Christian Colin Per L'Orange, PhD PMP

CONTACT INFORMATION

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PROFESSIONAL EXPERIENCE

***Associate Director**, Center for Energy Development and Health, Colorado State University, Fort Collins, Colorado USA* **Sept 2015-Present**

***Research Scholar**, Department of Mechanical Engineering, Colorado State University, Fort Collins, Colorado USA* **Dec 2014-Present**

***Research Scholar**, Department of Environmental & Radiological Health Sciences, Colorado State University, Fort Collins, Colorado USA* **July 2014-Dec 2014**

***Postdoctoral Fellow**, Department of Environmental & Radiological Health Sciences, Colorado State University, Fort Collins, Colorado USA* **June 2012-July 2014**

MiLO Ventures L.L.C. **Dec 2011-Present**

Co-Founder, Fort Collins, Colorado USA

MiLO Ventures is a technology development company that was founded in 2011. MiLO Ventures specializes in developing one-off technologies and projects for niche markets. Members of the team collectively bring 21+ years of product development experience. Have development experience with companies ranging from small start-up operations to large international organizations. The team has brought together a unique combination of skill sets with education in electrical and mechanical engineering, including advanced graduate degrees. The team has experience in both fundamental research and practical application with a focus on taking concepts to products.

HIGHLIGHTED GRANTS & CONTRACT

'A Novel, Low-Cost Method for Assessing Personal Aerosol Exposures in Real-Time'

2016-2017; HHS/CDC/NIOSH, PI: ***L'Orange.*** 2U54OH008085-13 ($25,000)

'Citizen-Enabled Aerosol Measurements for Satellites (CEAMS): A Network for High-Resolution Monitoring of PM2.5 and Aerosol Optical Depth.'

2017-2018; NASA, PI: Volckens. NNX17AF94A ($161,000)

'Air Quality Monitoring for the 21st Century: A Crowdsourced, Satellite-Enabled, Low-Cost Sampler'

2017-2018; Colorado Office of Economic Development, PI: Volckens ($125,000)

'A New Paradigm for Workplace Air Sampling and Cost-Effective Exposure Assessment'

2015-2019; CDC/NIOSH, PIs: Volckens, Henry. 1R01OH010662 ($1,994,886)

'Wearable, Low-Cost Air Sampler'

2015-2016; Colorado Office of Economic Development, PI: Volckens ($69,644)

'Cookstove Air Pollution: Emission profiles and subclinical effects of exposure'

2014-2019; NIH/NIEHS, PIs: Volckens, Peel. R01ES023688 ($2,800,124)

'Quantifying the Climate, Air Quality and Health Benefits of Improved Cookstoves: An integrated laboratory, field and modeling study'

2013-2016; U.S. EPA Star Grant, PI: Volckens. RD83543801 ($1,500,000)

'Design, Evaluation, and Validation of a Next-Generation Inhalable Aerosol Sampler'

2012-2016; CDC/NIOSH, PIs: Volckens, Anthony, Sleeth. R01OH010295 ($2,094,398)

'The Commuter Exposure Study: Linking Exposure, Source-Receptor Models, and Health'

2012-2017; NIH/NIEHS (MPI), PIs: Volckens, Peel. R01ES020017 ($2,072,576)

'Development of Standard Protocols for the Testing of Plancha Style Cookstoves and the Evaluation of Cookstove Durability'

2013-2016; United Nationals Foundation, Global Alliance for Clean Cookstoves, PIs, L'Orange, DeFoort ($90,000)

'African Clean Cooking Energy Solutions QA/TS'

2013-2016: World Bank, PIs: Charron

Select Professional Field Experience

Kampala, Uganda, November 2016. Invited lecturer – conducted one week specialty course at Makerere University on laboratory management, emissions characterization, and quantifying personal exposure to particulate matter.

Accra, Ghana, November 2015. ISO Technical Meeting for the development of biomass cookstove standards.

Kampala, Uganda, June 2015. U.S. Environmental Protection Agency funded field study characterizing the emissions emitted from biomass cookstoves.

La Esperanza, Honduras, February 2015. U.S. Environmental Protection Agency funded field study characterizing the emissions emitted from biomass cookstoves.

Kampala, Uganda
Kinshasa Democratic Republic of the Congo
Dakar, Senegal, April 2014. World Bank funded technical expert. Visited three regional testing centers in Africa responsible for designing and testing clean cookstoves in Africa. Reviewed current technical capacity and knowledge as well as providing guidance to local teams on how to improve the scientific and testing methodologies used.

Phnom Penh, Cambodia, March 2013. Attended international conference addressing biomass combustion in the developing world. Presented on current efforts to develop standard testing methodologies for the evaluation biomass cookstove durability.

Addis Ababa & Tigray, Amhara, Oromia, and SNNP regions, Ethiopia, August 2011. Conducted a technical review of current cookstove capacities in Ethiopia including product design, testing facilities, and production capacity. The study included visits to 47 producers, 69 government/NGO/bilateral organizations, meetings with 11 focus groups (a total of 115 participants), and the collection of 15+ emissions samples in homes throughout the country. Testing was conducted both in a local laboratory and in homes.

Lima, Peru, Feb 2011. International conference addressing indoor air pollution in the developing world.

Karnataka, India, Jan 2011. Met with a government representative responsible for product testing and certification. Evaluated durability testing protocol being used by research partner to predict product life and gave feedback for method refinement and improvement. Gathered data on consumer feedback of products currently being used and evaluated durability of designs.

Karnataka, India, July 2008. Responsible for establishing emissions testing facility for research partner, Envirofit International, and gathered user feedback for products currently in the market.

Professional Certifications

Project Management Professional certification - The Project Management Professional (PMP) credential scheme is accredited by the American National Standards Institute (ANSI) against the International Organization for Standardization (ISO) 17024. **January 2016 – Present**

Service

Technical Committee Member - American National Standards Institute Technical Expert Representative on ISO Technical Committee 285 **July 2013 – Present**

Technical Reviewer
Energy for Sustainable Development
Biomass & Bioenergy
Environmental Engineering Science
Journal of the Air & Waste Management Association
International Journal of Environmental Research and Public Health
Energies
Atmospheric Environment

Education

Colorado State University, Fort Collins, Colorado USA

Ph.D., Mechanical Engineering **Summer 2013**

Dissertation: *"The Development of Numerical Tools for Characterizing and Quantifying Biomass Cookstove Impact"*

M.S., Mechanical Engineering **Summer 2009**

Thesis: *"Testing Methodologies for Biomass Cook Stoves and their Effects on Emissions"*

B.S., Mechanical Engineering **Spring 2008**

PUBLICATIONS

Bilsback, K. et al. Closing the Gap between Lab and Field Emissions from Biofuel Cookstoves: The Firepower Sweep Test Protocol. Environmental Science & Technology . Under review.

Garland, C., Delapena, S., Prasad, R., **L'Orange, C.,** Alexander, D., & Johnson, M. (2017). Black carbon cookstove emissions: A field assessment of 19 stove/fuel combinations. Atmospheric Environment, 169, 140-149.

L'Orange, C., Anderson, K., Sleeth, D., Anthony, T., Volckens, J. (2016) Simple, Low-Cost Sampler for Inhalable Aerosol. Annals of Occupational Hygiene. Annals of Occupational Hygiene *(Editors Choice)*

Good, N., Molter, A., Ackerson, C., Bachard, A., Carpenter, T., Clark, M., Fedak, K., Kayne, A., Koehler, K., Moore, B., **L'Orange, C.**, Quinn, C., Ugave, V., Stuart, A., Peel, J., Volckens, J. (2015). The Fort Collins Commuter Study: Impact of route type and transport mode on personal exposure to multiple air pollutants. Journal of Exposure Science & Environmental Epidemiology.

Kodros, J. K., Scott, C. E., Farina, S. C., Lee, Y. H., **L'Orange, C.,** Volckens, J., & Pierce, J. R. (2015). Uncertainties in global aerosols and climate effects due to biofuel emissions. Atmospheric Chemistry and Physics, 15(15), 8577-8596.

L'Orange, C., Leith, D., Volckens, J., DeFoort, M. (2015) A Quantitative Model of Cookstove Variability and Field Performance: Implications for Sample Size. Biomass and Bioenergy

Hawley, B., **L'Orange, C.**, Olsen, B., Marchese, A., Volckens, J. (2014) Oxidative Stress and Aromatic Hydrocarbon Response of Human Bronchial Epithelial Cells Exposed to Petro- or Biodiesel Exhaust Treated with a Diesel Particulate Filter. Toxicological Sciences.

Cate, D., Nanthasurasak, P., Riwkulkajorn, P., **L'Orange, C.**, Henry, C., Volckens, J. (2013) Rapid Detection of Transition Metals in Welding Fumes Using Paper-Based Analytical Devices. Annals of Occupational Hygiene.

L'Orange, C., DeFoort, M., Volckens, J. (2012) Influence of Stove Type and Cooking Pot Temperature on Particulate Matter Emissions from Biomass Cook Stoves. Energy for Sustainable Development

ISSUED PATENTS

Patent number 61/261,694. "Combustion Chamber for Charcoal Cookstoves." Technology #10048