 1999

Membership in Professional Societies

- International Desalination Association
- American Institute of Chemical Engineers
- North American Membrane Society

Language Skills

- Fluent in Mandarin and English
- Conversational in Taiwanese Hokkien and Indonesian (Bahasa Indonesia)

Extracurricular Activities

- Mentored and tutored high school students in mathematics 2002-2003
- Weekly volunteer as after-school tutor for elementary school students 2001-2002

Hobbies and Interests

- Salsa dancing, knitting and snowboarding

Publications

1. Wen-Yi Shih, K. Albrecht, J. Glater and Yoram Cohen, "A dual-probe approach for evaluation of gypsum crystallization in response to antiscalant treatment" *Desalination*, 169(3), 213-221 (2004)
2. Wen-Yi Shih, Anditya Rahardianto, Ron-Wai Lee and Yoram Cohen, "Morphometric characterization of calcium sulfate dihydrate (gypsum) scale on reverse osmosis membranes", *Journal of Membrane Science*, 252(1-2), 253-263 (2005)
3. Wen-Yi Shih, Junbo Gao, Anditya Rahardianto and Yoram Cohen, "Evaluation of antiscalant performance in the presence of aluminum", in preparation.
4. Wen-Yi Shih and Yoram Cohen, "Effects of surface properties on surface crystallization phenomenon", in preparation
5. Anditya Rahardianto, Wen-Yi Shih, Ron-Wai Lee and Yoram Cohen, "Diagnostic characterization of gypsum scale formation and control in RO membrane desalination of brackish water", *Journal of Membrane Science*, 279(1-2), 655-668 (2006)

Conference Presentations

1. Wen-Yi Shih and Y. Cohen, "Axial Development of CaSO₄ crystals on Reverse Osmosis Membranes", 2003 North American Membrane Society, May 17-21, 2003, Snow King Resort Hotel, Jackson Hole, Wyoming
2. Ron-Wai Lee, Wen-Yi Shih, Y. Cohen, and Mark D. Williams, "Flux Decline due to Gypsum Scale Formation in RO Desalting," May 17-21, 2003, Snow King Resort Hotel, Jackson Hole, Wyoming
3. Yoram Cohen, Anditya Rahardianto, Wen-Yi Shih, Ron-Wai Lee, Julius Glater, Junbo Gao, Mark D. Williams and Christopher J. Gabelich, "Membrane Scale Formation and Control", Desalination Research and Innovation Partnership (DRIP) Workshop, October 24, 2003, Fountain Valley, California.
4. Wen-Yi Shih, R-W. Lee, J. Gao, J. Glater and Y. Cohen. "Surface characterization of CaSO₄ crystals on RO membranes," Annual AIChE Meeting, November 16-21, 2003, San Francisco CA
5. Cohen, Y., A. Rahardianto, R-W Lee, W-Y Shih, J. Glater, J. Gao and M. Williams, "Membrane Desalination of High Salinity Surface and Agricultural Drainage Waters - Mineral Salt Scale Formation and Control", Annual AIChE Meeting, November 16-21, 2003, San Francisco, CA
6. Wen-Yi Shih, Anditya Rahardianto, Yoram Cohen, "Characterization and Analysis of mineral salt scale formation in membrane desalting on surface water and agricultural drainage water", 227th ACS National Meeting, March 28- April 1 2004, Anaheim Convention Center, Anaheim, California.
7. Yoram Cohen, Junbo Gao, Anditya Rahardianto, Wen-Yi Shih, Julius Glater, Mark D. Williams, Christopher J. Gabelich, "Membrane desalination of high salinity agricultural drainage water and surface water: Mitigation of mineral salt scaling and enhancement of product water recovery", 2004 North American Membrane Society, June 26-30, 2004, Sheraton Waikiki Hotel, Honolulu, Hawaii
8. Wen-Yi Shih, Anditya Rahardianto, Julius Glater and Yoram Cohen, "Development of mineral salt scale on RO membranes and surrogate surfaces", 2004 North American Membrane Society, June 26-30, 2004, Sheraton Waikiki Hotel, Honolulu, Hawaii.
9. Anditya Rahardianto, Wen-Yi Shih, Yoram Cohen and Mark. D. Williams, "Enhanced Water Recovery from Primary Membrane Desalination Concentrate by Precipitative Softening and Secondary Membrane Desalination", Annual AIChE Meeting, November 7 – 12 2004, Austin Convention Center, Austin, TX
10. Wen-Yi Shih and Yoram Cohen, "Mineral Salt Crystallization on RO Membranes and Surrogate Surfaces", 2005 American Water Works Association, April 4-8, 2005, Pacific Palms Resort, Industry Hills, California.
11. Wen-Yi Shih and Yoram Cohen, "Mineral Salt Crystallization on RO Membranes and Surrogate Surfaces", Annual AIChE Meeting, October 30 - November 4 2005, Cincinnati Convention Center, Cincinnati, OH
12. Wen-Yi Shih, Anditya Rahardianto and Yoram Cohen, "Mineral Salt Crystallization on RO Membranes and Surrogate Surfaces", 2006 American Water Works Association, April 24-28, 2006, Burlingame, California.
13. Anditya Rahardianto, Wen-Yi Shih, Brian McCool, Saeed Rezvani and Yoram Cohen. "High Recovery RO Desalination of Inland Brackish Water", 2006 American Water Works Association, April 24-28, 2006, Burlingame, California.

References

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