S. KENT HOEKMAN
Research Professor, Emeritus
Desert Research Institute
Division of Atmospheric Sciences
2215 Raggio Parkway, Reno, NV 89512-1095

Tel: 775-674-7065
Fax: 775-674-7016
email: Kent.Hoekman@dri.edu

Education

Ph.D.	1980	Iowa State University, Ames, IA	Organic Chemistry
B.S.	1975	Calvin College, Grand Rapids, MI	Chemistry

Professional Interests and Activities

Dr. Hoekman is a Research Professor within the Division of Atmospheric Sciences at the Desert Research Institute (DRI). DRI is a statewide division of the Nevada System of Higher Education (NSHE) that pursues basic and applied environmental research on local, national, and international scales. His professional interests include environmental impacts of energy production, distribution, and use; development of renewable and sustainable energy systems; conversion of biomass to biofuels; air quality impacts of vehicle emissions; and impacts of advanced-technology fuels and vehicles on emissions and energy use. He is also interested in the interface between politics and environmental science, particularly in the areas of energy policy, renewable fuels, greenhouse gases, and climate change.

In addition to his personal professional activities, Dr. Hoekman has provided leadership for DRI in the identification, protection, and licensing of intellectual property (IP) developed at the Institute. Dr. Hoekman was instrumental in establishing a joint Technology Transfer Office (TTO) between DRI and the University of Nevada, Reno (UNR), and has served as DRI's Liaison to the TTO, where he oversaw the activities of this office on behalf of DRI.

Dr. Hoekman has also served DRI by coordinating and promoting the Institution's R&D portfolio in the field of renewable energy. He has led the effort to establish a Renewable Energy Center (REC) at DRI, and continues to provide leadership in this area by serving as Director of DRI's Clean Technologies and Renewable Energy Center (CTREC). For further information about this renewable energy work, please refer to the CTREC website at http://www.dri.edu/clean-technologies-and-renewable-energy.

In addition, Dr. Hoekman is active in the scientific academic and business communities. He serves as a reviewer for numerous science and engineering journals, is a member of several professional societies, has assisted in organizing scientific conferences, and contributes to the mentoring and advisement of graduate students at the University of Nevada in Reno (UNR). Currently, he serves as Associate Editor for the *International Journal of Alternative Energy* and the journal *Energies*.

From 2001 to 2007, Dr. Hoekman served as Executive Director of DRI's Division of Atmospheric Sciences (DAS). DAS consists of approximately 50 research faculty, along with 70 technologists, graduate students, post-docs, and other support staff. The Division conducts fundamental and applied research around the world on topics pertaining to emissions, renewable energy, air pollution, meteorology, climatology, aerosol chemistry and physics, and other areas related to atmospheric science. DAS also serves as the institutional home for the Western Regional Climate Center, one of six NOAA-funded regional climate centers in the U.S. As Director, Dr. Hoekman was responsible for all personnel, financial, organizational, and professional activities of Divisional operations. The Division's scientific work is sponsored by over 100 federal, state, local, and private organizations that provide approximately $14 million per year in research grants and contracts. For more information about the Division and its activities, please refer to its web site at http://www.das.dri.edu.

Prior to joining DRI in 2001, Dr. Hoekman spent over 20 years at Chevron, where his research focused on transportation fuels and their impacts on motor vehicle emissions and air quality. Experimental work included detailed characterization of exhaust emissions compositions from gasoline-,

diesel-, and alcohol-fueled vehicles. Laboratory studies were conducted to investigate how changes in fuel formulation could reduce vehicle emissions and improve ambient air quality. He has served on several technical committees representing the American Petroleum Institute (API), the Western States Petroleum Association (WSPA), the Coordinating Research Council (CRC), and other industry organizations interested in fuels, emissions, atmospheric chemistry and air quality.

Dr. Hoekman also has experience in environmental regulatory affairs pertaining to vehicles, fuels, emissions, air quality, and health effects. He has served in technical advisory roles to EPA and was a member of the California Air Resources Board (CARB) Research Screening Committee for five years. He served as a member of the Health Effects Institute's (HEI) Special Committee on Emerging Technologies from 2001 through 2007.

Professional Experience

2007 – Present	Research Professor, Division of Atmospheric Sciences, Desert Research Institute, Reno, NV
2001 – 2007	Executive Director, Division of Atmospheric Sciences, Desert Research Institute, Reno and Las Vegas, NV
1997 – 2001	Senior Staff Scientist, Chevron Products Co., San Francisco and San Ramon, CA
1990 – 1996	Staff Scientist and Senior Staff Scientist, Chevron Research and Technology Company, Richmond, CA
1980 – 1989	Research Chemist and Senior Research Chemist, Chevron Research and Technology Company, Richmond, CA

Professional Memberships

- American Association for the Advancement of Science (AAAS)
- American Chemical Society (ACS)
- Air and Waste Management Association (AWMA)
- Society of Automotive Engineers (SAE)
- Algal Biomass Organization
- American Institute of Chemical Engineering (AIChE)

Awards/Honors

- Chevron Chairman's Award (1984) – Presented in recognition of diesel emissions research
- Horning Memorial Award (1985) – Presented by the Society of Automotive Engineers
- Arch T. Colwell Merit Award (1985) – Presented by the Society of Automotive Engineers
- Society of Automotive Engineer's Award for Excellence in Oral Presentation (1993 and 1995)
- Recognition of Appreciation from the California Air Resources Board (2001)

Peer-Reviewed Publications

Hoekman, S.K., Broch, A. L., Felix, L., Farthing, W., 2017: Hydrothermal Carbonization (HTC) of Loblolly Pine Using a Continuous, Reactive Twin-Screw Extruder. *Energy Conversion and Management*, **134**, 247-259, doi: 10.1016/j.enconman.2016.12.035

Jena, U., Hoekman, S.K., 2017: Editorial: Recent Advancements in Algae-to-Biofuels Research: Novel Growth Technologies, Conversion Methods, and Assessments of Economic and Environmental Impacts. *Frontiers in Energy Research*, **5** (Article 2), 1-2, doi: 10.3389/fenrg.2017.0002

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Hoekman, S.K., Broch, A. L., Liu, X., Felix, L., 2016: MMT Effects on Gasoline Vehicles: A Literature Review. *SAE Int. J. Fuels Lubr*., **9**(1), 322-343, doi: 10.4271/2016-01-9073

Liu, Z., Guo, Y., Balasubramanian, R., Hoekman, S.K., 2016: Mechanical stability and combustion characteristics of hydrochar/lignite blend pellets. *Fuel*, **164**, 59-65, doi: 10.1016/j.fuel.2015.10.004

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Summers, H. M., Ledbetter, R. N., McCurdy, A. T., Morgan, M. R., Seefeldt, L. C., Jena, U., Hoekman, S.K., Quinn, J. C., 2015: Techno-economic feasibility and life cycle assessment of dairy effluent to renewable diesel via hydrothermal liquefaction, *Bior. Tech*., **196**, 431-440.

Schuetzle, D., Schuetzle, R., Hoekman, S.K., Zielinska, B. K., 2015: The effect of oxygen on formation of syngas contaminants during the thermochemical conversion of biomass, *Int. J. Energy Environ. Eng*., **6**(4), 405-417.

Collett, S., Hoekman, S.K., McCauley, E., Wallington, T. J., 2015: Highlights from the Coordinating Research Council 2015: Mobile Source Air Toxics Workshop, *EM*, July 2015, 29-32.

Liu, X., Hoekman, S.K., Robbins, C. M., Ross, P. D., 2015: Lifecycle Climate Impacts and Economic Performance of Commercial-scale Solar PV Systems: A Study of PV Systems at Nevada's Desert Research Institute (DRI), *Solar Energy*, **119**, 561-572.

Chen, L.-W.A., Robles, J. A., Chow, J. C., Hoekman, S.K., 2015: Renewable hydrogen production from bio-oil in an aerosol pyrolysis system, *Procedia Engineering*, **102**, 1867-1876.

Liu, Z. G., Hoekman, S.K., . Balasubramanian, R., Zhang, F. S., 2015: Improvement of fuel qualities of solid fuel biochars by washing treatment, *Fuel Process. Technol*., **134**, 130-135.

Hoekman, S.K., Broch, A. L., Warren, A., Felix, L., Irwin, J., 2014: Laboratory pelletization of hydrochar from woody biomass, *Biofuels*, **5**(6), 651-666.

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Robbins, C., Goldade, T., Hoekman, S.K., Jacobson, R., and Turner, R. (2014). Empirically Driven Computer Simulations of Solar Thermal Systems for Space Heating and Domestic Hot Water. *ASME Technical Paper* ESFuelCell2014-6476.

Damm, C., Strobach, E., Robbins, C., Broch, A., Turner, R., and Hoekman, S.K. (2014). Development of the Renewable Energy Deployment and Display (REDD) Facility at the Desert Research Institute. *ASME Technical Paper* ESFuelCell2014-6626.

Reza, M., Uddin, M. H., Lynam, J. G., Hoekman, S.K., Coronella, C. J., 2014: Hydrothermal carbonization of loblolly pine: reaction chemistry and water balance, *Biomass. Conv. Bioref*., **4**, 311-321.

Yan, W., Hoekman, S.K., 2014: Production of CO2-free hydrogen from methane dissociation: a review, *Environ. Prog. Sust. Energy*, **33**(1), 213-219.

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Reza, M.T., W. Yan, M.H. Uddin, J.G. Lynam, S.K. Hoekman, C.J. Coronella, and V.R. Vasquez, 2013: Reaction kinetics of hydrothermal carbonization of loblolly pine. Bior. Tech., **139**, 161-169.

Broch, A., S.K. Hoekman, S. Unnasch, 2013: A review of variability in indirect land use change assessment and modeling in biofuel policy. *Environ. Sci. & Policy*, **29**, 147-157.

Hoekman, S.K., A. Broch, C. Robbins, B. Zielinska, and L. Felix, 2013: Hydrothermal carbonization (HTC) of selected woody and herbaceous biomass feedstocks. *Biomass Conversion and Biorefinery*, **3,** 113-126, doi:10.1007/s133990-012-0066-y.

Liu, Z., A. Quek, S.K. Hoekman, and R. Balasubramanian, 2013: Production of solid biochar fuel from waste biomass by hydrothermal carbonization. *Fuel* **103**, 943-949.

Parshetti, G.K., S.K. Hoekman, and R. Balasubramanian, 2013: Chemical, structural and combustion characteristics of carbonaceous products obtained by hydrothermal carbonization of palm empty fruit bunches. *Bioresource Technol*, **135,** 683-689.

Samburova, V., M.S. Lemos, S. Hiibel, S.K. Hoekman, J. Cushman, and B. Zielinska, 2013: Analysis of triacylglycerols and free fatty acids in algae using ultra-high performance liquid chromatography mass spectrometry. *J. Am. Oil Chem. Soc*., **90**, 53-64.

Liu, Z., A. Quek, S.K.Hoekman, and R. Balasubramania (2012). Thermogravimetric investigation of hydrochar-lignite co-combustion, *Bioresource Technol.*, **123**, 646-652.

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Hoekman, S.K., R.S. MacArthur, M. Naylor and J.A. Rutherford (1998). RVP Reduction for Control of Wintertime CO. *Soc. Auto. Eng. Tech. Paper* No. 981373.

Lanning, L.A., W.L. Clark, W.O. Siegl, S.K. Hoekman, R.M. Stanley and W.F. Biller (1997). CRC Hydrocarbon Emissions Analysis Round Robin Test Program, Phase II. *Soc. Auto. Eng. Tech. Paper* No. 971608.

Hoekman, S.K., J. Freel and R.S. MacArthur (1996). Reduced-RVP Gasoline – An Attractive Alternative to RFG. *Soc. Auto. Eng. Tech. Paper* No. 961281.

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Croes, B.E., S.K. Hoekman and A. Guerrero (1991). Ozone-Forming Potential of Emissions from Lower Aromatic Content Gasolines. *Air and Waste Management Association* Paper No. 91-107.8.

Gething, J.A., S.K. Hoekman, A.R. Guerrero and J.M. Lyons (1990). The Effect of Gasoline Aromatics Content on Exhaust Emissions: A Cooperative Test Program. *Soc. Auto. Eng. Tech. Paper* No. 902073.

Eberhard, G.A., M. Ansari and S.K. Hoekman (1990). Emissions and Fuel Economy Tests of a Methanol Bus with a 1988 DDC Engine. *Soc. Auto. Eng. Tech. Paper* No. 900342.

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Eberhard, G.A., M. Ansari and S.K. Hoekman (1989). Emissions and Fuel Economy Test Results for Methanol- and Diesel-Fueled Buses. *Air and Waste Management Association Paper* 89-9.4.

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Seizinger, D.E. and S.K. Hoekman (1984). Aromatic Measurements of Diesel Fuel - A CRC Round-Robin Study. *Soc. Auto. Eng. Tech. Paper* No. 841363.

Barton, T.J., Hoekman, S.K., Burns, S.A. (1982). Comments on the Formation of Silanones in the Thermolysis of Hydridosilyl Peroxides. *Organometallics* **1**, 721-725.

Barton, T.J., Hoekman, S.K. (1980). Bis(trimethylsilyl)diazomethane, Trimethylsily trimethylgermyl diazomethane, and Bis(trimethylgermyl)diazomethane – Synthesis and Chemistry of Quantitative Silene and Germene Precursors. *J. Amer. Chem. Soc.* **102**, 1584-1591.

Barton, T.J., Hoekman, S.K. (1979). Convenient Synthesis of Trimethylsilyldiazomethane – Silene Generator. *Synthesis and Reactivity in Inorganic and Metal-Organic Chemistry* **9**, 297-300.

Book Chapter

Liu, Z., Balasubramanian, R., Hoekman, S.K., 2014: Chapter 9: Production of Renewable Solid Fuel Hydrochar from Waste Biomass by Sub- and Supercritical Water Treatment, In *Near-critical and Supercritical Water and their Applications for Biorefineries*, **XVI**, 474 p. (2014), 231-260, Fang, Z., and Xu, C.C. (Eds.): Springer, 2014.

Final Technical Reports

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Hoekman, S.K., Broch, A. L., Liu, X., 2016: Environmental Implications of Higher Ethanol Production and Use in the U.S. Final Report to the American Petroleum Institute (API). Desert Research Institute: Reno, NV.

Broch, A. L., Hoekman, S.K., 2015: Effects of Organometallic Additives on Gasoline Vehicles: Analysis of Existing Literature, Final Report submitted to the Coordinating Research Council (CRC), Report No. E-114: September 2015.

Liu, X., Hoekman, S.K., 2015: Life Cycle Analysis of Co-Formation of Coal Fines with Hydrochar Produced by Twin-Screw Extrusion (TSE) Process, GTI: Supplemental to Final Report, July 2, 2015, Report No. DE-FE0005349.

Hoekman, S.K., Broch, A. L., Robbins, C. M., and Warren, A., 2015: R&D to Prepare and Characterize Robust Coal/Biomass Mixtures for Direct Co-Feeding Into Gasification Systems, GTI: Final Report, April 30, 2015, Report No. DE-FE0005349.

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Jena, U. and Hoekman, S.K. (2014). "Development of commodity bio-oil from algae biomass via low temperature hydrothermal conversion process." Final report to Univ. Georgia Research Foundation, DOE Contract DOE-DE-EE006201, October 2014 (34 pp).

Hoekman, S.K., Jena, U., and Broch, A. (2014). "Two-Step HTC Treatment of Lignocellulosic Feedstock for Conversion into Sugars and High Energy Density Hydrochar." Final report to American Process Inc. (API), July 23, 2014 (20 pp).

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Broch, A., and S.K. Hoekman. (2012) "Transportation Fuel Life Cycle Analysis: A Review of Indirect Land Use Change and Agricultural N_2O Emissions." CRC Final Report No. E-88-2, January 2012. (156 pp)

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Patents Pending:

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Conference papers, proceedings, and presentations

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