**KAI-CHUNG CHENG**

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**EDUCATION**

**Ph.D.**, Environmental Engineering and Science, Stanford University, Stanford, CA, USA January 2011

Dissertation: *Characterizing and modeling close-proximity exposure to an air pollution source*

*in naturally ventilated residences*

**M.S.**, Environmental Engineering, National Chiao Tung University, Hsinchu, Taiwan June 2002

Thesis: *Simultaneous personal sampling of vapor- and aerosol-phase TDI with a triple filter system*

**B.S.**, Environmental Science, Tunghai University, Taichung, Taiwan June 2000

**RESEARCH INTERESTS**

* **Monitoring**
* Sampling, emission characterization, and exposure assessment of aerosols in the built environment.
* Wireless low-cost sensing methods for location and exposure mapping
* **Modeling**
* Spatiotemporal variability of near-source exposure; relationships between exposure, health, and energy.

**POSITIONS**

2023-present

**Assistant Professor** (San Diego State University)

**Research Engineer** (Stanford University)

2014-2023

**Research Scientist (**CaliforniaDepartment of Public Health)

2013-2014

**Postdoctoral Researcher** (Stanford University)

2011-2013

**PEER-REVIEWED PUBLICATIONS**

1. **Cheng, K.C**., Ott, W.R., Wallace, L.A., Zhu, Y., Hildemann, L.M., 2021. PM2.5 exposure close to marijuana smoking and vaping: a case study in residential indoor and outdoor settings. *Science of the Total Environment* (accepted).
2. Wallace, L.A., Ott, W.R., **Cheng, K.C.**, Zhao, T, Hildemann, L.M., 2021. Method for estimating the volatility of aerosols using the Piezobalance: examples from vaping e-cigarette and marijuana liquids. Atmospheric Environment (accepted).
3. Ott, W.R., Zhao, T., **Cheng, K.C.**, Wallace, L.A., Hildemann, L.M., 2021. Measuring indoor fine particle concentrations, emission rates, and decay rates from cannabis use in a residence. *Atmospheric Environment: X* (accepted)*.*
4. Wallace, L.A., Ott, W.R., Zhao, T., **Cheng, K.C.**, Hildemann, L.M., 2020. Secondhand exposure from vaping marijuana: concentrations, emissions, and exposures determined using both research-grade and low-cost monitors. *Atmospheric Environment:X.* DOI:10.1016/j.aeaoa.2020.100093
5. **Cheng, K.C.**, Zheng, D., Hildemann, L.M., 2020. Impact of fan mixing on air pollutant exposure near indoor sources: an analytical model to connect proximity effect with energy. *Building and Environment*.

DOI: 10.1016/j.buildenv.2020.107185

1. Zhao, T., **Cheng, K.C.**, Ott, W.R., Wallace, L.A., Hildemann, L.M., 2020. Characteristics of secondhand cannabis smoke from common smoking methods: Calibration factor, emission rate, and particle removal rate. *Atmospheric Environment*.

DOI: 10.1016/j.atmosenv.2020.117731

1. **Cheng, K.C.**, Tseng, C.H., Hildemann, L.M., 2019. Using indoor positioning and mobile sensing for spatial exposure and environmental characterizations: Pilot Demonstration of PM2.5 Mapping. *Environmental Science & Technology Letters*.

DOI: 10.1021/acs.estlett.8b00694

1. Park, H.K., **Cheng, K.C.**, Tetteh, A.O., Hildemann, L.M., Nadeau, K.C., 2017. Effectiveness of air purifier on health outcomes and indoor particles in homes of children with allergic diseases in Fresno: a pilot study. *Journal of Asthma*, 54, 341-346.
2. **Cheng, K.C.**, Park, H.K., Tetteh, A.O., Zheng, D., Ouellette, N.T., Nadeau, K.C., Hildemann, L.M., 2016. Mixing and sink effects of air purifiers on indoor PM2.5 concentrations: a pilot study of 8 residential homes in Fresno, California. *Aerosol Science and Technology*, 50, 835-845.
3. **Cheng, K.C.**, Zheng, D., Tetteh, A.O., Park, H.K., Nadeau, K.C., Hildemann, L.M., 2016. Personal exposure to airborne particulate matter due to residential dryer lint cleaning. *Building and Environment*, 98, 145-149.
4. Klepeis, N.E., Dhaliwal, N., Hayward, G., Acevedo-Bolton, V., Ott, W.R., Read, N., Layton, S., Jiang, R.T., **Cheng, K.C.**, Hildemann, L.M., Repace, J.L., Taylor, S., Ong, S.L., Buchting, F.O., Lee, J.P., Moore, R.S., 2016. Measuring indoor air quality and engaging California Indian stakeholders at the Win-River Resort and Casino: collaborative smoke-free policy development *International Journal of Environmental Research and Public Health*, 13, 143.
5. Dacunto, P.J., Klepeis, N.E., **Cheng, K.C.**, Acevedo-Bolton, V., Jiang, R.T., Repace, J.L., Ott, W.R., Hildemann, L.M., 2015. Determining PM2.5 calibration curves for a low-cost particle monitor: common indoor residential aerosols. *Environmental Science: Processes & Impacts*, 17, 1959-1966.
6. **Cheng, K.C.**, Acevedo-Bolton, V., Jiang, R.T., Klepeis, N.E., Ott, W.R., Kitanidis, P.K., and Hildemann, L.M., 2014. Stochastic modeling of short-term exposure close to an air pollution source in a naturally ventilated room: An autocorrelated random walk method. *Journal of Exposure Science and Environmental Epidemiology*, 24, 311-318.
7. Ott, W.R., Acevedo-Bolton, V., **Cheng, K.C.**, Jiang, R.T., Klepeis, N.E., Hildemann, L.M., 2014. Outdoor fine and ultrafine particle measurements at six bus stops with smoking on two California arterial highways -- Results of a pilot study. *Journal of the Air and Waste Management Association*, 64, 47-60.
8. Acevedo-Bolton, V., Ott, W.R., **Cheng, K.C.**, Jiang, R.T., Klepeis N.E., Hildemann L.M., 2014. Controlled experiments measuring personal exposure to PM2.5 in close proximity to cigarette smoking. *Indoor Air*, 24, 199-212.
9. Dacunto, P.J., **Cheng, K.C.**, Acevedo-Bolton, V., Jiang, R.T., Klepeis, N.E., Repace, J.L., Ott, W.R., Hildemann, L.M., 2014. Identifying and quantifying secondhand smoke in source and receptor rooms: Logistic regression and chemical mass balance approaches. *Indoor Air*, 24, 59-70.
10. Dacunto, P.J., **Cheng, K.C.**, Acevedo-Bolton, V., Klepeis, N.E., Repace, J.L., Ott, W.R., Hildemann, L.M., 2013. Identifying and quantifying secondhand smoke in multiunit homes with tobacco smoke odor complaints. *Atmospheric Environment*, 71, 399-407.
11. Dacunto, P.J., **Cheng, K.C.**, Acevedo-Bolton, V., Jiang, R.T., Klepeis, N.E., Repace, J.L., Ott, W.R., Hildemann, L.M., 2013. Real-time particle monitor calibration factors and PM2.5 emission factors for multiple indoor sources. *Environmental Science Processes & Impacts*, 15, 1511-1519.
12. Acevedo-Bolton, V., **Cheng, K.C.**, Jiang, R.T., Ott, W.R., Klepeis N.E., Hildemann L.M., 2012. Measurement of the proximity effect for indoor air pollutant sources in two homes. *Journal of Environmental Monitoring*, 14, 94-104.
13. Jiang, R.T., Acevedo-Bolton, V., **Cheng, K.C.**, Klepeis N.E., Ott, W.R., and Hildemann L.M., 2011. Determination of response of real-time SidePak AM510 monitor to secondhand smoke, other common indoor aerosols, and outdoor aerosol. *Journal of Environmental Monitoring*, 13, 1695-1702.
14. **Cheng, K.C.**, Acevedo-Bolton, V., Jiang, R.T., Klepeis, N.E., Ott, W.R., Fringer, O.B., and Hildemann, L.M., 2011. Modeling exposure close to air pollution sources in naturally ventilated residences: Association of turbulent diffusion coefficient with air change rate. *Environmental Science and Technology*, 45, 4016-4022.
15. Repace, J.L., Jiang, R.T., Acevedo-Bolton, V, **Cheng, K.C.**, Klepeis, N.E., Ott, W.R., and Hildemann, L.M., 2011. Fine particle air pollution and secondhand smoke exposures and risks inside 66 US casinos. *Environmental Research*, 111, 473-484.
16. Jiang, R.T., **Cheng, K.C.**, Acevedo-Bolton, V., Klepeis, N.E., Repace, J.L., Ott, W.R., and Hildemann, L.M., 2011. Measurement of fine particles and smoking activity in a statewide survey of 36 California Indian Casinos. *Journal of Exposure Science and Environmental Epidemiology*, 21, 31-41.
17. **Cheng, K.C.**, Goebes, M.D., and Hildemann, L.M., 2010. Association of size-resolved airborne particles with foot traffic inside a carpeted hallway. *Atmospheric Environment*, 44, 2062-2066.
18. **Cheng, K.C.**, Acevedo-Bolton, V., Jiang, R.T., Klepeis, N.E., Ott, W.R., and Hildemann, L.M., 2010. Model-based reconstruction of the time response of electrochemical air pollutant monitors to rapidly varying concentrations. *Journal of Environmental Monitoring*, 12, 846-853.

**PRESENTATIONS**

* “*Measuring the spatial variation of secondhand cannabis aerosols in residences*”

at the International Society of Exposure Science, 2020 (virtual).

* “*Modeling and mapping the proximity effect on air pollutant exposure in buildings*”

at the Department of Environmental and Occupational Health Sciences, University of Washington, Seattle, WA, 2019.

* “*Modeling exposure close to air pollution sources in mechanically ventilated rooms: Association of turbulent diffusion coefficient with ventilation power input*”

at the 36th American Association for Aerosol Research (AAAR) conference, Raleigh, NC, 2017.

* “*Personal exposure to airborne particulate matter due to residential dryer lint cleaning*”

at the 36th American Association for Aerosol Research (AAAR) conference, Raleigh, NC, 2017.

* “*Mixing and sink effects of air purifiers on indoor PM2.5 concentrations: a pilot study of 8 residential homes in Fresno, California*”

at the 35th American Association for Aerosol Research (AAAR) conference, Portland, OR, 2016.

* “*From the effect of source proximity to the sustainable built environment*”

at the Department of Mechanical and Automation Engineering at the Chinese University of Hong Kong, Hong Kong, 2016.

**AIR QUALITY COURSEWORK**

* Advanced Aerosol Measurement
* Particulate Control Equipment
* Gaseous Pollutant Control
* Air Pollution Physics and Chemistry
* Air Quality Management
* Atmospheric Aerosols

**SOME ACTIVITIES**

* Reviewer of *Atmospheric Environment*, *Aerosol Science and Technology, Journal of Exposure Science and Environmental Epidemiology*, *Indoor Air*, and *Environmental Science and Technology* 2011-present
* Guardian of the American Society for the Prevention of Cruelty to Animals (ASPCA) 2010-present
* Committee member of the Environmental Engineering and Science seminar series at Stanford 2008-2009
* Soldier of the Republic of China Army in Taiwan 2002-2004
* First chair trumpet player at the Senior High School of National Taiwan Normal University 1993-1996