

Paper Science and Engineering Scholarship Activities 2002

Publications

1. **Almquist, C. B.** and P. Biswas, "Role of Synthesis Method and Particle Size of Nanostructured TiO₂ on its Photoactivity" *Journal of Catalysis*, vol. 212, pp. 145-156. (2002).
2. **Almquist, C. B.**, E. Sahle-Demessie, J. Enriques and P. Biswas, "The Photocatalytic Oxidation of Low concentration methyl-tertiary Butyl Ether on Titanium Dioxide in Synthetically Prepared and Field Samples of Ground Water in a Falling Film Reactor," *Environmental Progress*. (2002).
3. Leisen J., B. Hojjatie, **D. W. Coffin**, S.A. Lavrykov, B.V. Ramarao, and H. W. Beckham, "Through-Plane Diffusion of Moisture in Paper Detected by Magnetic Resonance Imaging," *Ind. Eng. Chem. Res.*, vol. 41(25), pp. 6555-6565, (2002).
4. Sahle-Demessie, E., T. Richardson, **C. B. Almquist**, and U. R. Pallai, "Comparison of Liquid and Gas-Phase Photo oxidation of MTBE: Synthetic and Field Samples," *Journal of Environmental Engineering*, vol. 128, pp. 782-790. (2002).
5. **Waller, M. H.**, "Papermaking Retention Aid Control: A Tutorial," from ISA 2002 conference and Exhibition, paper No. ISA02-P013, *ISA Emerging Technologies*, vol. 425, pp. 51-61 (2002).

Unrefereed Publications

1. **Boyd, L.** and **C.B. Almquist** (Advisor), "The Effects of Photocatalysis on Paper Mill Wastewater", Industrial Water Conference, Orlando, FL., December 2002.
2. **Waller, M. H.**, "Charge Measurement Sensors Offer New Opportunities for Better Wet-End Control," *Pulp & Paper*, vol. 97 (3), pp. 54-58, (2002).
3. **Waller, M. H.**, "ISA PUPID Scholarships," *The Logger*, vol. 2002 (2), pp. 3-5 (2002).
4. **Waller, M. H. and R. C. Peterson** "PSE 471-2 Sailboard Design", 2002 ASEE Chemical Engineering Faculty Summer School, Boulder, CO, 12 pages, July 2002.

Technical Reports

1. **Coffin, D. W.** and M. Schaepe, "Predicting the Lifetime of Corrugated Boxes," Status report to the Containerboard Group of AF&PA, pp. 11, September 4, 2002.
2. **Coffin, D. W.** and M. Schaepe, "Predicting the Lifetime of Corrugated Boxes," Status report to the Containerboard Group of AF&PA, pp. 21, December 1, 2002.
3. **Waller, M. H.**, "Expert Report of Professor Michael Waller on the Issue of Invalidity of U.S. Patent 4,678,915," U.S. District Court, Northern District of California, San Jose Division, Case No. C01-20646, JF, 39 pages. April 6, 2002.
4. **Waller, M. H.**, "Expert Report of Professor Michael Waller in Support of ABB's Rebuttal Damages Expert Report," U. S. District Court, Northern District of California, San Jose Division, Case No. C02-20646, JF, 5 pages. May 28, 2002.

Presentations

(some are previously listed as publications)

1. **Almquist, C.B.**, "The Destruction of the Monochlorobenzene and Dimethyl Sulfide over Nanostructure Vanadia/Titania Catalysis", presented at the American Institute of Chemical Engineerings (AIChE), Indianapolis, IN, November, 2002.
2. **Boyd, L.** (Presenter) and **C.B. Almquist** (Advisor), "The Effects of Photocatalysis on Paper Mill Wastewater", Industrial Water Conference, Orlando, FL., December 2002.
3. **Coffin, D. W.** (Presenter) and B. Hojjatie, "Measurement and Analysis of Sheet Topography Using a Shadow Moiré System," 2002 Progress in Paper Physics Conference, Auburn, NY, September 8-13, 2002.
4. Dreher, C., **D. Coffin** (Advisor), and C. Habeger, "A Critical Investigation of Sorption Induced Transients in Paper," 2002 Progress in Paper Physics Conference, Auburn NY, September 8-13, 2002.
5. **Kumar, Sachin** (Presenter) and **C.B. Almquist** (Advisor), "The Destruction of the Monochlorobenzene and Dimethyl Sulfide over Nanostructure Vanadia/Titania Catalysis". technical poster at the American Association of Aerosol Research (AAAR), Charlotte, NC, October 2002.
6. **Sikora, M. D.** (Presenter), Awasthi, S., Wilson, D. and D. Hart, "Carbon Nanotube Function in Wet Laid Composites", Miami University Nanotechnology Symposium, Oxford, OH, May 15, 2002.
7. **Sikora, M.D.**, "Paper Science & Engineering Contract Research Capabilities", Recycled Paper Trade Association Operations Committee semi-annual meeting, Miami University, Oxford, OH, October, 2002.
8. **Waller, M. H.**, "Papermaking Retention Aid Control: A Tutorial," presented at ISA 2002 Chicago, IL, October 21, 2002.
9. **Waller, M. H.**, "PSE 471-2 Sailboard Design," presented at 2002 ASEE Chemical Engineering Faculty Summer School, Boulder, CO, July 30, 2002.
10. Vorakunjinij, A., **D. Coffin** (Advisor), and C. Habeger, "Influence of Paper Structure on the Tensile and Compressive Creep Behavior of Paper," 2002 Progress in Paper Physics Conference, Auburn NY, September 8-13, 2002.

Published Reviews

1. **Waller, M. H.** (reviewer), "Solving the Reasons for Breaks Using Digital Event Capturing Technology," by K. K. Hilden and D. Lanthier, *P&P Canada*, April 2002.
2. **Waller, M. H.** (reviewer), "Development and calibration of a fast 3D optical system for railway sleepers measurement," by J.J. Aguilar, M. Lope, and F. Torres, *ISA Transactions*, April 2002.
3. **Waller, M. H.** (reviewer), "Integration of Business and Production Processes," by A.P. Kjaer, *IEEE Control Systems Magazine*, December 2002.

External Research Grant Proposals Submitted (not funded or pending)

1. **Almquist, C. B.**, "A Project management Approach to Chemical/Environmental Engineering Unit Operations Laboratory" Procter and Gamble Curriculum Development Grant Program, \$120,000 over 3 years.
2. **Almquist, C. B.**, "An Investigation of the Catalytic Performance of Nanostructured Titanium Dioxide-Based Catalysts for the Destruction of Malodorous Compounds," Petroleum Research Fund, American Chemical Society, \$35,000

3. **Almquist, C. B.**, "An Investigation of Nanostructured TiO₂-Based Catalysts for the Destruction of Malodorous Compounds and Hazardous Air Pollutants", US EPA \$40,000.
4. Firsicol, D. (co-PI), and **M.D. Sikora (co-PI)**, "Commercial Fabrication of Carbon Nanotube Assemblies", Ohio Department of Development Technology Action Fund, (Collaboration with Inorganic Specialists), Miami portion \$298,799.
5. Hubbe, M. (co-PI), **M.D. Sikora (co-PI)**, J. Hsieh (co-PI), and A. Kantardjieff (co-PI), "Cryogenic Modification of Papermaking Fibers for Energy Reduction", US DOE, (Collaboration with North Carolina State and Georgia Institute of Technology), Miami portion \$329,389.
6. Lake, M. (co-PI), D. Firsicol (co-PI), and **M.D. Sikora (co-PI)**, "Commercialization of Pyrograf Technology", Ohio Department of Development Technology Action Fund, (Collaboration with Inorganic Specialists and Pyrograf Products, Inc.), Miami portion, \$471,950, pending.
7. Sidhu, S. (PI), J. Graham, and **C. B. Almquist**, "The use of nanostructured V₂O₅/TiO₂ to remediate PCB-contaminated soils", US EPA, (Collaboration with University of Dayton Research Institute), Miami portion \$119,577 over 3 years.
8. **Sikora, M.D. (co-PI)**, **R.C. Peterson (co-PI)**, and **C.B. Almquist (co-PI)**, "Novel Methods for Fiber Separation and Modification using Shock Treatment", US DOE, \$1,623,010.

External Research Grants Awarded

1. **Coffin, D. W.** (PI) and M. Schaepe, "Corrugated Box Lifetime," American Forest and Paper Association (Collaboration with Institute of Paper Science and Engineering). Miami portion \$26,000.

Internal Research Grant Proposals Submitted (not funded or pending)

Internal Research Grants Awarded

1. **Almquist, C. B.**, "Environmental Catalysis with Nanostructured Particles," Research Challenge Grant: \$9,958.
2. **Almquist, C. B.**, "To measure the effect of urbanization on heavy metal concentrations in soil and ambient aerosols in Oxford, Ohio," NSF-funded REU program through the Ecology Department, \$500.
3. Pacey, G.E. (PI), J.A. Cox, **C. B. Almquist**, **M. D. Sikora**, *et al.*, "Miami University's Nanotechnology Initiative", Sheriff Award, total award \$312,000, PSE portion to purchase BET surface area analyzer, \$7,000.
4. **Peterson, R. C.**, "An Investigation of Goldenrod as a New Source of Papermaking Fiber", Shoup Award, \$6,000.

Theses completed

1. **Lindström, M.**, "Generation of Novel TiO₂ – Composite – A Feasibility Study" advisor **W. E. Scott**. 2002.

Undergraduate Summer Scholars

1. **Kanzic, L. (PSE)**, "The Application of Photocatalysis as a Method to Degrade Organic Pollutants in Paper Mill Wastewater," advisor **C. B. Almquist**. 2002.

Other Grants Awarded

1. **Contract research awards**, 27 companies, total invoices \$113,000.
2. **Peterson, R. C.**, "All Paper Sailboard Competition," Department of Energy and Institute of Paper Science and Engineering: Energy Challenge 2002", \$2,000. (Note: Competition winner of second place and \$10,000 prize.)
3. **Sikora, M.D.**, "Helsinki Initiative for Paper Science & Engineering: Planting Seeds for Tomorrow", Hampton Fund, \$4,000.
4. **Waller, M.H.**, ISA, registration fee waiver for conference registration at ISA 2002, \$295.
5. **Waller, M.H.**, NSF, for participation at 2002 ASEE Chemical Engineering Faculty Summer School, Boulder CO, 30 July – 4 August 2002, \$800.
6. **Waller, M.H.**, Control Lab BU & University of Twente, Site License for 20SIM Software, \$1663.