

Brandon Emil Boor

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Current Position

Purdue University West Lafayette, Indiana (Aug. 2015-Present)
Assistant Professor of Civil Engineering (Architectural Engineering area) and Environmental & Ecological Engineering (by courtesy)

Research Areas & Interests: Indoor air quality, HVAC filtration, human exposure assessment, airborne nanoparticles, bioaerosols (fungi, bacteria, pollen, allergens), combustion aerosols & wood smoke, particle adhesion & resuspension, aerosol measurement techniques, air quality in occupational workplaces, early-life/infant exposures, new particle formation, urban air pollution, low-cost air quality monitoring, building ventilation, health effects of air pollution, and fate & transport of VOCs/SVOCs.

Education

The University of Texas at Austin Austin, Texas (2011-2015)
• Ph.D., Civil Engineering, August 2015
• Dissertation: *Studies on Particle Resuspension, Infant Exposure & the Sleep Microenvironment*
• Dissertation Advisors: Atila Novoselac & Ying Xu

The University of Texas at Austin Austin, Texas (2009-2010)
• M.S.E., Environmental & Water Resources Engineering, December 2010
• Thesis: *Monolayer & Multilayer Particle Resuspension from Indoor Surfaces: Literature Review & Experimental Methodology*

York College of Pennsylvania York, Pennsylvania (2005-2009)
• B.S., Mechanical Engineering, *Summa Cum Laude*, August 2009

Awards & Honors

- **ES&T Cover Article, Volume 52, Issue 1** (Wu et al. 2018)
- **Most Read Paper in ES&T Letters, March-April 2015** (Boor et al. 2015)
- **American Chemical Society Editors' Choice for ES&T Letters Paper** (Boor et al. 2015)
- **U.S. Environmental Protection Agency: Science to Achieve Results (STAR) Fellowship** (2014-2015)
- **Best Student Paper Award** (one of top 5 among 250 papers) at the Indoor Air 2014 Conference for paper entitled: *Infant Crawling-Induced Resuspension of Settled Floor Dust*
- **U.S. Department of State Fulbright Program: Fulbright-CIMO Doctoral Grant to Finland**, Co-Sponsored by the Centre for International Mobility (CIMO) (2013-2014)
- **American-Scandinavian Foundation: Fellowship for Dissertation Research in Finland**, Supported by the Scandinavian Seminar & Finnish Funds (2013-2014)
- **National Science Foundation: Nordic Research Opportunity Supplemental Grant to Finland**, Co-Sponsored by the Finnish Funding Agency for Technology & Innovation (Tekes) (2011)
- **National Science Foundation: Graduate Research Fellowship** (2010-2013)
- **National Science Foundation: Integrative Graduate Education & Research Traineeship (IGERT)** in Indoor Environmental Science & Engineering (Trainee: 2010, Affiliate: 2010-2012)
- **American Society of Heating, Refrigerating & Air Conditioning Engineers: Graduate Student Grant-In-Aid** (2010-2011); Henry Adams Scholarship (2007-2008)
- **The University of Texas at Austin: Graduate Dean's Prestigious Fellowship Supplement** (2014-2015); Walter L. & Reta Mae Moore Graduate Fellowship in Civil Engineering (2013-2014); Kolodzey Travel

- Grant (2012); Thrust 2000 - Hagedorn Endowed Graduate Fellowship in Engineering (2009-2013); David Bruton, Jr. Graduate School Fellowship (2010-2013)
- **York College of Pennsylvania:** Sardari & Saroj Khanna Award in Physics (2009); 1st Place Honors in the 2009 York College Student Scholars Week Poster Competition for the Physical Sciences Department; Academic Senate Scholarship (2007-2008); Student Association Service Scholarship (2007-2008); Alpha Chi National College Honor Society (2007-2009); Outstanding Freshman Award (2006); Dean's Academic Scholarship (2005-2009)
 - **Society of American Military Engineers:** Sundt Scholarship (2005-2009)

Professional Appointments

Academic & Research Affiliations at Purdue University

Ray W. Herrick Laboratories, School of Mechanical Engineering	(Aug. 2015-Present)
Center for High Performance Buildings (CHPB)	(Aug. 2015-Present)
Ecological Sciences & Engineering (ESE) Interdisciplinary Graduate Program	(Jan. 2016-Present)
Engineering Projects in Community Service (EPICS)	(Aug. 2016-Present)
Purdue Climate Change Research Center (PCCRC)	(Apr. 2017-Present)

University of Helsinki Division of Atmospheric Sciences & Finnish Institute of Occupational Health

Visiting Researcher, Urban & Indoor Aerosols Group Helsinki, Finland (Sept. 2013-Aug. 2015)

The University of Texas at Austin

Austin, Texas (Aug. 2009-Aug. 2015)

EPA STAR & NSF Graduate Research Fellow, Building Energy & Environments Group (final 2 yrs in Finland)

University of Jordan Department of Physics

Amman, Jordan (May-June 2014)

Visiting Researcher

VTT Technical Research Centre of Finland

Espoo, Finland (Aug.-Dec. 2011)

NSF Nordic Research Opportunity Fellow, Indoor Spaces & Environments Group

National Institute of Standards & Technology (NIST)

Gaithersburg, Maryland (Jan. 2008-Jan. 2009)

Engineering Co-op Student, Energy & Environment Division, Indoor Air Quality & Ventilation Group

BAE Systems, Inc.

York, Pennsylvania (May-Aug. 2007)

Engineering Co-op Student, Ground Systems Division

Johns Hopkins University Applied Physics Laboratory

Laurel, Maryland (Sept. 2004-May 2005)

Engineering Intern, Aerospace Research & Development

Peer-Reviewed Journal Publications

14. Hyytiäinen, H., Jayaprakash, B., Kirjavainen, P., Saari, S.E., Holopainen, R., Keskinen, J., Hämeri, K., Hyvärinen, A., **Boor, B.E.**, and Täubel, M. (2018). Crawling-Induced Floor Dust Resuspension Affects the Microbiota of the Infant Breathing Zone. Provisionally Accepted for Publication in *Microbiome*.
13. Wu, T.* , Täubel, M., Holopainen, R., Viitanen, A.K., Vainiotalo, S., Tuomi, T., Keskinen, J., Hyvärinen, A., Hämeri, K., Saari, S.E., and **Boor, B.E.** (2018). Infant and Adult Inhalation Exposure to Resuspended Biological Particulate Matter. *Environmental Science & Technology*, 52(1):237-247 (**Cover Article**).
12. **Boor, B.E.**, Spilak, M.P., Laverge, J., Novoselac, A., and Xu, Y. (2017). Human Exposure to Indoor Air Pollutants in Sleep Microenvironments: A Literature Review. *Building & Environment*, 125:528-555.
11. Teimouri, M., Ra, K., Conkling, E.N., **Boor, B.E.**, Nuruddin, M., Howarter, J.A., Youngblood, J.P., Kobos, L.M., Shannahan, J.H., Jafvert, C.T., and Whelton, A.J. (2017). Worksite Chemical Air Emissions

- and Worker Exposure during Sanitary Sewer and Stormwater Pipe Rehabilitation using Cured-in-Place-Pipe (CIPP). *Environmental Science & Technology Letters*, 4(8):325-333.
10. Hussein, T., **Boor, B.E.**, Nogueira dos Santos, V., Kangasluoma, J., Petäjä, T., and Lihavainen, H. (2017). Mobile Aerosol Measurement in the Eastern Mediterranean: A Utilization of Portable Instruments. *Aerosol & Air Quality Research*, 17:1775-1786.
 9. Cao, G., Liu, S., **Boor, B.E.**, and Novoselac, A. (2017). Dynamic Interaction of a Downward Plane and a Cough Jet With Respect to Particle Transmission: An Analytical and Experimental Study. *Journal of Occupational & Environmental Hygiene*, 14(8):620-633.
 8. Cao, G., Liu, S., **Boor, B.E.**, and Novoselac, A. (2015). Characterizing the Dynamic Interactions and Exposure Implications of a Particle-Laden Cough Jet with Different Room Airflow Regimes Produced by Low and High Momentum Jets. *Aerosol & Air Quality Research*, 15:1955-1966.
 7. **Boor, B.E.**, Liang, Y., Crain, N.E., Järnström, H., Novoselac, A., and Xu, Y. (2015). Identification of Phthalate and Alternative Plasticizers, Flame Retardants, and Unreacted Isocyanates in Infant Crib Mattress Covers and Foam. *Environmental Science & Technology Letters*, 2(4):89-94 (ACS Editors' Choice).
 6. Mølgaard, B., Viitanen, A.K., Kangas, A., Huhtiniemi, M., Larsen, S.T., Vanhala, E., Hussein, T., **Boor, B.E.**, Hämeri, K., and Koivisto, A.J. (2015). Exposure to Airborne Particles and Volatile Organic Compounds from Polyurethane Molding, Spray Painting, Lacquering, and Gluing in a Workshop. *International Journal of Environmental Research & Public Health*, 12(4):3756-3773.
 5. **Boor, B.E.**, Spilak, M.P., Corsi, R.L., and Novoselac, A. (2015). Characterizing Particle Resuspension from Mattresses: Chamber Study. *Indoor Air*, 25(4):441-456.
 4. **Boor, B.E.**, Järnström, H., Novoselac, A., and Xu, Y. (2014). Infant Exposure to Emissions of Volatile Organic Compounds from Crib Mattresses. *Environmental Science & Technology*, 48(6):3541-3549.
 3. Spilak, M.P., **Boor, B.E.**, Novoselac, A., and Corsi, R.L. (2014). Impact of Bedding Arrangements, Pillows, and Blankets on Particle Resuspension in the Sleep Microenvironment. *Building & Environment*, 81:60-68.
 2. **Boor, B.E.**, Siegel, J.A., and Novoselac, A. (2013). Wind Tunnel Study on Aerodynamic Particle Resuspension from Monolayer and Multilayer Deposits on Linoleum Flooring and Galvanized Sheet Metal. *Aerosol Science & Technology*, 47(8):848-857.
 1. **Boor, B.E.**, Siegel, J.A., and Novoselac, A. (2013). Monolayer and Multilayer Particle Deposits on Hard Surfaces: Literature Review and Implications for Particle Resuspension in the Indoor Environment. *Aerosol Science & Technology*, 47(8):831-847.

*designates graduate student advisee

Invited Lectures

9. **Boor, B.E.** (2017). Nandi Clean Kitchen Study: Evaluating Indoor Air Pollution and Natural Ventilation of Traditional and Community-Developed Modified Kitchens in Nandi, Kenya. *Purdue Center for Global Food Security (CGFS)-I2D Lab Seed Grant Seminar*, West Lafayette, Indiana, April 2017.
8. **Boor, B.E.** (2017). The Infant Pig-Pen Effect: Characterizing Early-Life Exposure to Microbes in Resuspended Dust. *Purdue University School of Health Sciences Seminar*, West Lafayette, Indiana, February 2017.
7. Whelton, A.J., **Boor, B.E.**, and Howarter, J. (2017). Understanding Chemical Exposure Risks from Cured-in-Place-Pipe (CIPP) Technology Used for Water Pipe Rehabilitation. *National Institute of Occupational Safety and Health (NIOSH) Seminar*, Morgantown, West Virginia, February 2017.
6. **Boor, B.E.** (2016). Surrounded by a Cloud of Dust: Particle Resuspension in Indoor Environments. *Workshop on the Health Risks of Indoor Exposure to Particulate Matter, The National Academies of Sciences, Engineering, and Medicine*, Washington, D.C., February 2016 (telecast to over 400 viewers). Video available on YouTube: <https://www.youtube.com/watch?v=e15YQzkYR9A>.

5. **Boor, B.E.** (2015). A Breath of Indoor Air: New Directions on Infant Exposure and Particle Resuspension. *Purdue University Lyles School of Civil Engineering Seminar*, West Lafayette, Indiana, March 2015.
4. **Boor, B.E.** (2015). Particle Resuspension in Indoor Environments: Overview and New Insights. *University of Helsinki Division of Atmospheric Sciences Seminar*, Helsinki, Finland, February 2015.
3. **Boor, B.E.** (2014). From Sleeping to Crawling: Studies on Human Exposure. *National Institute for Health & Welfare Department of Environmental Health Research Seminar*, Kuopio, Finland, October 2014.
2. **Boor, B.E.** (2014). Exposure to Indoor Air Pollutants while Sleeping. *Aalto University Department of Energy Technology Research Seminar*, Espoo, Finland, May 2014.
1. **Boor, B.E.** (2014). Chemical Emissions from Infant Crib Mattresses. "Healthy Beds" Workshop with the Finnish Allergy & Asthma Federation & VTT Expert Services Ltd., Espoo, Finland, May 2014.

Refereed Conference Proceedings & Presentations

29. Wu, T.* and **Boor, B.E.** (2018). Real-Time Monitoring of Microbes and Mold in Buildings. *Indoor Air Quality Association (IAQA) 21st Annual Meeting*, Chicago, IL, January 2018 (Paper).
28. Slade, J.H., Bui, A., Cook, R., Bondy, A., Desrochers, S.J., Harvey, R.M., Ditto, J., Gentner, D., Pratt, K., Ault, A., Griffin, R., **Boor, B.E.**, Petrucci, G., and Shepson, P.B. (2017). Diel Variations in the Phase State of Atmospheric Aerosol in a Mixed Forest: The Role of Molecular Composition and Liquid Water. *American Association for Aerosol Research (AAAR) 36th Annual Conference*, Raleigh, NC, October 2017 (Presentation).
27. Hyytiäinen, H., Jayaprakash, B., Holopainen, R., Viitanen, A.K., Vainiotalo, S., Hämeri, K., Hyvärinen, A., **Boor, B.E.**, and Täubel, M. (2017). Crawling-Induced Floor Dust Resuspension Affects Infant Microbial Exposure. *29th Conference of the International Society for Environmental Epidemiology (ISEE)*, Sydney, Australia, September 2017 (Presentation).
26. Täubel, M., Hyytiäinen, H., Saari, S., Jayaprakash, B., Hyvärinen, A., Holopainen, R., Viitanen, A.K., Vainiotalo, S., Tuomi, T., Keskinen, J., Hämeri, K., and **Boor, B.E.** (2017). Resuspension of Microbes from Carpet Flooring and Implications for Human Exposure. *American Society for Microbiology (ASM) Microbe 2017 Conference*, New Orleans, LA, June 2017 (Presentation).
25. Teimouri, M., Ra, K., Conkling, E.N., **Boor, B.E.**, Nuruddin, M., Howarter, J.A., Youngblood, J.P., Kobos, L.M., Shannahan, J.H., Jafvert, C.T., and Whelton, A.J. (2017). Water Pipe Repair Can Cause Toxic Air. *2017 Association of Environmental Engineering and Science Professors (AEESP) Research & Education Conference*, Ann Arbor, MI, June 2017 (Presentation).
24. Teimouri, M., Conkling, E.N., Ra, K., Zyaykina, N., **Boor, B.E.**, Howarter, J.A., and Whelton, A.J. (2017). Cured in Place Pipe: Results from a RAPID Response Study to Investigate Chemical Emissions into the Workspace and Environment. *109th Indiana Section American Water Works Association (AWWA) Annual Conference*, Indianapolis, Indiana, January 2017 (Presentation).
23. Slade, J.H., Shepson, P.B., Desrochers, S.J., Harvey, R.M., Wallace, W., Griffin, R.J., Bui, A., Kavassalis, S., Shi, Q., Murphy, J.G., Cook, R., Connor, M., Ault, A.P., Pratt, K., Alwe, H.D., Millet, D.B., Bertman, S.B., Stevens, P.S., Wennberg, P.O., **Boor, B.E.**, and Petrucci, G. (2016). The Influence of Monoterpene and Isoprene Nitrates on the Chemistry and Phase State of Secondary Organic Aerosol in a Low-NO_x Mixed Deciduous/Coniferous Forest. *American Geophysical Union (AGU) 2016 Fall Meeting*, San Francisco, CA, December 2016 (Presentation).
22. Wu, T.* and **Boor, B.E.** (2016). Real-Time Measurements of Fluorescent Biological Aerosol Particles in the Infant Near-Floor Microenvironment in a Child Development Laboratory School. *American Association for Aerosol Research (AAAR) 35th Annual Conference*, Portland, OR, October 2016 (Presentation).
21. Täubel, M., Saari, S., Hyvärinen, A., Holopainen, R., Viitanen, A.K., Vainiotalo, S., Tuomi, T., Keskinen, J., Hämeri, K., and **Boor, B.E.** (2016). Microbiota of Floor Dust and Human Exposure Implications of

- Resuspension Scenarios. *ISME 16: 16th International Symposium on Microbial Ecology*, Montreal, Canada, August 2016 (Presentation).
20. Alraddadi, O., Leuner, H., **Boor, B.E.**, Hutzler, W., and Dana, M. (2016). Air Cleaning Performance of a Biowall for Residential Applications. *2016 Purdue Herrick Conference*, West Lafayette, IN, July 2016 (Paper).
 19. **Boor, B.E.**, Täubel, M., Holopainen, R., Viitanen, A.K., Vainiotalo, S., Tuomi, T., Keskinen, J., Hyvärinen, A., Hämeri, K., and Saari, S. (2016). Resuspension of Fluorescent Biological Aerosol Particles from Carpeted Flooring. *Indoor Air 2016: 14th International Conference on Indoor Air Quality and Climate*, Ghent, Belgium, July 2016 (Paper).
 18. **Boor, B.E.**, Holopainen, R., Täubel, M., Viitanen, A.K., Koivisto, A.J., Vainiotalo, S., Salmi, K., Tuomi, T., Hyvärinen, A., Hämeri, K., Novoselac, A., and Xu, Y. (2016). Infant Crawling-Induced Particle Resuspension: Size-Resolved Resuspension Rates Derived from a Three-Zone Model. *Indoor Air 2016: 14th International Conference on Indoor Air Quality and Climate*, Ghent, Belgium, July 2016 (Paper).
 17. Täubel, M., Saari, S., Hyvärinen, A., Holopainen, R., Viitanen, A.K., Vainiotalo, S., Tuomi, T., Keskinen, J., Hämeri, K., and **Boor, B.E.** (2016). Resuspension of Microbes in Floor Dust and Implications for Human Exposure. *Indoor Air 2016: 14th International Conference on Indoor Air Quality and Climate*, Ghent, Belgium, July 2016 (Paper).
 16. Tian, Y., Ferro, A.R., and **Boor, B.E.** (2016). Stirring Up House Dust: A Review of Recent Experimental Studies on Human-Induced Particle Resuspension from Flooring, Clothing, and Upholstery. *DUST 2016: 2nd International Conference on Atmospheric Dust*, Taranto, Italy, June 2016 (Presentation).
 15. **Boor, B.E.**, Nogueira dos Santos, V., Abdullah, H., and Hussein, T. (2015). Mobile Measurements of 10 nm to 10 μ m Particles and Black Carbon in Amman, Jordan. *American Association for Aerosol Research (AAAR) 34th Annual Conference*, Minneapolis, MN, October 2015 (Presentation).
 14. Kangas, A., Viitanen, A.-K., Huhtiniemi, M., Koivisto, A.J., Vanhala, E., Fonseca, A.S., Mølgaard, B., **Boor, B.E.**, Hussein, T., and Hämeri, K. (2015). Comparison of Nanosized Particles and Gaseous Compounds in Different Work Environments. *SENN 2015 - International Congress on Safety of Engineered Nanoparticles and Nanotechnologies*, Helsinki, Finland, April 2015 (Paper).
 13. Hussein, T., Nogueira dos Santos, V., and **Boor, B.E.** (2015). Particle Number Size Distributions in Jordan Derived from Portable Instruments in a Mobile Setup. *Physics Days 2015 - The 49th Annual Meeting of the Finnish Physical Society*, Helsinki, Finland, March 2015 (Presentation).
 12. **Boor, B.E.**, Holopainen, R., Viitanen, A.K., Koivisto, A.J., Täubel, M., Vainiotalo, S., Salmi, K., Tuomi, T., Hyvärinen, A., Hämeri, K., Novoselac, A., and Xu, Y. (2015). Infant Exposure to Resuspended Particles from Carpeted Flooring: Experimental Chamber Study with a Simplified Mechanical Crawling Infant. *Sisäilmastoseminaari 2015 - Finnish Indoor Climate Conference*, Helsinki, Finland, March 2015 (Paper).
 11. Viitanen, A.-K., Kangas, A., Huhtiniemi, M., Vanhala, E., Fonseca, A.S., Mølgaard, B., **Boor, B.E.**, Hussein, T., Hämeri, K., and Koivisto, A.J. (2015). Ultrafine Particles and Gaseous Compounds in Various Work Environments. *Sisäilmastoseminaari 2015 - Finnish Indoor Climate Conference*, Helsinki, Finland, March 2015 (Paper).
 10. Viitanen, A.-K., Kangas, A., Huhtiniemi, M., Peräkylä, O., Lehtipalo, K., **Boor, B.E.**, Maragkidou, A., Hämeri, K., and Koivisto, A.J. (2014). Measurement of Particles from 1 nm in a Naturally Ventilated Shop. *2014 International Aerosol Conference*, Bexco, Busan, Korea, August 2014 (Presentation).
 9. **Boor, B.E.**, Koivisto, A.J., Hämeri, K., Novoselac, A., and Xu, Y. (2014). Infant Crawling-Induced Resuspension of Settled Floor Dust. *Indoor Air 2014: 13th International Conference on Indoor Air Quality and Climate*, Hong Kong, July 2014 (Paper).
 8. Liu, S., Cao, G., **Boor, B.E.**, and Novoselac, A. (2014). A Protected Occupied Zone Ventilation System to Prevent the Transmission of Coughed Particles. *Indoor Air 2014: 13th International Conference on Indoor Air Quality and Climate*, Hong Kong, July 2014 (Paper).
 7. **Boor, B.E.**, Liang, Y., Crain, N.E., Järnström, H., Novoselac, A., and Xu, Y. (2014). New and Used Crib Mattresses as a Source of Volatile Organic Compounds, Phthalate and Alternative Plasticizers, and

- Other Chemical Species in the Infant Sleep Microenvironment. *Indoor Air 2014: 13th International Conference on Indoor Air Quality and Climate*, Hong Kong, July 2014 (Paper).
6. **Boor, B.E.**, Spilak, M.P., Corsi, R.L., and Novoselac, A. (2012). Inhalation Exposure to Resuspended Particles in the Sleeping Microenvironment: Chamber Study. *International Society of Exposure Science (ISES) 22nd Annual Conference*, Seattle, WA, October 2012 (Presentation).
 5. **Boor, B.E.**, Järnström, H., Xu, Y., and Novoselac, A. (2012). Infant Sleeping Microenvironment: Infant Thermal Plume and Inhalation Exposure to Volatile Organic Compounds Originating in a Crib Mattress. *International Society of Exposure Science (ISES) 22nd Annual Conference*, Seattle, WA, October 2012 (Presentation).
 4. **Boor, B.E.**, Järnström, H., Xu, Y., and Novoselac, A. (2012). Identification of VOCs, Phthalates, and Isocyanates in Crib Mattresses. *Healthy Buildings 2012*, Brisbane, Australia, July 2012 (Paper).
 3. **Boor, B.E.**, Novoselac, A., and Corsi, R.L. (2011). Inhalation Exposure to Brominated Flame Retardants in the Sleeping Microenvironment: Preliminary Modeling and Results. *Indoor Air 2011: 12th International Conference on Indoor Air Quality and Climate*, Austin, TX, June 2011 (Paper).
 2. **Boor, B.E.**, Siegel, J.A., and Novoselac, A. (2011). Development of an Experimental Methodology to Determine Monolayer and Multilayer Particle Resuspension from Indoor Surfaces. *2011 American Society of Heating, Refrigerating & Air Conditioning Engineers (ASHRAE) Winter Conference*, Las Vegas, NV, February 2011 (Paper - *ASHRAE Transactions*, 117(1):434-441).
 1. **Boor, B.E.**, Siegel, J.A., and Novoselac, A. (2010). Experimental Methodology to Determine Absolute Particle Resuspension Fractions for Indoor Surfaces. *American Association for Aerosol Research (AAAR) 29th Annual Conference*, Portland, OR, October 2010 (Presentation).
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Conference Workshops & Sessions

2. **Boor, B.E.**, Tovey, E., Täubel, M., Spilak, M.P., Laverge, J., and Corsi, R.L. (2014). Sleep Microenvironments for Infants and Adults: Pollutant Exposure. Workshop at *Indoor Air 2014: 13th International Conference on Indoor Air Quality and Climate*, Hong Kong, July 2014.
1. **Boor, B.E.**, Laverge, J., Spilak, M.P., Bornehag, C.-G., and Corsi, R.L. (2012). Inhaling while Dreaming: Human Exposure to Pollutants while Sleeping. Workshop at *Healthy Buildings 2012*, Brisbane, Australia, July 2012.

Editorials & Blog Posts

1. Whelton, A.J., Shannahan, J., **Boor, B.E.**, Howarter, J.A., Youngblood, J.P., and Jafvert, C.T. (2017). Cured-in-Place-Pipe (CIPP): Inhalation and Dermal Exposure Risks Associated with Sanitary Sewer, Storm Sewer, and Drinking Water Pipe Repairs. *National Institute of Occupational Safety and Health (NIOSH) Science Blog Post*, September 2017.

Teaching

- CE 597 / EEE 595: Indoor Air Quality: Spring 2018 (13 students), Spring 2017 (10 students), Spring 2016 (22 students)
- CE 311: Architectural Engineering: Fall 2017 (24 students), Fall 2016 (31 students)
- Engineering Projects in Community Service, EPICS 065: Global Air Quality Trekkers: Spring 2018 (24 students), Fall 2017 (17 students), Spring 2017 (12 students), Fall 2016 (14 students)
- Study Abroad, SA 10521: GAQT Nandi Clean Kitchen Study to Eldoret, Kenya: Winter Break 2016-2017 (4 students)

Graduate Student Mentoring

- **Primary Advisor - Ph.D. Students:** Tianren Wu (CE, Aug. 2016-Present)
- **Primary Advisor - M.S. Thesis Students:** Danielle Wagner (EEE, Aug. 2016-Present)
- **Mentor - International Visiting Scholars:** Samuel Ray Odhiambo (Moi University, Kenya, Aug.-Sept. 2017)
- **Mentor - M.S. Independent Studies:** Sungwoo Kim (CE, Fall 2017), Moshan Chen (CE, Fall 2017), Jinglin Jiang (CE, Fall 2017), Bara Abdullatif Alarfaj (CE, Fall 2016 & Spring 2017), Pei Cong (CE, Fall 2016), Ting-yu Chang (CE, Fall 2016)
- **Additional Mentoring of M.S. Students:** Mahmoud Nour (Health Science, May-Dec. 2016), Giovanni Aguilera (ME, Sept. 2016-July 2016), Osama S. Alraddadi (Purdue Polytechnic Institute, Sept. 2015-April 2016)

Undergraduate Student Mentoring

- **Advisor,** EPICS Service-Learning Engineering Design Program, Global Air Quality Trekkers (GAQT): Aug. 2016-Present
- **Mentor - Undergraduate Research Programs:** Rachel Wetterlin (Nandi Clean Kitchen Study, C4E Research Internship, Summer 2017), Stephane Nouafo Wanko (Purdue AirSense, Summer Undergraduate Research Fellowship Program 2017), Ruihang Du (Purdue AirSense, Summer Undergraduate Research Fellowship Program 2017), Manjie Fu (Summer Undergraduate Research Fellowship Program 2016)
- **Mentor - International Visiting Scholars:** Jin Pan (Tsinghua University, China, Top Open Program Scholar, Aug.-Sept. 2016)
- **Mentor - Undergraduate Independent Studies:** Briana McDaniel (Purdue AirSense, EEE, Fall 2017), Shadi T. Azouz (Purdue AirSense, ME, Summer 2017), Manjie Fu (BME, Fall 2016 & Spring 2017)
- **Advisor,** Departmental Study Abroad to Kenya, GAQT Nandi Clean Kitchen Study to Eldoret, Kenya: Winter Break 2016-2017 (4 students)

Graduate Student Committee Service

- **Ph.D. Dissertation Committee Member:** Zhu Shi (Mechanical Engineering), Timothy Simon (Mechanical Engineering)
- **M.S. Thesis/Report Committee Member:** Kelsey M. Hall (Health Science, Graduated in May 2017), Mahmoud Nour (Health Science, Graduated in Dec. 2016), Osama S. Alraddadi (Purdue Polytechnic Institute, Graduated in May 2016)
- **External M.S. Thesis/Report Reviewer:** Karoline Veum Solberg, Norwegian University of Science & Technology (Advisor: Guangyu Cao, Graduated in Fall 2016)

Student Awards & Honors

- **Purdue Climate Change Research Center (PCCRC) Graduate Student Travel Grant,** awarded to Danielle Wagner*, \$600, Summer 2017.
- **Center for the Environment (C4E) Undergraduate Student Summer Research Internship Award,** awarded to Rachel Wetterlin**, *Evaluation of the Indoor and Outdoor Air Quality Implications of Community-Developed Modified Kitchens in Nandi, Kenya*, \$2,400, Summer 2017.
- **Purdue Undergraduate Research and Poster Symposium Best Poster Abstract Award, Physical Sciences,** awarded to Manjie Fu**, Spring 2017.
- **Purdue EPICS Awards** to Oliver Schroeder** and Mina Mohsenian**, Spring 2017.
- **Purdue Student Service Learning Grant:** awarded to EPICS Global Air Quality Trekkers (GAQT) undergraduate team**, \$1,500, Fall 2016.
- **Purdue Graduate Student Government Travel Grant:** awarded to Tianren Wu*, Fall 2016.

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Mentored Student Podium & Poster Presentations (Non-Refereed)

- Odhiambo, S.R.* (2017). The Nandi Clean Kitchens Project. *The Second Kenya Air Quality Annual Conference 2017*, Nairobi, Kenya, November 2017 (Podium).
- Wu, T.* (2017). Urban Aerosol Size Distributions and Physiochemical Properties: Implications for HVAC Filtration. *2017 Herrick Industrial Advisory Committee (IAC) Conference Poster Show*, October 2017 (Poster).
- Wu, T.* (2017). Early Childhood Exposure to Resuspended Biological Particulate Matter (bioPM). *2017 Herrick Industrial Advisory Committee (IAC) Conference Poster Show*, October 2017 (Poster).
- Wagner, D.* (2017). Nandi Clean Kitchen Study: Mitigating Indoor Air Pollution in Western Kenya by Optimizing Passive Ventilation. *2017 Herrick Industrial Advisory Committee (IAC) Conference Poster Show*, October 2017 (Poster).
- Du, R.** , Kim, S.* , McDaniel, B.** , Odhiambo, S.R.* (2017). Purdue AirSense: An Open-Source Air Quality Monitoring System. *2017 Herrick Industrial Advisory Committee (IAC) Conference Poster Show*, October 2017 (Poster).
- Nouafo Wanko, S.** (2017). Purdue AirSense: An Affordable Way to Measure and Study Air Pollution. *2017 Purdue SURF Research Symposium*, August 2017 (Poster).
- Du, R.** (2017). Purdue AirSense: An Open-Source Air Quality Monitoring System. *2017 Purdue SURF Research Symposium*, August 2017 (Podium).
- Fu, M.** (2017). Crawling-Induced Resuspension as a Major Source of Particulate Matter in the Infant Breathing Zone. *2017 Purdue Undergraduate Research & Poster Symposium*, April 2017 (Poster).
- Wagner, D.* (2017). Evaluating Indoor Air Pollution and Natural Ventilation of Traditional and Modified Kitchens in Nandi, Kenya. *2017 Innovation for International Development Lab (I²D Lab) Exposition*, March 2017 (Poster).
- EPICS GAQT Undergraduate Team (Oliver Schroeder and Mina Mohsenian presenting)** (2017). Nandi Clean Kitchen Study. *2017 Innovation for International Development Lab (I²D Lab) Exposition*, March 2017 (Poster).
- EPICS GAQT Undergraduate Team (Oliver Schroeder and Mina Mohsenian presenting)** (2017). Nandi Clean Kitchen Study. *Purdue Engagement and Service-Learning Summit: Partnerships for Purpose*, March 2017 (Poster).
- Wagner, D.* (2016). Nandi Clean Kitchen Study: Mitigating Indoor Pollution in Western Kenya. *Innovation for International Development Lab (I²D Lab) Seminar*, November 2016 (Podium).
- Wu, T.* (2016). Characterizing Real-Time Bioaerosol Dynamics in Buildings Using Laser-Induced Fluorescence (LIF). *2016 Herrick Industrial Advisory Committee (IAC) Conference Poster Show*, October 2016 (Poster).
- Wagner, D.* (2016). Nandi Clean Kitchen Study: Mitigating Indoor Pollution in Western Kenya. *2016 Herrick Industrial Advisory Committee (IAC) Conference Poster Show*, October 2016 (Poster).
- Pan, J.** (2016). Biological Particle Adhesion to Indoor Surfaces: A Literature Review. *2016 Herrick Industrial Advisory Committee (IAC) Conference Poster Show*, October 2016 (Poster).
- Hall, K.M., Hughes, A.J., Nour, M.* , Thomas, S.C.* , and Ward, E.J. (2016). Real-Time Characterization of Nanoparticle Exposures by Welders: Impact of Base Metal and Weld Type. *2016 Herrick Industrial Advisory Committee (IAC) Conference Poster Show*, October 2016 (Poster).
- Fu, M.** (2016). Infant Exposure to Resuspended Particles from Carpeted Flooring: Experimental Chamber Study with a Simplified Mechanical Crawling Infant. *2016 Purdue SURF Research Symposium*, August 2016 (Poster).

*designates graduate student advisee, **designates undergraduate student advisee

Extramural Research Grants

- **National Science Foundation:** *RAPID: Chemical Air Emissions from Cured-in-Place-Pipe (CIPP) Pipe Repair Activity*, PI: Whelton, A.J., **Co-PI: Boor, B.E.**, \$49,999, 03/15/2016 - 02/28/2017.
- **American Society of Heating, Refrigerating & Air Conditioning Engineers:** *Reproducing a Representative Urban Atmospheric Aerosol Distribution at High Concentration in the Laboratory for Air Filter Ageing to be used in ASHRAE GPC 35P for Determining the Energy Consumption Caused by Air Filters (1734-TRP)*, **PI: Boor, B.E.**, \$140,000, 08/01/2017 - 07/31/2019.

Intramural Research Grants

- **Innovation for International Development Lab (I²D Lab) Seed Grant Program:** *The Nandi Clean Kitchen Study*, **PI: Boor, B.E.**, Co-PIs: Wells, E.M., Lagat, D.K., \$42,108, 05/01/2016 - 04/31/2017 [renewed for a second year, 05/01/2017 - 04/31/2018].
- **Study Abroad and International Learning (SAIL) Grant and Intercultural Pedagogy Grant (IPG):** *Global Air Quality Trekkers - Nandi Clean Kitchen Study*, **PI: Boor, B.E.**, \$10,000, Winter Break 2016-2017.
- **Instructional Innovation Program:** *Purdue AirSense: A Student-Centered Teaching Platform for Air Pollution Sensing and Data Analytics*, **PIs: Boor, B.E.** and Michalski, G., \$100,000, 01/01/2017 - 12/31/2018.
- **OEVPRP Laboratory & University Core Facility Research Equipment Program:** *Acquisition of a MARS6 Microwave Digestion System*, PI: Dydak, U., **Co-PIs: Wells, E.M., Boor, B.E., Park, J.H.**, 2017.
- **Kresge Challenge Grant:** *Laboratory Fume Hood Installation*, **PI: Boor, B.E.**, \$4,160, 2017.
- **Purdue Research Foundation (PRF) Grant,** *The Impact of Aerosol Size Distributions and Physiochemical Properties on the Filtration Efficiency and Loading Kinetics of HVAC Filter Media*, **PI: Boor, B.E.**, 2017-2018.

Professional Service

- **Journal Paper Peer-Review:** *Indoor Air* (2017: 2 mspts., 2016: 2 mspts., 2015: 1 mspt., 2014: 1 mspt., 2013: 1 mspt.), *Building & Environment* (2018: 1 mspt., 2017: 5 mspts., 2015: 1 mspt.), *Aerosol Science & Technology* (2018: 1 mspt., 2017: 2 mspts., 2016: 1 mspt., 2015: 1 mspt.), *Journal of Aerosol Science* (2017: 1 mspt.), *Aerosol & Air Quality Research* (2017: 1 mspt.), *American Journal of Infection Control* (2017: 1 mspt.), *Journal of Hazardous Materials* (2017: 1 mspt.), *Energy & Buildings* (2017: 1 mspt.), *Science of the Total Environment* (2016: 1 mspt.), *Indoor & Built Environment* (2016: 1 mspt.), *Journal of Occupational & Environmental Hygiene* (2015: 1 mspt.), *Sustainable Cities & Society* (2014: 1 mspt.), *Atmospheric Environment* (2013: 1 mspt.), *Building Simulation* (2012: 1 mspt.)
- **Conference Paper Peer-Review:** *Indoor Air 2016*, 2016 ASHRAE Annual Conference, 2016 International Conference on Advances on Clean Energy Research
- **Proposal Peer-Review:** *National Science Foundation, Science Foundation Ireland (SFI), Environment & Health Fund (EHF) of Israel*
- **Vice Chair,** The 5th International High Performance Buildings Conference of the 2018 Herrick Conferences at Purdue University, July 2018
- **Voting Member,** U.S. Technical Advisory Committee (TAG) to ISO/TC 142 - Cleaning Equipment for Air and Other Gases (Jan. 2016-Present)
- **Bylaws Committee,** American Association for Aerosol Research (AAAR) (October 2016-Present)
- **Scientific Advisor,** nExact Project on sub-5 nm particle generation, classification, and counting, for Airmodus Oy (Finland), Sociedad Europea de Analisis Diferencial de Movilidad S.L. (SEADM, Spain), and VSParticle (The Netherlands) (Jan. 2016-Present)
- **Session Chair or Co-Chair:** AAAR 2016, Indoor Air 2016, 2016 Purdue Herrick Conference, Healthy Buildings 2012, Indoor Air 2011
- **Planning for the Healthy Beds Product VOC Labeling Program in Finland,** with the Finnish Allergy & Asthma Federation & VTT Expert Services Ltd. (May-Sept. 2014)

Academic Service

- **Recruitment Committee**, Lyles School of Civil Engineering (Sept. 2017-Present)
- **Safety Committee**, Lyles School of Civil Engineering (Sept. 2017-Present)
- **Study Abroad Committee**, Lyles School of Civil Engineering (Feb. 2016-Present)
- **Graduate Student Committee**, Lyles School of Civil Engineering (Aug.-Dec. 2016)
- **Student Fellowship & Scholarship Peer-Review: Borlaug Fellows Program at Purdue** (2016, 2017)
- **Panel Member at Purdue: Graduate Student Workshop - Faculty Positions** (March 2016), Faculty Hiring Panel for Post-Docs (April 2016), 2016 Office of Interdisciplinary Graduate Program (OIGP) Spring Reception Poster Competition (May 2016)
- **ENGR 131 Presentations to FYE Students: September 2016** (2 presentations)
- **IAQ Demonstrations for Minorities in Engineering Summer Program (MIEP): June 2016**
- **Finnish Fulbright Welcome Network** (2016-Present)
- **Equality & Work Well Being Group Committee**, University of Helsinki Division of Atmospheric Sciences (Nov. 2014-Aug. 2015)

Professional Society Affiliations

- American Society of Heating, Refrigerating & Air Conditioning Engineers (ASHRAE) (Student: 2008-2014, Associate: 2016-Present)
- International Society of Indoor Air Quality & Climate (ISIAQ) (2010-Present)
- American Association for Aerosol Research (AAAR) (2010-Present)
- International Society of Exposure Science (ISES) (2012-2016)
- Aerosol Association in the Middle East and North Africa (AAMENA) (2016-Present)
- Association of Environmental Engineering and Science Professors (AEESP) (2016-Present)

Selected Media Coverage

- "Babies Stir Up Clouds of Bio-Gunk when the Crawl," *Purdue University News*, January 2018.
- "Baby's Crib Mattress: Breathing Safe" and "What to Look for When Buying a Crib Mattress," 2-Part Scientific Review Article and Interview, *Environmental Working Group*, December 2017.
- "Human Exposure to Indoor Air Pollutants in Sleep Microenvironments: A Literature Review," 1-hour Interview on *IAQ Radio: Ep. 478*, September 22, 2017.
- "The Best Crib Mattresses," *The Wirecutter* (part of the New York Times Company), September 2017.
- "Cooking Up a Fix for Unsafe Stoves in Kenya," *Purdue Civil Engineering Impact Magazine*, Spring 2017.
- "Purdue Students Assess Indoor Air Pollution in Kenya," *Purdue Exponent*, January 18, 2017.
- "Indoor Air Quality in Traditional Kenyan Kitchens, Childcare Facilities, and Beds," *University of Helsinki Division of Atmospheric Sciences Newsletter*, Nr. 36, December 2016
- "Clean Kitchen Study to Reduce Household Air Pollution," *AMPATH Kenya Gazeti*, Autumn 2016
- "How your bed may be making you sick," *CNN Health Video (filmed at Herrick Labs)*, July 7, 2016
- "Indoor Air Quality Research Helps Build Safer Buildings," *Purdue Exponent*, April 8, 2016
- "Air Quality in Bed Is a Nightmare," *Scientific American*, March 17, 2015.
- "Bringing Research to Practitioners," 1-hour Interview on *IAQ Radio: Ep. 343*, October 10, 2014.
- "Toxic Dreams: Crib Mattresses May Release Risky Fumes," *Environmental Working Group*, April 2014.
- "Crib Mattress Dangers," *National Science Foundation Discoveries & Science Now: Ep. 22*, April 9, 2014.
- "UT Study Finds Crib Mattresses Emit Volatile Organic Compounds," *Austin American-Statesmen*, April 5, 2014.
- "UT Engineers Caution Parents About Chemicals in Crib Mattresses," *Alcalde*, April 4, 2014.
- "Crib Mattresses Release Potentially Harmful Chemicals, Study Finds," *Fox News*, April 2, 2014.
- "Crib Mattresses Emit High Rates of Potentially Harmful Chemicals, Cockrell School Engineers Find," *UT News*, April 2, 2014.
- "Is Your Baby's Mattress Poisoning Them as They Sleep?," *UK Daily Mail*, April 2, 2014.

- “Crib Mattresses Expose Infants To Elevated Levels of Volatile Organic Compounds,” *Chemical & Engineering News of the American Chemical Society*, February 27, 2014.
- “Les Matelas, Source Méconnue de Pollution,” *Le Figaro Santé*, January 8, 2013.