

RESUME

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Education

Yale University, Department of Chemical Engineering, Environmental Engineering Program
Ph.D., 2003–2008

Advisor: Professor Menachem Elimelech

- Thesis title: “Aggregation and Deposition of Nanoparticles in Aquatic Environments”

Yale University, Department of Chemical Engineering, Environmental Engineering Program
M.S., 2003–2004

National University of Singapore, Department of Civil Engineering, Center for Water Research
M.Eng., 2001–2003

Advisor: Professor Lianfa Song

- Thesis title: “Fouling Development in Full-Scale Reverse Osmosis Process: Characterization and Modeling”

University of Melbourne (Australia), Department of Civil Engineering
B.Eng., July–December 1999

- On student exchange program for one semester

National University of Singapore, Department of Civil Engineering
B.Eng., 1997–2001

- Graduated with First Class Honors
- Thesis title: “Reserve Strength of Crane Structures” (co-advised by Professors Yoo Sang Choo and Richard Liew)

Teaching Experience

Yale University, Department of Chemical Engineering
Teaching Assistant (with Professor William Mitch), Spring 2005
CENG 377: Water Quality Control

- Conduct discussion sessions, consultation, and grading

Yale University, Department of Chemical Engineering
Teaching Assistant (with Professor Paul Van Tassel), Fall 2004
ENAS 505: Advanced Engineering Mathematics

- Consultation and grading

National University of Singapore, Department of Civil Engineering
Graduate Tutor (with Professor Pengzhi Lin), Fall 2001
CE 2134: Fluid Mechanics

- Conduct tutorial classes, consultation, and grading

Advising Experience

Yale University, Department of Chemical Engineering, Environmental Engineering Program
Sophomore Student: Andrew Klein, Summer and Fall 2006

- Research focused on influence of plasmid DNA on stability of hematite nanoparticles

National University of Singapore, Department of Civil Engineering, Center for Water Research
Senior Student: Gurdev Singh, 2002–2003

- Thesis Title: “Normalization Methods in the Study of Fouling Kinetics”

National University of Singapore, Department of Civil Engineering, Center for Water Research
Senior Student: Gerard Ng, 2002–2003

- Thesis Title: “Investigation of Fouling Potential of Feed Water for Reverse Osmosis System”

Other Professional Experiences

Rice University, Houston, Texas
Visiting Student to Professor Mark Wiesner’s Laboratory, Fall 2005 (November 6–12)

- Characterization and synthesis of fullerene nanoparticles

University of Geneva, Switzerland
Visiting Student to Professor Michal Borkovec’s Lab, Fall 2004 (September 13–October 3)

- Training on static and dynamic light scattering techniques

Chan Chee Wah Consultants, Singapore
Industrial Attachment, Spring 2000

- Structural, geotechnical, and foundational design for schools and subway stations

National Service, Singapore
1995–1997

Honors and Awards

- The C. Ellen Gonter Environmental Chemistry Award 2007 presented by the Division of Environmental Chemistry of the American Chemical Society – Title of paper: “Influence of Humic Acid on the Aggregation Kinetics of Fullerene (C₆₀) Nanoparticles in Monovalent and Divalent Electrolyte Solutions”
- Second best presentation at the 4th Robert M. Langer Graduate Student Symposium, December 1, 2006, Yale University, New Haven, Connecticut
- Yale University Graduate Fellowship and Faculty of Engineering Fellowship 2003
- National University of Singapore Research Scholarship, 2001–2003
- Third prize in Student Poster Competition at the North American Membrane Society 13th Annual Meeting, May 11–15, 2002, Long Beach, California

Professional Society Memberships

- American Chemical Society 2004–present
- American Institute of Chemical Engineers 2005–present

Reviewer for Scholarly Journals

- Colloid and Polymer Science
- Environmental Science & Technology
- Journal of Nanoparticle Research

Journal Publications

1. Nguyen, T. H. and Chen, K. L., Role of Divalent Cations in Plasmid DNA Adsorption to Natural Organic Matter-Coated Silica Surface, *Environmental Science and Technology*, 2007, 41, 5370–5375.
2. Chen, K. L., Mylon, S. E., and Elimelech, M., Enhanced Aggregation of Alginate-Coated Iron Oxide (Hematite) Nanoparticles in the Presence of Calcium, Strontium, and Barium Cations, *Langmuir*, 2007, 23, 5920–5928.

3. Chen, K. L. and Elimelech, M., Influence of Humic Acid on the Aggregation Kinetics of Fullerene (C₆₀) Nanoparticles in Monovalent and Divalent Electrolyte Solutions, *Journal of Colloid and Interface Science*, 2007, 309, 126–134.
4. Chen, K. L. and Elimelech, M., Aggregation and Deposition Kinetics of Fullerene (C₆₀) Nanoparticles, *Langmuir*, 2006, 22, 10994–11001.
5. Chen, K. L., Mylon, S. E., and Elimelech, M., Aggregation Kinetics of Alginate-Coated Hematite Nanoparticles in Monovalent and Divalent Electrolytes, *Environmental Science and Technology*, 2006, 40, 1516–1523.
6. Mylon, S. E., Chen, K. L., and Elimelech, M., Influence of Natural Organic Matter and Ionic Composition on the Kinetics and Structure of Hematite Colloid Aggregation: Implications to Iron Depletion in Estuaries, *Langmuir*, 2004, 20, 9000–9006.
7. Song, L., Chen, K. L., Ong, S. L., and Ng, W. J., A New Normalization Method for Determination of Colloidal Fouling Potential in Membrane Processes, *Journal of Colloid and Interface Science*, 2004, 271, 426–433.
8. Chen, K. L., Song, L., Ong, S. L., and Ng, W. J., The Development of Membrane Fouling in Full-Scale RO Processes, *Journal of Membrane Science*, 2004, 232, 63–72.

Papers in Conference Proceedings

1. Chen, K. L. and Elimelech, M., Aggregation and Fate of Fullerene Nanoparticles in Aquatic Environments, NSTI Nanotech 2006, May 7–11, 2006, Boston, Massachusetts.

Conference Presentations

(Underlined names indicate presenting authors)

1. Tiraferri, A., Chen, K. L., Sethi, R., and Elimelech, M., Reduced Aggregation and Sedimentation of Zerovalent Iron Nanoparticles in the Presence of Guar Gum, 3rd International Symposium on Permeable Reactive Barriers and Reactive Zones, November 8–19, 2007, Rimini, Italy.
2. Chen, K. L. and Elimelech, M., Aggregation Kinetics of Fullerene (C₆₀) Nanoparticles in the Presence of Humic Acid, The American Institute of Chemical Engineers 2007 Annual Meeting, November 4–9, 2007, Salt Lake City, Utah.
3. Chen, K. L. and Elimelech, M., Electrokinetic Properties and Stability of Engineered Fullerene (C₆₀) Nanoparticles in Aqueous Solutions, The American Institute of Chemical Engineers 2007 Annual Meeting, November 4–9, 2007, Salt Lake City, Utah.

4. Chen, K. L. and Elimelech, M., Influence of Humic Acid on the Aggregation Kinetics of Fullerene (C₆₀) Nanoparticles in Monovalent and Divalent Electrolyte Solutions, American Chemical Society 234th National Meeting, August 19–23, 2007, Boston, Massachusetts (*Invited Talk*).
5. Chen, K. L. and Elimelech, M., Aggregation and Deposition Kinetics of Fullerene (C₆₀) Nanoparticles in Aquatic Environments, Association of Environmental Engineering and Science Professors Conference, July 28–August 1, 2007, Virginia Tech, Blacksburg, Virginia.
6. Chen, K. L. and Elimelech, M., Influence of Humic Acid on the Aggregation Kinetics of Fullerene (C₆₀) Nanoparticles, 81st American Chemical Society Colloid and Surface Science Symposium, June 24–27, 2007, University of Delaware, Newark, Delaware.
7. Chen, K. L. and Elimelech, M., Influence of Synthesis Technique on Electrokinetic Properties of Fullerene (C₆₀) Nanoparticles in Aqueous Solutions, 81st American Chemical Society Colloid and Surface Science Symposium, June 24–27, 2007, University of Delaware, Newark, Delaware.
8. Chen, K. L. and Elimelech, M., Aggregation and Deposition Kinetics of Fullerene (C₆₀) Nanoparticles in Aquatic Systems, 4th Robert M. Langer Graduate Student Symposium, December 1, 2006, Yale University, New Haven, Connecticut.
9. Nguyen, T. H. and Chen, K. L., Adhesion of Plasmid DNA to Natural Organic Matter Coated Mineral Surfaces, The American Institute of Chemical Engineers 2006 Annual Meeting, November 12–17, 2006, San Francisco, California.
10. Chen, K. L. and Elimelech, M., Aggregation and Deposition Kinetics of Fullerene Nanoparticles onto Quartz Surface, The American Institute of Chemical Engineers 2006 Annual Meeting, November 12–17, 2006, San Francisco, California.
11. Chen, K. L., Mylon, S. E., and Elimelech, M., Mechanism of Enhanced Aggregation of Alginate-Coated Hematite Nanoparticles in the Presence of Calcium, Strontium, and Barium Cations, The American Institute of Chemical Engineers 2006 Annual Meeting, November 12–17, 2006, San Francisco, California.
12. Chen, K. L. and Elimelech, M., Aggregation and Deposition Kinetics of Fullerene Nanoparticles in Monovalent and Divalent Electrolytes, 80th American Chemical Society Colloid and Surface Science Symposium, June 18–21, 2006, Colorado University, Boulder, Colorado.
13. Chen, K. L., Mylon, S. E., and Elimelech, M., Enhanced Aggregation of Alginate-Coated Hematite Nanoparticles: Influence of Divalent Cations on Gel-Network Formation, 80th American Chemical Society Colloid and Surface Science Symposium, June 18–21, 2006, Colorado University, Boulder, Colorado.

14. Chen, K. L. and Elimelech, M., Aggregation and Deposition Kinetics of Fullerene Nanoparticles in Aquatic Environments, Interfaces Against Pollution 4th International Conference, June 4–7, 2006, Granada, Spain.
15. Chen, K. L. and Elimelech, M., Aggregation and Deposition Kinetics of Fullerene Nanoparticles in Aquatic Environments, 26th New England Workshop on Complex Fluids, March 10, 2006, Yale University, New Haven, Connecticut.
16. Chen, K. L., Mylon, S. E., and Elimelech, M., Enhanced Aggregation of Alginate-Coated Hematite Nanoparticles, The American Institute of Chemical Engineers 2005 Annual Meeting, October 30–November 4, 2005, Cincinnati, Ohio.
17. Chen, K. L., Mylon, S. E., and Elimelech, M., Aggregation of Alginate-Coated Hematite Nanoparticles in Monovalent and Divalent Electrolytes, American Chemical Society 230th National Meeting, August 28–September 1, 2005, Washington, DC.
18. Chen, K. L., Mylon, S. E., and Elimelech, M., Influence of Alginate and Ionic Composition on Aggregate Structure of Hematite Colloids, American Chemical Society 230th National Meeting, August 28–September 1, 2005, Washington, DC.
19. Chen, K. L., Mylon, S. E., and Elimelech, M., Influence of Alginate and Ionic Composition on the Stability of Hematite Colloids, 79th American Chemical Society Colloid and Surface Science Symposium, June 12–15, 2005, Clarkson University, Potsdam, New York.
20. Chen, K. L., Mylon, S. E., and Elimelech, M., Aggregation Kinetics of Alginate-Coated Hematite Colloids in Divalent Electrolytes, 79th American Chemical Society Colloid and Surface Science Symposium, June 12–15, 2005, Clarkson University, Potsdam, New York.
21. Chen, K. L., Mylon, S. E., and Elimelech, M., Influence of Solution Chemistry on the Aggregation Kinetics of Alginate-Coated Hematite Colloids, American Chemical Society 229th National Meeting, March 13–17, 2005, San Diego, California.
22. Mylon, S. E. and Chen, K. L., Influence of Natural Organic Matter and Ionic Composition on the Kinetics and Structure of Hematite Colloid Aggregation: Implications for Iron Depletion in Estuaries, American Chemical Society 228th National Meeting, August 22–26, 2004, Philadelphia, Pennsylvania.
23. Mylon, S. E., Chen, K. L., and Elimelech, M., Influence of Natural Organic Matter and Ionic Composition on the Kinetics and Structure of Hematite Colloid Aggregation: Implications to Iron Depletion in Estuaries, 78th American Chemical Society Colloid and Surface Science Symposium, June 20–23, 2004, Yale University, New Haven, Connecticut.

24. Chen, K. L., Song, L., Hu, J., Ong, S. L., and Ng, W. J., A New Normalization Method for Fouling Characterization of Feed Waters in Membrane Processes, North American Membrane Society 14th Annual Meeting, May 17–21, 2003, Jackson Hole, Wyoming.
25. Chen, K. L., Song, L., Ong, S. L., and Ng, W. J., Modeling of Fouling Development in a Spiral-Wound RO Membrane Element, 12th KAIST-KU-NTU-NUS Symposium on Environmental Engineering, June 26–29, 2002, National Taiwan University, Taipei, Taiwan, Republic of China.
26. Chen, K. L., Song, L., Ong, S. L., and Ng, W. J., Modeling the Fouling Development of Membrane Fouling in a Full-Scale RO Process, North American Membrane Society 13th Annual Meeting, May 11–15, 2002, Long Beach, California.

Poster Presentations

(Underlined names indicate presenting authors)

1. Chen, K. L., Mylon, S. E., and Elimelech, M., Enhanced Aggregation of Colloidal Hematite Resulting from the Adsorption of Alginate: Influence of Divalent Cations on Gel-Network Formation, The Geological Society of America 2006 Annual Meeting, October 22–25, 2006, Philadelphia, Pennsylvania.
2. Chen, K. L. and Elimelech, M., Aggregation and Fate of Fullerene Nanoparticles in Aquatic Environments, NSTI Nanotech 2006, May 7–11, 2006, Boston, Massachusetts.
3. Mylon, S. E., Goergen, A. G., Chen, K. L., and Elimelech, M., Influence of Alginate on the Electrokinetic Properties and Aggregation Kinetics of Hematite Nanoparticles, American Chemical Society 231st National Meeting, March 26–30, 2004, Atlanta, Georgia.