

**Marcus D. Hilliard, Ph.D.**  
**Curriculum Vitae**

**Name:** Dr. Marcus D. Hilliard

**Work Address:** Southwest College, 10141 Cash Road, Stafford, TX 77477

**College Email Address:** marcus.hilliard@hccs.edu

**Education**

- Ph.D. Chemical Engineering, The University of Texas at Austin, Austin, Texas 2008
- M.S. Chemical Engineering, The University of Texas at Austin, Austin, Texas 2005
- B.S. Chemical Engineering, Texas Tech University, Lubbock, Texas 2002

**Teaching Experience**

- Instructor, 2010 – Present  
Houston Community College District  
Courses: ENGR 1201: Introduction to Engineering, CHEM 1305: Introductory Chemistry
- Teaching Assistant, 2002 - 2006  
The University of Texas at Austin  
Courses: CHE 388K Unit Operations II: Separation Processes, CHE 473K Process Planning and Design, CHE 372 Reactor Design and Optimization

**Professional, Technical, and Work-related Experience and Skills**

- The Dow Chemical Company, Sr. R&D Engineer, Freeport, Texas, 2010 – Present
- The Dow Chemical Company, Sr. Process Engineer, Freeport, Texas, 2008 – 2010
- Norwegian University of Science and Technology, Exchange Researcher, Trondheim, Norway, 2005
- The Dow Chemical Company, CMIS-New Product and Math Modeling Intern, Midland, Michigan, 2000
- The Dow Chemical Company, ESI Technical Sales and Development Intern, Freeport, Texas, 1999
- The Dow Chemical Company, Epoxy Process Research Intern, Freeport, Texas, 1998

**Professional Achievements**

- Six Sigma Green Belt Project Leader, 2010
- Texas EIT certificate, 2001

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**Patents**

- Rochelle, G.T., Hilliard, M. "Acidic Gas Capture by Diamines." U.S. Pat. Appl. 2009211446 (pending).

**Conference Proceedings**

- Hilliard, M., Kim, I., Rochelle, G. T., Svendsen, H. F., and Hoff, K. A. "Thermodynamics of Carbon Dioxide in Aqueous Piperazine/Potassium Carbonate Systems at Elevated Temperatures." Proceedings of the 8th International Conference on Greenhouse Gas Control Technologies, Trondheim, Norway, June 19-22, 2006.
- Hilliard, M. and Rochelle, G. T. "Thermodynamics of Aqueous Piperazine/Potassium Carbonate/Carbon Dioxide Characterized by the Electrolyte Nonrandom Two-Liquid Model In Aspen Plus." Proceedings of the 7th International Conference on Greenhouse Gas Control Technologies, Vancouver, BC, September 5-9, 2004.

**Presentations**

- Dugas, R., Hilliard, M., Rochelle, G. T. "Kinetics and Thermodynamics of 7 m MEA and 7 m MEA/2 m PZ Solutions." The 6th Annual Conference on Carbon Capture and Sequestration, Pittsburgh, PA, May 8, 2007.
- Hilliard, M., Rochelle, G. T. "An Innovative Approach to Thermodynamics of Carbon Capture Technologies." The Process Science and Technology Center Meeting, Austin, TX, October 25, 2006.
- Hilliard, M., McLees, J., Rochelle, G. T. "Volatility of MEA and Piperazine." The 9th International Post Combustion CO<sub>2</sub> Capture Network Meeting, Copenhagen, Denmark, June 16, 2006.
- Hilliard, M., Rochelle, G. T., Svendsen, H. F. "Solubility of CO<sub>2</sub> in 7 m MEA and 2 m PZ Solutions from 100 – 120 oC." The Separations Research Program Meeting, Austin, TX, April 5, 2005.
- Hilliard, M., Rochelle, G. T. "Thermodynamic Model for Aqueous Potassium Carbonate Characterized by the Electrolyte Nonrandom Two-Liquid Model In Aspen Plus." Annual Fall Meeting-American Institute of Chemical Engineers, Austin, TX, November 9, 2004.
- Hilliard, M., Rochelle, G. T. "Thermodynamic Model for Potassium Carbonate/Piperazine using Aspen Plus." The Separations Research Program Meeting, Austin, TX, April 14, 2004.
- Williams, J., Hilliard, M., Hoo, K., Parker, H., Lan, W., Wiesner, T. "The Virtual Chemical Engineering Unit Operations Laboratory." Annual Fall Meeting-American Institute of Chemical Engineers, Indianapolis, IN, November 3-8, 2002.
- Balijepalli, S., Bicerano, J., Tucker, C., Hilliard, M. "Lattice Simulations of Nonionic Surfactant/Cosurfactant Systems." Annual Fall Meeting-American Chemical Society, Anaheim, CA, August 20-24, 2002.

**Publications**

- Nguyen, T., Hilliard, M., Rochelle, G.T. "Amine volatility in CO<sub>2</sub> capture." International Journal of Greenhouse Gas Control. 4 (5) 2010, Pages 707-715.