

W. Michael Griffin, Ph.D.  
Carnegie Mellon University  
Green Design Institute  
Engineering and Public Policy  
Tepper School of Business  
Posner Hall, 254A  
Pittsburgh, PA 15213

(412) 268-2299 (Office)  
(412) 268-7357 (Fax)  
(724) 413-3227 (Cell)

### **CURRENT POSITIONS**

- Assistant Research Professor, (2008 – Present), Engineering and Public Policy and Tepper School of Business, Carnegie Mellon University, Pittsburgh, PA 15213-3890.
- Executive Director (2000-Present), Green Design Institute, Carnegie Mellon University, Pittsburgh, PA 15213-3890.

### **EMPLOYMENT HISTORY**

- Adjunct Professor, (2007-2010), Civil and Environmental Engineering, Carnegie Mellon University, Pittsburgh, PA 15213-3890.
- Part-time Faculty (1995 - 2002), Environment Science and Management Program, Duquesne University, 600 Forbes Avenue, Pittsburgh, PA 15282-1502.
- Adjunct Professor (1997 - 2001), Department of Biological Sciences, Mellon Hall Duquesne University, Bayer School of Natural and Environmental Sciences, Pittsburgh, PA 15282.
- President (1994 - 2001), GMS Technologies, Inc., PO Box 2353, Cranberry Township, PA 16066.
- Vice President, Research & Development (1996-1999), Applied CarboChemicals, Inc., 810 River Avenue, Pittsburgh, PA 15212.
- Director, Research and Development Services, CHMR and Director, Bioremediation Product Evaluation Center (BPEC) NETAC (1992-1994), Pittsburgh, PA 15238. Continued part-time until November 1995 as Senior Scientist.
- Manager, Research and Development (1990-1992), Sybron Chemicals Inc. Salem VA 24153.
- Research Scientist, Biotechnology (and other positions) (1980-1990), BP America Research and Development (previously Standard Oil of Ohio), Cleveland, Ohio 44128.

### **EDUCATION**

Ph.D. Microbiology, 1980: University of Rhode Island  
Kingston, Rhode Island 02881

M.S. Biology, 1977: University of Dayton  
Dayton, Ohio 45469

B.S. Biology, 1975: University of Dayton

Dayton, Ohio 45469

## **PROFESSIONAL AFFILIATIONS**

Editor, Integrated Environmental Assessment and Management, 2010 - Present

American Society for Microbiology, 1975 – 2007

Society of Industrial Microbiology, 1977 - Present

Society for Petroleum Engineering, 1982 - 1984

American Society of Biological Chemists, 1986 - 1990

Editorial Board Member, Journal of Industrial Microbiology, 1994-2002

American Chemical Society, 1997 - Present

Society of Ecological Economics, 2002 - 2004

International Society of Industrial Ecology, 2003 – Present

American Association for the Advancement of Science, 2003 – Present

## **PUBLICATIONS**

Venkatesh, Aranya, Paulina Jaramillo, W. Michael Griffin, H. Scott Matthews. 2010. Supporting Low Carbon Fuel Policies in the United States with an Uncertainty Analysis of Life Cycle Greenhouse Gas Emissions from Petroleum-based Fuels. *Environmental Sci. and Technol.*, Submitted.

Mullins, Kimberley A., W. Michael Griffin, H. Scott Matthews. 2010. Policy Implications of Uncertainty in Modeled Life-Cycle Greenhouse Gas Emissions of Biofuels. *Environmental Sci. and Technol.*, Submitted.

Kocoloski, Matthew, W. Michael Griffin and H. Scott Matthews. 2010. Impacts of Facility Size and Location Decisions on Ethanol Production Cost. *Energy Policy*, Submitted.

Jaramillo, Paulina, Amy Landis, and W. Michael Griffin. 2010. Comparison of potential emission reduction strategies for the polymer sector: Bio-feedstocks and Bio-energy. *Environmental Sci. and Technol.*, Submitted.

Kocoloski, Matthew, W. Michael Griffin and H. Scott Matthews. 2009. Estimating National Cellulosic Ethanol Production from Forest Thinnings. *Biomass and Bioenergy*, Submitted.

Jaramillo, Paulina, W. Michael Griffin and Sean McCoy. 2009. Life Cycle Inventory of CO<sub>2</sub> in an EOR System. *Environmental Sci. and Technol.*, 42:8027-8032.

Kocoloski, Matthew, W. Michael Griffin, and H. Scott Matthews. 2009. Indirect Land-Use Change and Biofuel Policy. *Environmental Research Letters*, doi:10.1088/1748-9326/4/3/034008.

Costello, Christine, W. Michael Griffin, Amy E. Landis, and H. Scott Matthews. 2009. Impact of Biofuel Crop Production on the Formation of Hypoxia in the Gulf of Mexico. *Environmental Sci. and Technol.*, 43:7985-7991.

- Leite, Rogério Cezar de Cerqueira, Manoel Regis Lima Verde Leal, Luis Augusto Barbosa Cortez, W. Michael Griffin, Mirna Ivonne Gaya Scandiffio. 2009. Can Brazil Replace 5% of the 2025 Gasoline World Demand with Ethanol? *Energy*, 34:655-661.
- Wakeley, Heather L., Chris T. Hendrickson, W. Michael Griffin and H. Scott Matthews. 2009. Economic and Environmental Transportation Effects of Large-Scale Ethanol Production and Distribution in the United States. *Environmental Sci. and Technol.*, 43 (7), 2228-2233.
- Jaramillo, P., W. Michael Griffin, and H. Scott Matthews. 2008. Comparative Analysis of the Production Costs and Life-Cycle GHG Emissions of FT-Liquid Fuels from Coal and Natural Gas. *Environmental Sci. and Technol.*, 42:7559-7565.
- Wakeley, Heather, W. Michael Griffin, Chris Hendrickson, and H. Scott Matthews. 2008. Alternative Transportation Fuels: Distribution Infrastructure for Hydrogen and Ethanol in Iowa. *ASCE Journal of Infrastructure Systems*, 14:262-271.
- Morrow, William R., W. Michael Griffin, and H. Scott Matthews. 2008. National-level Infrastructure and Economic Effects of Switchgrass Co-firing with Coal in Existing Power-plants for Carbon Mitigation. *Environmental Sci. and Technol.*, 42:3501-3507.
- Hendrickson, Chris T., W. Michael Griffin, William R. Morrow III, H. Scott Matthews, and Heather Wakeley. 2008. Transport Infrastructure Requirements for Ethanol as a Significant Alternative Fuel. *10th International Conference on Applications of Advanced Technology in Transportation*, ASCE. Athens, Greece.
- Lave, Lester B. and W. Michael Griffin. 2008. In: *Environmentally Conscious Transportation*, M. Kutz, ed., p. 1-14. The Economic and Environmental Footprints of Transportation. John Wiley & Sons, Hoboken, NJ.
- Morrow, William R., W. Michael Griffin, and H. Scott Matthews. 2007. State-level Infrastructure and Economic Effects of Switchgrass Co-firing with Coal in Existing Power-plants for Carbon Mitigation. *Environmental Sci. and Technol.*, 41:6657-6662.
- Jaramillo, Paulina, W. Michael Griffin, and H. Scott Matthews. 2007. Comparative Life Cycle Air Emissions of Coal, Domestic Natural Gas, LNG, and SNG for Electricity Generation. *Environmental Sci. and Technol.*, 41(17):6290 - 6296.
- Griffin, W. Michael and Lester Lave. 2006. Cellulosic Ethanol in an Oil and Carbon Constrained World. pp 21- 30. In: *A High Growth Strategy for Ethanol*. Aspen Institute. Washington, D.C.
- Lave, Lester B and W. Michael Griffin. 2006. The Green Bullet. *Foreign Policy Online*. (Invited Paper) [http://www.foreignpolicy.com/story/cms.php?story\\_id=3411&print=1](http://www.foreignpolicy.com/story/cms.php?story_id=3411&print=1).
- Lave, Lester B. and W. Michael Griffin. 2006. Importing Ethanol Solves Many Problems. *Issues in Science and Technology*, Spring:40-42.
- Morrow, William R., W. Michael Griffin, and H. Scott Matthews. 2006. Modeling Cellulosic Ethanol Production and Distribution in the US. *Environ. Sci. and Technol.*, 40 (9): 2877 -2886.
- Lal, Rattan, Michael Griffin, Jay Apt, Lester Lave, Granger Morgan. 2004. Response to comments on "Managing soil carbon". *Science*, 305:1567d.

- Lal, Rattan, Michael Griffin, Jay Apt, Lester Lave, and M. Granger Morgan. 2004. Restoring Soils to Protect Climate, Food, and Water. *Science*. 304:393-393.
- MacLean, Heather L., Lester B. Lave, W. Michael Griffin. 2003. Alternative Transport Fuels for the Future. *International Journal of Vehicle Design*. 35(1/2):27-49.
- Waldron, Bradford and W. M. Griffin 2002. Evaluation of Beeswax Based Petroleum Bioremediation Products. p129-141. In: *Maritime & Ports Engineering III*. WIT Press in Ashurst, Southampton, UK.
- Cortez, Luis A.B., W.M, Griffin, José A. Scaramucci, Mirna Scandiffio, M, and O.A. Braunbeck. 2003. Considerations on the World Use of Bioethanol as Contribution for Sustainability. *Management of Environmental Quality*, 14 (4), 508–519.
- Cortez, Luis A.B., W.M, Griffin, José A. Scaramucci, Mirna Scandiffio, M, and O.A. Braunbeck. 2004. pp 189-196. In: *Worldwide use of ethanol: a contribution for economic and environmental sustainability*. Afgan, N.H., Z. Bogdan, and N. Duic, (eds): Sustainable Development of Energy, Water and Environment Systems - Proceedings of the Conference, 2-7 June 2002, Dubrovnik, Croatia.
- MacLean, Heather L., Lester B. Lave, W. Michael Griffin and Satish V. Joshi. 2001. Evaluation of Lignocellulosic Ethanol to Fuel the USA-Canadian Light Duty Transportation Fleet. *SAE Paper No.* 2001-01- 3739.
- Lave, Lester B., W. Michael Griffin and Heather L. MacLean. 2001. Lowering Carbon Dioxide Emissions from Cars and Light trucks. *Issues in Science and Technology*, Winter 2001-02: 73-78.
- Griffin, W. Michael, Lester B. Lave and Heather L. MacLean. 2001. Promise and cost of cellulosic ethanol for the U.S. Light-duty Fleet. *SAE Paper No.* 2001-01-2474.
- Lee, K. G., H. Tremblay, J. Gauthier, S. E. Cobanli, and M. Griffin. 1997. Bioaugmentation and biostimulation: Paradox between laboratory and field results. In *Proc. 1997 Int. Oil Spill Conference*, pp. 697-704. American Petroleum Institute, Washington, DC.
- Griffin, W. Michael and Stephen Paff. 1995. Biofiltration: Weighing the technology's cost benefits. *Environ. Protect.* (July):17-18.
- Rosenberg, E., R. Legmann, E.Z. Ron, W. M Griffin, and A.T. Merski. 1995. Biotreatment of petroleum contamination in Open Systems, pp. 891-892, 1995 *International Oil Spill Conference Proceeding*, Long Beach CA.
- Merski, A.T. and W.M. Griffin. 1993. Tapping bioremediation's potential - a matter of sweat and tiers. *Hazmat World* (Mar):63-70.
- Horowitz, S. and W. M. Griffin. 1991. Structural analysis of *Bacillus licheniformis* 86 surfactant. *J. Indust. Microbiol.* 7:45-42.
- Horowitz, S., J.N. Gilbert, and W. M. Griffin. 1990. Isolation and characterization of a surfactant produced by *Bacillus licheniformis* 86. *J. Indust. Microbiol.* 6:243-248.
- Griffin, W. M., K. M. Antloga, N. Santoro, A. P. Bakaletz, M. S. Rhieins, and O. H. Tuovinen. 1985. Development of culture media, a sporulation procedure, and indirect

immunofluorescent antibody technique for sulfate-reducing bacteria. *Dev. Indust. Microbiol.* 26: 611-626.

Antloga, K. M. and W. M. Griffin. 1985. Characterization of sulfate-reducing bacteria isolated from oil field waters. *Dev. Indust. Microbiol.* 26: 597-611.

Griffin, W. M. and R. W. Traxler. 1983. Intracellular inclusions of an *n*-alkane grown *Arthrobacter*. *Dev. Indust. Microbiol.* 24:389-400.

Griffin, W. M. and R. W. Traxler. 1981. Some aspects of hydrocarbon metabolism by *Pseudomonas*. *Dev. Indust. Microbiol.* 22:425-435.

Griffin, W. M. and J. J. Cooney. 1979. Degradation of model recalcitrant hydrocarbons by microorganisms from freshwater ecosystems. *Dev. Indust. Microbiol.* 20:479-488.

## **PATENTS**

U.S. Patent 6,699,390, March 2, 2004, Use of Beeswax to degrade hydrocarbons, with B. Waldron.

U. S. Patent 5,449,619, September 12, 1995, Drain opener formulation, with R. Ritter, D. Dent.

U. S. Patent 4,653,584, March 31, 1987, Maleimide-modified bioresistant polymers and enhanced oil recovery method employing the same, with K. Antloga, A. Nemecek, L. Ball

U. S. Patent 4,638,865, January 27, 1987, Bioresistant water-soluble alkyl-substituted acrylamide polymers and enhanced oil recovery method employing same, with K. Antloga, A. Nemecek, L. Ball

U. K. Patent 6B 2,153,834B, November 12, 1986, Microbial enhancement of polymer viscosity, with K. Antloga, L. Ball

## **PRESENTATIONS**

Griffin, W. Michael. 2009. Using LCA to compare alternative fuels to petroleum based fuels Inmetro/Rio Comprido, Rio de Janeiro, Brazil. May 27, 2009 (Invited Presentation)

Griffin, W. Michael. 2009. LCA – Is it regulatory ready? Arizona State University, Department of Civil Environmental Engineering and the Global School of Sustainability, May 5, 2009 (Invited Presentation).

Griffin, W. Michael, H. Scott Matthews, Heather Wakeley, Matthew Kocolowski. 2008. Infrastructure and life cycle Implications of Biofuels. Society of Environmental Toxicology and Chemistry Annual Meeting Tampa, FL, November 19, 2008 (Invited Presentation).

Griffin, W. Michael, H. Scott Matthews, Chris Weber, Chris Hendrickson. 2008. The importance of boundary assessments in corporate carbon management efforts. Society of Environmental Toxicology and Chemistry Annual Meeting Tampa, FL, November

- 19, 2008 (Invited Presentation).
- Griffin, M., A. Managneechai, Chris Hendrickson, H.S. Matthews. 2008. Economic and greenhouse gas implications of delivering Canadian Oil Sands in the United States. In LCA/LCM 2008, Seattle, WA, September 30, 2008.
- Griffin, M. 2008. Analysis of important environmental issues related with sugarcane ethanol and the ethanol institute. University of Campinas, Campinas Sao Paulo Brazil, June 26, 2008 (Invited Presentation).
- Griffin, M. 2008. US Ethanol Use current status, future prospects, and how we can get there? Monash University, Melbourne, Victoria, Australia, January 17, 2008 (Invited Presentation).
- Griffin, M. 2007. Ethanol: Today and Tomorrow. University of Campinas, Campinas Sao Paulo Brazil, July 11, 2007 (Invited Presentation).
- Griffin, M. 2006. World Ethanol Market. Department of Energy, September 13. (Invited Presentation).
- Griffin, M. 2006. Cellulosic Ethanol. Millersville University, January 25, 2006. (Invited Presentation).
- Lave, Lester and Michael Griffin. 2005. The Role of Cellulosic Ethanol in an Oil-Hungry World. University of Campinas, Campinas Sao Paulo Brazil, 30 Years of Proalcol. November 16, 2005. (Invited Presentation).
- Griffin, M. 2005. Markets for the Alternative Energy Products. Forest Products Technobusiness Forum. Center for Paper Business and Industry and Institute of Paper Science and Technology, Georgia Institute of Technology, Atlanta, GA September 20, 2005 (Invited Presentation).
- Morrow, W.R., M. Griffin, and H. Scott Matthews. 2005. Modeling Cellulosic Ethanol Production and Distribution in the US. 24th Symposium on Biotechnology for Fuels and Chemicals. Denver Co.
- Griffin, M. 2005. Roundtable "Cars of Today, Fuels of the Future." Group Against Smog and Pollution. April 20, 2005 (Invited Presentation).
- MacLean, H.L., M. Griffin, S. Joshi, and L. Lave. Towards a Sustainable Personal Transportation Sector: Assessing the Potential of Cellulose-Derived Ethanol. 2003. International Society of Industrial Ecology. Ann Arbor, MI.
- Donofrio R., G. Floro, J. Buzzelli, W.M. Griffin, and J.F. Stolz. Anaerobic biodegradation of biodiesel by *Burkholderia solanocearum*. 1995. Allegheny Branch ASM, Pittsburgh, PA.
- Floro, G., R. Donofrio, J. Buzzelli, W.M. Griffin, and J.F. Stolz. Aerobic biodegradation of biodiesel by *Burkholderia cepacia*. 1995. Allegheny Branch ASM, Pittsburgh, PA.
- Follis, P., G. Floro, J. Buzzelli, W.M. Griffin, and J.F. Stolz. Biodegradation of Soy Diesel in Freshwater and Soil Microcosms. 1995 American Society for Microbiology Annual Meeting, Washington, D.C.
- Rosenberg, E., R. Legmann, E.Z. Ron, W. M Griffin, and A.T. Merski. Biotreatment of

petroleum contamination in Open Systems, 1995 International Oil Spill Conference, Long Beach CA.

Griffin, M., Bioremediation product efficacy and environmental safety evaluation protocol development, 1993 Japanese Research Institute Bioremediation Symposium, Tokyo, Japan (Invited Presentation).

Merski, A.T. and M. Griffin, Bioremediation product efficacy testing, 1992-Joint Workshop with the U.S. EPA and the Israeli Ministry of the Environment, Tel Aviv, Israel (Invited Presentation).

Griffin, M. Oil Spill Bioremediation. Oct. 1992 Pittsburgh Chemists Club, (Invited Presentation).

Antloga, K. M. and M. Griffin, Bacterial degradation of water-soluble polymers, 1985-Society of Industrial Microbiology Annual Meeting, Boston, MA.

Antloga, K. M. and M. Griffin, Characterization of sulfate-reducing bacteria isolated from oil field waters, 1984-Society of Industrial Microbiology Annual Meeting, Fort Collins, CO.

Griffin, M., K. M. Antloga, N. Santoro, A. P. Bakaletz, M. S. Rhieins, and O. H. Tuovinen, Development of culture media, a sporulation procedure and an indirect immunofluorescent antibody technique for sulfate-reducing bacteria, 1984-Society of Industrial Microbiology Annual Meeting, Fort. Collins, CO.

Griffin, M. and L. E. Ball, Biodegradation of water soluble polymers, 1983-Akron Polymer Symposium, Akron OH (Invited Presentation).

Griffin, M. and R. W. Traxler, Intracellular inclusions in *Arthrobacter* sp. grown on hydrocarbons, 1982-Society of Industrial Microbiology Annual Meeting, St. Paul, MN.

Griffin, M. and R. W. Traxler, Hydrocarbon metabolism in *Pseudomonas*, 1980-Society of Industrial Microbiology Annual Meeting, Flagstaff, AZ.

Griffin, M. and R. W. Traxler, Intracellular inclusions in *Arthrobacter*, 1979-American Society for Microbiology Annual Meeting, Flagstaff, NV.

Griffin, M. and J. J. Cooney, Degradation of model recalcitrant hydrocarbons, 1978-Society of Industrial Microbiology Annual Meeting, Houston, TX.

Griffin, M. and J. J. Cooney, Degradation of hydrocarbons by freshwater organisms, 1978-American Society for Microbiology Annual Meeting, Las Vegas, NV.

#### **GRANTS AND CONTRACTS:**

National Science Foundation, Environmental Protection Agency, Department of Energy, Department of Defense, Department of Agriculture, W. Alton Jones Foundation, General Motors, Ford Motor Company, Petrol Rem Inc., Bayer, British Petroleum, Maktishem Chemical Co., Alcoa, Bluemoon Foundation, Energy Foundation.

#### **COURSES TAUGHT:**

Industrial Microbiology, Microbiology, Environmental Biotechnology, Environmental

## Sampling

**ADVISEES/ CO-ADVISEES:** Paige Follis (MS, Duquesne), Bradford Waldron (MS, Duquesne), William Morrow (Ph.D., CMU), Paulina Jaramillo (Ph.D., CMU), Heather Wakeley (Ph.D., CMU), Aweewan Mangmeechai (Ph.D., CMU), Mattt Kocalowski (Ph.D., CMU current), Christine Costello (Ph.D., CMU current), Kim Mullins (PhD. CMU current), Azmann Hassan (Ph.D., CMU current), Stefan Schwietzke (Ph.D., CMU current), Aranya Venketesh (Ph.D, current).