

Joshua S. Apte

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Current position

Assistant Professor (January 2015 – present)

The University of Texas at Austin

Department of Civil, Architectural and Environmental Engineering (primary appointment),
Department of Population Health (by courtesy), South Asia Institute (affiliated faculty).

Core research area: Air pollution. **Key interests:** (i) sensing, measurement, and modeling methods for characterizing air pollution at local and global scales; (ii) impacts of energy and urban infrastructure systems on the environment and public health; (iii) atmospheric aerosol dynamics; (iv) air quality, environmental justice, and environmental sustainability in low-income areas; (v) policies to protect climate and health.

Education

Postdoc	2014	Lawrence Berkeley National Laboratory Environmental Energy Technologies Division
Ph.D.	2013	University of California, Berkeley (Energy and Resources) Dissertation: “Human Exposure to Urban Vehicle Emissions”
M.S.	2008	University of California, Berkeley (Energy and Resources)
Sc.B.	2004	Brown University (Environmental Science, magna cum laude)

Fellowships, awards and honors

- Air Quality Fellow, US State Department (2018)
- President’s Award for Global Learning, University of Texas (2018)
- Top Environmental Technology Article of 2017, *ES&T* (Apte et al., 2017)
- Walter A. Rosenblith New Investigator Award, Health Effects Institute (2017)
- Three articles on *ES&T* “most read articles” list, (Apte et al., 2015, 2017; Messier et al. 2018)
- One article on *ES&T Letters* “most read articles” list (Apte et al., 2018)
- ITRI-Rosenfeld Postdoctoral Fellowship, Lawrence Berkeley National Lab (2013-15)
- Philomathia Graduate Fellowship in the Environmental Sciences, UC Berkeley (2013)
- Outstanding Graduate Student Instructor Award, UC Berkeley (2013)
- Chang-Lin Tien Graduate Fellowship in the Environmental Sciences, UCB (2012-13)
- Fulbright-Nehru Fellowship to India, US Department of State (2010)
Host: Indian Institute of Technology – Delhi
- EPA STAR (Science and Technology to Achieve Results) Fellowship, US EPA (2009-13)
- Honorable Mention, US NSF Graduate Research Fellowship Program (2008)
- MOT/UNIDO Bridging the Divide Fellowship, UC Berkeley (2007)
- Foreign Language and Area Studies Fellowship in Hindi, UCB (2006-07, 2007-08)
- Royce Fellowship, Brown University (2003-04)

Articles submitted for peer review

35. Saha P, Li Z, Apte JS, Robinson AL, Presto AA. Urban ultrafine particle exposure assessment with land-use regression: influence of sampling strategy. Submitted, *Environmental Science & Technology*.
34. Anenberg SC, Achakulwisut P, Brauer M, Moran D, Apte JS, Henze D. Particulate matter mortality in cities worldwide: a challenge and an opportunity for co-benefits from low carbon development. Submitted, *Nature Sustainability*.
33. Spears D, Dey S, Chowdhury S, Vyas S, Apte JS. Direct evidence of the impact of early-life exposure to ambient PM_{2.5} air pollution on later-childhood height-for-age in India. Submitted, *Environmental Health Perspectives*.
32. Gani S, Bhandari S, Seraj S, Wang DS, Patel K, Soni P, Arub Z, Habib G, Hildebrandt Ruiz L, Apte JS. Submicron aerosol composition in the world's most polluted megacity: The Delhi Aerosol Supersite campaign. In review for *Atmospheric Chemistry and Physics*. Preprint available in *Atmospheric Chemistry and Physics Discussion* at: doi.org/10.5194/acp-2018-106.
31. Tessum CW, Apte JS, Goodkind AL, Muller NZ, Mullins KA, Paoletta DA, Polasky S, Springer NP, Thakrar SK, Marshall JD, Hill JD. Inequity in consumption of goods and services widens racial-ethnic disparities in air pollution exposure. Submitted, *Proceedings of the National Academy of Sciences*.
30. Fantke P, McKone TE, Apte JS, Illner N, Jolliet O, Marshall JD, Stylianou K, Tainio M, Evans JS. Global effect factors for exposure to fine particulate matter. Submitted, *Environmental Science & Technology*.
29. Li HZ, Gu P, Ye Q, Zimmerman N, Robinson ES, Subramanian R, Apte JS, Robinson AL, Presto AA. Spatially dense air pollutant sampling: Implications of spatial variability on the representativeness of stationary air pollutant monitors. Submitted, *Atmospheric Environment*.
28. Zimmerman N, Li HZ, Ellis E, Hauryliuk A, Robinson ES, Gu P, Shah RU, Ye Q, Snell L, Subramanian R, Robinson AL, Apte JS, Presto AA. Integrating spatiotemporal variability and modifiable factors into air pollution estimates: The Center for Air, Climate, and Energy Solutions Air Quality Observatory. Submitted, *Atmospheric Environment*.

Peer-reviewed journal articles

27. Saha P, Zimmerman N, Mailings C, Hauryliuk A, Li Z, Snell L, Subramanian R, Lipsky EM, Apte JS, Robinson AL, Presto AA. 2019. Quantifying high-resolution spatial variations and local source impacts of urban ultrafine particle concentration. *Science of the Total Environment* 655, 473-481.
26. Shah RU, Robinson ES, Gu P, Robinson AL, Apte JS, Presto AA. 2018. High spatial resolution mapping of aerosol composition and sources in Oakland, California using mobile aerosol mass spectrometry. *Atmospheric Chemistry and Physics* 18, 16325-16344.
25. Messier KP, Chambliss SE, Gani S, Alvarez RA, Brauer M, Choi JJ, Hamburg SP, Kerckhoffs J, LaFranchi B, Lunden MM, Marshall JD, Portier CJ, Roy A, Szpiro AA, Vermeulen RCH, Apte JS. 2018. Mapping air pollution with Google Street View cars: Efficient approaches with mobile monitoring and land use regression. *Environmental Science & Technology* 52, 12563-12572.

24. Gu P, Li HZ, Ye Q, Robinson ES, Apte JS, Robinson AL, Presto AA. 2018. Intra-city variability of PM exposure is driven by carbonaceous sources and correlated with land use variables. *Environmental Science & Technology* 52, 11545 - 11554.
23. Burnett R, Chen H, Szyszkowicz M, Fann N, Hubbell B, Pope CA III, Apte JS, Brauer M, Cohen A, Weichenthal S, Coggins J, Di Q, Brunekreef B, Frostad J, Lim SS, Kan H, Walker KD, Thurston G, Hayes RB, Lim CC, Turner MC, Jerrett M, Krewski D, Gapstur SM, Diver WR, Ostro B, Goldberg D, Crouse DL, Martin RV, Peters P, Pinault L, Tjepkema M, van Donkelaar A, Villeneuve PJ, Miller AB, Yin P, Zhou M, Wang L, Janssen NAH, Marra M, Atkinson RW, Tsang H, Thach TQ, Cannon JB, Allen RT, Hart J, Laden F, Cesaroni G, Forastiere F, Weinmayr G, Jaensch A, Nagel G, Concin H, Spadaro JV. 2018. Global estimates of mortality associated with long-term exposure to outdoor fine particulate matter. *Proceedings of the National Academy of Sciences* 115, 9592-9597.
22. Apte JS, Brauer M, Cohen AJ, Ezzati M, Pope CA III. 2018. Ambient PM_{2.5} reduces global and regional life expectancy. *Environmental Science & Technology Letters* 5, 546-551.
21. Robinson ES, Gu P, Ye Q, Li ZH, Shah RU, Apte JS, Robinson AL, Presto AA. 2018. Restaurant impacts on outdoor air quality: elevated organic aerosol mass from restaurant cooking with neighborhood-scale plume extents. *Environmental Science & Technology* 52, 9285-9294.
20. Paolella D, Tessum CW, Adams P, Apte JS, Chambliss SE, Hill J, Muller NZ, Marshall JD. 2018. Effect of model spatial resolution on estimates of fine particulate matter exposure and exposure disparities in the United States. *Environmental Science & Technology Letters* 5, 436-441.
19. Ye Q, Gu P, Li HZ, Robinson ES, Lipsky EM, Kaltsonoudis C, Lee AKY, Apte JS, Robinson AL, Sullivan RC, Presto AA, Donahue NM. 2018. Characterization of spatial variability of sources and mixing state of atmospheric particles in a metropolitan area. *Environmental Science & Technology* 52, 6807-6815.
18. Saha P, Robinson ES, Shah RU, Zimmerman N, Apte JS, Robinson AL, Presto AA. 2018. Reduced ultrafine particle concentration in urban air: Changes in nucleation and anthropogenic emissions. *Environmental Science & Technology* 52, 6798-6806.
17. Alexeef SE, Roy A, Shan J, Liu X, Messier KP, Apte JS, Portier CJ, Sidney S, van den Eeden SK. 2018. High-resolution mapping of traffic related air pollution with Google Street View cars and incidence of cardiovascular events within neighborhoods in Oakland, CA. *Environmental Health* 17:38.
16. Fantke P, Jolliet O, Apte JS, Hodas N, Evans J, Weschler CJ, Stylianou KS, Jantunen M, McKone TE. 2017. Characterizing aggregated exposure to primary particulate matter: Recommended intake fractions for indoor and outdoor sources. *Environmental Science & Technology* 51, 9089-9100.
15. Apte JS, Messier KP, Gani S, Brauer M, Kirchstetter TW, Lunden MM, Marshall JD, Portier CJ, Vermeulen RCH, Hamburg SP. 2017. High resolution air pollution mapping with Google Street View cars: exploiting big data. *Environmental Science & Technology* 51, 6999-7008.
14. Kirchstetter TW, Preble CV, Hadley OC, Bond TC, Apte JS. 2017. Large reductions in black carbon concentrations in the United States between 1965 and 2000. *Atmospheric Environment* 151, 17-23.

13. Brauer M, Freedman G, Frostad J, van Donkelaar A, Martin R, Dentener F, van Dingenen, Rita, Estep K, Amini H, Apte JS, Balakrishnan K, Barregard L, Broday D, Feigin V, Ghosh S, Hopke P, Knibbs L, Kokubo Y, Liu Y, Ma S, Morawska L, Texcalac Sangrador J-L, Shaddick G, Anderson HR, Vos T, Forouzanfar M, Burnett R, Cohen A. 2016. Ambient air pollution exposure estimation for the Global Burden of Disease 2013. *Environmental Science & Technology* 50, 79-88.
12. Marshall JD, Apte JS, Coggins JS, Goodkind AL. 2015. Blue skies bluer? *Environmental Science & Technology* 49, 13929-13936.
11. Apte JS, Marshall JD, Cohen AJ, Brauer M. 2015. Addressing global mortality from ambient PM_{2.5}. *Environmental Science & Technology* 49, 8057-8066.
10. Tang NW, Apte JS, Martien PM, Kirchstetter TW. 2015. Measurements of black carbon emissions from in-use diesel-electric passenger locomotives. *Atmospheric Environment* 115, 295-303.
9. Su J, Apte JS, Lipsitt J, Garcia-Gonzales, DA, Beckerman BS, de Nazelle A, Texcalac-Sagrandor J-L, Jerrett M. 2015. Identification of population potentially exposed to traffic in seven world cities. *Environment International* 78, 82-89.
8. Fantke P, Jolliet O, Evans JS, Apte JS, Cohen AJ, Hänninen OO, Hurley F, Jantunen MJ, Jerrett M, Levy JI, Loh MM, Marshall JD, Miller BG, Preiss P, Spadaro JV, Tainio M, Tuomisto JT, Weschler CJ, McKone TE. 2015. Health effects of fine particulate matter in life cycle impact assessment: Findings from the Basel Guidance Workshop. *International Journal of Life Cycle Assessment*, 20, 276-288.
7. Krzyzanowski M, Apte JS, Bonjour SP, Brauer M, Cohen AJ, Prüss-Üstün A. 2014. Air pollution in the megacities. *Current Environmental Health Reports* 1, 185-191.
6. Saraswat A, Apte JS, Kandlikar M, Brauer M, Henderson SB, Marshall JD. 2013. Spatiotemporal land use regression models of fine, ultrafine and black carbon particulate matter in New Delhi, India. *Environmental Science & Technology*, 47, 12903-12911.
5. Apte JS, Bombrun E, Marshall JD, Nazaroff WW. 2012. Global intraurban intake fractions for air pollutants from vehicles and other distributed sources. *Environmental Science & Technology* 46, 3415-3423.
4. Grieshop AP, Boland D, Reynolds CCO, Gouge B, Apte JS, Rogak S, Kandlikar M. 2012. Modeling air pollutant emissions from Indian auto-rickshaws: model development and implications for fleet emission rate estimates. *Atmospheric Environment* 50, 148-156.
3. Apte JS, Kirchstetter TW, Reich AH, Deshpande SJ, Kaushik G, Chel A, Marshall JD, Nazaroff WW. 2011. Concentrations of fine, ultrafine, and black carbon particles in auto-rickshaws in New Delhi, India. *Atmospheric Environment* 45, 4470-4480.
2. Sager J, Apte JS, Lemoine DM, Kammen DM. 2011. Reduce the growth rate of light duty vehicle travel to meet 2050 global climate goals. *Environmental Research Letters* 6, 024018.
1. Coffey B, Borgeson S, Selkowitz S, Apte JS, Mathew P, Haves P. 2009. Towards a very low-energy building stock: modeling the US commercial building sector to support policy and innovation planning. *Building Research & Information* 37, 610-624

Reports and other

- Fantke P, Evans J, Hodas N, Apte J, Jantunen M, Jolliet O, McKone TE. 2016. Health Effects of Particulate Matter. Book chapter 4 in *Global Guidance for Life Cycle Impact Assessment Indicators, Volume 1*, eds. Rolf Frischknecht and Olivier Jolliet. United Nations Environment Program, Paris. ISBN pending. <http://www.lifecycleinitiative.org/wp-content/uploads/2016/10/LCIA-publication-preview.pdf>
- Jerrett M, Su J, Apte JS, Beckerman B. 2010. Estimates of Population Exposure to Traffic-Related Air Pollution in Beijing, China and New Delhi, India. Report to Health Effects Institute. Boston, MA.
- Guttikunda SK and Apte JS. 2009. Monitoring and Mapping Air Pollution: A One Day Experiment in Delhi, India. SIM-Air Series working paper 29, available from: <http://www.urbanemissions.info/sim-series-29.html>.
- Apte JS. 2008. Population Exposure to Vehicular Emissions in Megacities. MS Paper, Energy and Resources Group. Berkeley, CA.
- Apte JS, Fuller MC, Gopal AR, Lindgren K. 2007. Developing the Means for the Use of Modern Lighting: How Can WLED Technology Bring High Quality, Affordable Light to India's Poor? Final report to Bridging the Divide Fellowship Program, Berkeley, CA.
- Apte JS and Arasteh D. 2006. Window-Related Energy Consumption in the US Residential and Commercial Building Stock. Lawrence Berkeley National Laboratory Technical Report LBNL-60146, Berkeley, CA.
- Apte JS, Arasteh D, Kohler JC. 2006. Save Energy with Superwindows. *Window and Door Magazine*. March 2006 issue.
- Apte JS. 2004. The Role of Residential Window Technology in US Carbon Emissions. Honors Thesis, Center for Environmental Studies, Brown University, Providence, RI.

Teaching

University of Texas at Austin. Dept. of Civil, Architectural and Environmental Engineering
CE397-2: Air Quality, Aerosols, and Health: Sp17 (Graduate)
CE397-1: Climate-Change Mitigation. Fa15, Fa16, Fa17 (Graduate)
ARE370: Design of Energy Efficient and Healthy Buildings. Sp15, Sp16, Sp17 (Undergraduate)

UC Berkeley. Graduate student instructor, Dept. of Civil and Environmental Engineering
CEE107: Climate-Change Mitigation. Fa2012, Sp2012, Sp2011.

Brown University. Undergraduate student instructor, Center for Environmental Studies
ES145: Ecosystem Analysis. Fa2003. (Field and lab course in forest ecology)
ES11: Introduction to Environmental Studies. Fa2001.

Supervision of graduate students and postdocs

University of Texas at Austin

Doctoral students: S Chambliss [MS 2018; PhD 2018 -], S Gani [MS 2016, PhD 2016 -], S Seraj [PhD, 2016 -]
Masters students: R Cesa (née Posa) [MS; 2014-2015], R Spencer [MS, 2016], L Snell [MS, 2017], R Gardner-Frolick [MS, 2017-], R Gosar [MS, 2017-], J Wu [MS, 2017 -], M Campmier [MS 2018-].
Postdoctoral fellows: K Messier [Postdoc, 2015-18], A Gurung [Postdoc, 2016-18]

Invited presentations

39. Apte JS. "Think globally, breathe locally: Sensing air pollution for a planet of cities." Hosted jointly by Global Metropolitan Studies and Environmental Engineering seminar series,

- University of California, Berkeley, CA. November 19, 2018.
38. Apte JS. "Think globally, breathe locally: Sensing air pollution with Google Street View cars." Department of Civil and Environmental Engineering, Massachusetts Institute of Technology, Cambridge, MA. October 31, 2018
 37. Apte JS. "Think globally, breathe locally: Sensing air pollution with Google Street View cars." Chan-NIEHS Center for Environmental Health, Harvard University, Boston, MA. October 30, 2018.
 36. Apte JS. "Sensing urban air pollution at high resolution with Google Street View cars." Department of Civil and Environmental Engineering, Virginia Tech, Blacksburg, VA. September 28, 2018.
 35. Apte JS. "Particulate Matters: Addressing global urban air pollution." Energy and Resources Group, University of California, Berkeley. September 19, 2018.
 34. Apte JS. "Addressing global mortality from ambient PM_{2.5}." Department of Engineering and Public Policy and Center for Atmospheric Particle Studies, Carnegie Mellon University, Pittsburgh, PA. October 6, 2017.
 33. Apte JS. "New developments in policy-relevant air monitoring." World Bank, Washington DC. July 26, 2017.
 32. Apte JS. "Connecting measurements, models and policy for effective air quality management in India." Energy Policy Institute at the University of Chicago, India office (EPIC-India), New Delhi. June 29, 2017.
 31. Apte JS. "Mapping urban air pollution at high resolution using Google Street View cars." Energy Technologies Area seminar, Lawrence Berkeley National Laboratory. June 15, 2017.
 30. Apte JS. "Filling the gaps in urban air pollution monitoring with Google Street View cars." Health Effects Institute annual meeting, Alexandria, VA. May 1, 2017.
 29. Apte JS and Marshall JD. "Leapfrogging for air quality management in India." Department of Civil Engineering, Indian Institute of Technology, Delhi. March 14, 2017.
 28. Apte JS. "Mapping Air Pollution at High Resolution Using Mobile Monitoring." Environmental Engineering seminar series, Department of Civil and Environmental Engineering, University of Washington, Seattle. October 21, 2016.
 27. Apte JS. "Managing India's Air Quality and Health Challenge: Connecting Sources to Impacts." Centre for Atmospheric Science, Indian Institute of Technology, Delhi. August 12, 2016.
 26. Apte JS. "Measurement and Modeling Techniques for Characterizing Sources, Concentrations and Human Exposures to Particulate Matter." International Center for Integrated Mountain Development (ICIMOD), Kathmandu, Nepal. May 16, 2016.
 25. Apte JS. "Air, Climate, Energy, and Health: Grand Challenges for Environmental Engineering." NSF-AEESP Workshop on Redefining Environmental Science and Engineering. Rice University, Houston, TX. April 1, 2016.
 24. Apte JS. "Towards Better Air Quality in Indian Cities." CEPT University, Ahmedabad, India. March 20, 2016.
 23. Apte JS. "Air Pollution Sensing for Better Air Quality Management." World Bank BBL lecture series, Washington, DC. December 4, 2015.
 22. Apte JS. "Modeling Urban Air Quality at High Spatial Resolution." Tech Talk lecture series, Google, Inc., Mountain View, CA. November 9, 2015.
 21. Apte JS. "Air Pollution, Transportation and Health in Indian Cities." Symposium on Infrastructure in India, UCLA, Los Angeles, CA. May 16, 2015.
 20. Apte JS. "Air Pollution and Health: Indian Cities in Global Context." US State Department, Washington, DC. May 11, 2015.

19. Apte JS. "Addressing Mortality from Ambient PM_{2.5}: India in Global Context." Public Health Foundation of India, Gurgaon, India. March 19, 2015.
18. Apte JS. "On-Road Exposure to Traffic Air Pollution." Anil Agarwal Dialogue, Centre for Science and Environment, New Delhi, India. March 12, 2015.
17. Apte JS. "Air Pollution In Indian Cities." American Embassy School, New Delhi, India. November 21, 2014.
16. Apte JS. "Air Quality in India." Indo-US Technology Summit, Greater Noida, India. November 18, 2014.
15. Apte JS. "Air Pollution in Indian Cities: Current Status and Future Prospects." US Embassy, New Delhi, India. November 7, 2014.
14. Apte JS. "Air Pollution in Indian Cities." Briefing to US Ambassador Nancy Powell, New Delhi, India. February 19, 2014.
13. Apte JS. "Frontiers in Urban Exposure Science." Department of Civil Engineering, Indian Institute of Technology, Kanpur. Feb 13, 2014.
12. Apte JS. "Air Pollution in Indian Cities: Current Status and Prospects for a Cleaner Future." US Agency for International Development, Feb 10, 2014. New Delhi, India.
11. Apte JS. "Human Exposure to Vehicle Emissions in Indian Cities." Policy Conclave of the India-California Air Pollution Mitigation Project, Feb 04, 2014. New Delhi, India.
10. Apte JS. "High Impact Strategies to Control the Health and Climate Consequences of Urban Infrastructure Systems." Environmental Energy Technologies Division, Lawrence Berkeley National Laboratory, Feb 25, 2013. Berkeley, California.
9. Apte JS. "Frontiers in Urban Exposure Science." Department of Civil, Architectural and Environmental Engineering, University of Texas at Austin, February 11, 2013.
8. Apte JS. "On-Road Exposure to Particulate Matter in New Delhi, India." Department of Civil Engineering, Indian Institute of Technology, Delhi, August 14, 2012. New Delhi, India.
7. Apte JS. "Exposed in the City: Global Urban Air Pollution Exposure and Health Models for Vehicle Emissions." International Council on Clean Transportation, June 1, 2012. San Francisco, CA.
6. Apte JS. "Hold Your Breath! On-Road Exposure to Particulate Matter in New Delhi, India." Guest lectures in CE3501 ("Introduction to Environmental Engineering") and CE5561 ("Air Quality Engineering"). University of Minnesota, Department of Civil Engineering, April 19, 2012. Minneapolis, MN.
5. Apte JS. "Commuter Exposure to Air Pollution in New Delhi Vehicles." Centre for Science and Environment, August 31, 2011. New Delhi, India.
4. Apte JS. "Transportation and Air Quality in Developing World Cities." Chevron Corporation, October 12, 2010. San Ramon, CA.
3. Apte JS. "Transport and Sustainability: Human Exposure to Vehicular Emissions." Indian Institute of Technology, March 26, 2009. Roorkee, India.
2. Apte JS, Arasteh D, Homan G, Selkowitz SE. "National Window Energy Savings Model: Application to Energy Star Criteria Revisions." US Department of Energy, August 13, 2008. Washington, DC.
1. Apte JS. "Exposure to Vehicular Emissions in Developing World Megacities." Indian Institute of Technology, March 27, 2008. Roorkee, India.

Conference presentations

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69. Preble CV, Caubel JJ, Cados T, Apte JS, Kirchstetter TW. "A community network of 100 low-cost black carbon sensors." Oral presentation at the 10th International Aerosol Conference, September 2-7, 2018, St. Louis, MO.

68. Hagan DH, Kroll J, Cross E, Apte JS, Gani S, Hildebrandt Ruiz L, Bhandari S, Habib G, "Source apportionment of particulate matter using low-cost particle sensors with co-located reference measurements." Oral presentation at the 10th International Aerosol Conference, September 2-7, 2018, St. Louis, MO.
67. Bhandari S, Gani S, Wang DS, Patel K, Seraj S, Soni P, Arub Z, Habib G, Apte JS, Hildebrandt Ruiz L. "Submicron aerosol at a receptor site in New Delhi: Interpreting sources and their origin." Oral presentation at the 10th International Aerosol Conference, September 2-7, 2018, St. Louis, MO.
66. Actkinson B, Wallace H, Griffin RA, Moore K, Alvarez R, Lewis G, Craft E, Messier KP, Miller D, Apte JS. "Use of mobile air quality measurements to investigate highly spatially resolved particulate matter concentrations in Houston." Poster presentation at the 10th International Aerosol Conference, September 2-7, 2018, St. Louis, MO.
65. Shah RU, Robinson ES, Gu P, Apte JS, Presto AA. "Gradients in concentration and composition of sub-micron PM in a coastal American city: Downtown street canyon dominates a large area emission source in Port of Oakland, CA." Oral presentation at the 10th International Aerosol Conference, September 2-7, 2018, St. Louis, MO.
64. Chambliss SE, Messier KP, Preble CV, Caubel JJ, Alvarez R, LaFranchi B, Lunden MM, Kirchstetter TW, Apte JS. "Towards high-resolution air pollution mapping: Fusing mobile PM measurements with data from a dense low-cost sensor network." Oral presentation at the 10th International Aerosol Conference, September 2-7, 2018, St. Louis, MO.
63. Gani S, Bhandari S, Seraj S, Wang DS, Patel K, Soni P, Arub Z, Habib G, Hildebrandt Ruiz L, Apte JS. "Submicron aerosol composition in the world's most polluted megacity: The Delhi Aerosol Supersite campaign." Oral presentation at the 10th International Aerosol Conference, September 2-7, 2018, St. Louis, MO.
62. Saha P, Zimmerman N, Snell LA, Apte JS, Robinson AL, Presto AA. "Quantifying high-resolution spatial variations and local source impacts of urban ultrafine particle exposure." Oral presentation at the 10th International Aerosol Conference, September 2-7, 2018, St. Louis, MO.
61. Gu P, Li HZ, Ye Q, Robinson ES, Apte JS, Robinson AL, Presto AA. "Spatially-resolved comparison of traffic and cooking-related PM₁ emission in urban area and their threat to public health." Poster presentation at the 10th International Aerosol Conference, September 2-7, 2018, St. Louis, MO.
60. Apte JS, Messier KP, Chambliss SE, Brauer M, Caubel JJ, Gani S, Hamburg SP, Kirchstetter TW, Marshall JD, LaFranchi B, Lunden MM, Preble CV, Presto AA, Portier CJ, Robinson AL, Robinson AL, Shah RU, Tuxen-Bettman K, Vermeulen RCH, Alvarez R. "Early lessons from new air pollution exposure science: High-resolution mapping of urban air quality using Google Street View cars, low-cost samplers, and aerosol mass spectrometry." Oral presentation at the 10th International Aerosol Conference, September 2-7, 2018, St. Louis, MO.
59. Li HZ, Gu P, Ye Q, Zimmerman N, Robinson ES, Subramanian R, Apte JS, Robinson AL, Presto AA. "Neighborhood-scale spatial variability of PM mass and number and exposure misclassification in an eastern US city." Oral presentation at the 10th International Aerosol Conference, September 2-7, 2018, St. Louis, MO.
58. Gardner-Frolick RP, Messier KP, Apte JS. "Data requirements for mapping long-term air pollution with mobile short-term measurements." Poster presentation at the 10th International Aerosol Conference, September 2-7, 2018, St. Louis, MO.
57. Apte JS, Messier KP. "Are low-cost sensors ready for prime time? The case of mobile monitoring." Oral presentation at joint meeting of the International Society for

- Environmental Epidemiology and International Society of Exposure Science. August 26-30, 2018, Ottawa, Canada.
56. Apte JS, Messier KP, Chambliss SE, Brauer M, Gani S, Hamburg SP, Kirchstetter TW, Marshall JD, LaFranchi B, Lunden MM, Portier CJ, Tuxen-Bettman K, Vermeulen RCH, Alvarez R. "Understanding traffic-related air pollution through mobile monitoring." Oral presentation at joint meeting of the International Society for Environmental Epidemiology and International Society of Exposure Science. August 26-30, 2018, Ottawa, Canada.
 55. Messier KP, Chambliss SE, Roy A, Marshall JD, Brauer M, Szpiro AA, Portier CJ, Kerckhoffs J, Vermeulen RCH, Apte JS. "Mapping air pollution with Google Street View cars: Towards efficient mobile monitoring." Oral presentation at joint meeting of the International Society for Environmental Epidemiology and International Society of Exposure Science. August 26-30, 2018, Ottawa, Canada.
 54. Preble CV, Caubel JJ, Cados T, Apte JS, Kirchstetter TW. "A dense sensor network to characterize community exposure to black carbon." Oral presentation at joint meeting of the International Society for Environmental Epidemiology and International Society of Exposure Science. August 26-30, 2018, Ottawa, Canada.
 53. Presto AA, Li HZ, Robinson ES, Gu P, Saha PK, Shah RU, Apte JS, Robinson AL. "Spatial patterns of exposures to nontraditional pollutants: Source resolved organic aerosol and ultrafine particles." Oral presentation at joint meeting of the International Society for Environmental Epidemiology and International Society of Exposure Science. August 26-30, 2018, Ottawa, Canada.
 52. Roy A, Alexeef S, Shan J, Liu X, Messier KP, Apte JS, Portier CJ, Sidney S, van den Eeden S. "Google Street View car measurements of traffic related air pollution within neighborhoods and stroke in a population with preexisting cardiovascular disease." Poster presentation at joint meeting of the International Society for Environmental Epidemiology and International Society of Exposure Science. August 26-30, 2018, Ottawa, Canada.
 51. Presto AA, Robinson ES, Shah RU, Gu P, Li HZ, Apte JS, Robinson AL. Poster presentation at joint meeting of the International Society for Environmental Epidemiology and International Society of Exposure Science. August 26-30, 2018, Ottawa, Canada.
 50. Kushwaha M, Savio E, Vakacherla S, Asundi J, Apte JS, Marshall JD. "Mobile-monitoring of air pollution (black carbon): preliminary results from Bangalore, India." Poster presentation at joint meeting of the International Society for Environmental Epidemiology and International Society of Exposure Science. August 26-30, 2018, Ottawa, Canada.
 49. Zimmerman N, Li HZ, Ellis A, Hauryliuk A, Robinson ES, Gu P, Snell LA, Subramanian R, Robinson AL, Apte JS, Presto AA. "Integrating spatiotemporal variability and modifiable factors into air pollution estimates." Poster presentation at joint meeting of the International Society for Environmental Epidemiology and International Society of Exposure Science. August 26-30, 2018, Ottawa, Canada.
 48. Tessum CW, Apte JS, Goodkind AL, Muller NZ, Mullins K, Paoletta D, Springer N, Marshall JD, Hill J. "Air pollution-related health and health equity effects of the United States economy: 1997-2015." Poster presentation at joint meeting of the International Society for Environmental Epidemiology and International Society of Exposure Science. August 26-30, 2018, Ottawa, Canada.
 47. Shah RU, Robinson ES, Gu BP, Robinson AL, Apte JS, Presto AA. Gradients in concentration and composition of fine particulates in a coastal American city: Downtown street canyon dominates a large area emission source in Port of Oakland, California. Poster presentation at 2018 Health Effects Institute annual meeting, April 28, 2018, Chicago, IL.

46. Apte JS, Szpiro AA, Brauer M. Scalable multi-pollutant exposure assessment using mobile monitoring platforms. Poster presentation at 2018 Health Effects Institute annual meeting, April 28, 2018, Chicago, IL.
45. Ye Q, Gu P, Li Z, Robinson ES, Apte JS, Sullivan R, Robinson AL, Presto AA, Donahue NM. "High Spatial Resolution of Atmospheric Particle Mixing State and its Links to Particle Evolution in a Metropolitan Area." Poster presentation at Fall 2017 meeting of American Geophysical Union, December 11-15 2017, New Orleans, LA.
44. Bhandari S, Wang DS, Gani S, Seraj S, Arub Z, Habib G, Apte JS, Hildebrandt Ruiz L. Chemical composition and source apportionment of high temporal resolution PM₁ data for January-August 2017 in Delhi, India. Poster presentation at Fall 2017 meeting of American Geophysical Union, December 11-15 2017, New Orleans, LA.
43. Wang DS, Bhandari S, Gani S, Seraj S, Arub Z, Habib G, Apte JS, Hildebrandt Ruiz L. "Source Apportionment and Composition of Fine Particulate Matter in Delhi, India." Oral presentation at annual meeting of the American Institute of Chemical Engineers, October 29 - November 3, Minneapolis, MN.
42. Seraj S, Chambliss SE, Apte JS. "Viewing Satellite-Based PM_{2.5} Data through an Urban Lens." Poster presentation at annual meeting of American Association for Aerosol Research. October 16-20, 2017, Raleigh, NC
41. Chambliss SE, Tessum C, Marshall JD, Apte JS. "Modeling Urban Intake Fraction Gradients Using the InMAP Model." Poster presentation at annual meeting of American Association for Aerosol Research. October 16-20, 2017, Raleigh, NC
40. Apte JS, Gani S, Bhandari S, Seraj S, Wang DS, Arub Z, Habib G, Hildebrandt Ruiz L. "Sources and Dynamics of the Submicron Aerosol in Delhi, India: Overview of the 2017 Delhi Aerosol Supersite Campaign." Oral presentation at annual meeting of American Association for Aerosol Research. October 16-20, 2017, Raleigh, NC.
39. Gani S, Bhandari S, Seraj S, Arub Z, Habib G, Hildebrandt Ruiz L, Apte JS. "Particle Size Distribution in New Delhi: Role of Coagulation and Nucleation." Poster presentation at annual meeting of American Association for Aerosol Research. October 16-20, 2017, Raleigh, NC.
38. Bhandari S, Wang DS, Gani S, Seraj S, Arub Z, Habib G, Apte JS, Hildebrandt Ruiz L. "Source Apportionment of High Temporal Resolution PM₁ Data for Delhi, India." Poster presentation at annual meeting of American Association for Aerosol Research. October 16-20, 2017, Raleigh, NC.
37. Saha P, Robinson ES, Shah R, Zimmerman N, Apte JS, Presto AA, Robinson AL. "Reduced New Particle Formation in Urban Air Due to Anthropogenic Emissions Reductions." Poster presentation at annual meeting of American Association for Aerosol Research. October 16-20, 2017, Raleigh, NC.
36. Robinson ES, Gu P, Shah R, Lu Z, Ye Q, Zimmerman N, Apte JS, Robinson AL, Presto AA. "Restaurant Impacts on Outdoor Air Quality: Elevated Organic Aerosol Mass from Restaurant Cooking with Neighborhood-scale Plume Extents." Poster presentation at annual meeting of American Association for Aerosol Research. October 16-20, 2017, Raleigh, NC.
35. Ye Q, Gu P, Li Z, Robinson ES, Apte JS, Sullivan R, Robinson AL, Presto AA, Donahue NM. "High Spatial Resolution of Sources, Mixing State and Exposure of Particulate Matter Using Single Particle Mass Spectrometry." Oral presentation at annual meeting of American Association for Aerosol Research. October 16-20, 2017, Raleigh, NC.
34. Gu P, Li Z, Ye Q, Robinson SE, Shi J, Shah R, Zimmerman N, Apte JS, Robinson AL, Presto AA. "Investigating Spatial Variation in Organic Aerosol Concentrations and Source Impact

- in a Metropolitan Area by Mobile Sampling with Aerodyne Aerosol Mass Spectrometer.” Oral presentation at annual meeting of American Association for Aerosol Research. October 16-20, 2017, Raleigh, NC.
33. Ellis A, Zimmerman N, Li H, Gu P, Robinson ES, Robinson AL, Apte JS, Presto AA, Subramanian R. “High Temporal and Spatial Variability in Ambient Black Carbon in an Urban Area from Fixed-Site and Mobile Monitoring.” Oral presentation at annual meeting of American Association for Aerosol Research. October 16-20, 2017, Raleigh, NC.
 32. Li H, Gu P, Ye Q, Zimmerman N, Robinson ES, Apte JS, Robinson AL, Presto AA. “Interplay of Mobile Air Monitoring and Distributed Samplers to Study Intracity Spatial Variation.” Poster presentation at annual meeting of American Association for Aerosol Research. October 16-20, 2017, Raleigh, NC.
 31. Zimmerman N, Li Z, Robinson ES, Ellis A, Subramanian R, Robinson AL, Apte JS, Presto AA. “Characterizing Intra-Urban Air Pollution Gradients with a Spatially-Distributed Network of Lower Cost Sensors.” Oral presentation at annual meeting of American Association for Aerosol Research. October 16-20, 2017, Raleigh, NC.
 30. Messier KP, Chambliss SE, Gani S, Vermeulen R, Alvarez R, Apte JS. “Air Quality Land Use Regression Model Robustness from Routine Mobile Monitoring Using Google Street View Cars.” Oral presentation at annual meeting of International Society for Exposure Science. October 15-19, 2017, Research Triangle Park, NC.
 29. Gurung A, Messier KP, Apte JS. “Applicability of Mobile Monitoring to High Resolution Air Quality Mapping in New Delhi, India.” Poster presentation at annual meeting of International Society for Exposure Science. October 15-19, 2017, Research Triangle Park, NC.
 28. Apte JS, Messier KP, Gani S, Lunden MM, Vermeulen RCH, Portier CJ, Hamburg SP. “Mapping Urban Air Quality in Oakland, CA with Google Street View Vehicles.” Oral presentation at annual meeting of American Association for Aerosol Research. October 18-21, 2016, Portland, OR.
 27. Gani S, Messier KP and Apte JS. “Exposure to Outdoor Ultrafine Particles: Role of Traffic and Atmospheric New Particle Formation.” Oral presentation at annual meeting of American Association for Aerosol Research. October 18-21, 2016, Portland, OR.
 26. Presto AA, Zimmerman N, Li H, Gu P, Subramanian R, Robinson AL, Apte JS. Intra-urban Spatial and Temporal Variations in Fine Particle Number, Mass Concentration, and Size Distributions.” Oral presentation at annual meeting of American Association for Aerosol Research. October 18-21, 2016, Portland, OR
 25. Li H, Gu P, Ye Q, Zimmerman N, Subramanian R, Robinson ES, Apte JS, Robinson AL, Presto AA. “A Hybrid Sampling Network to Investigate Intracity Spatiotemporal Variation of Multiple Pollutants.” Poster presentation at annual meeting of American Association for Aerosol Research. October 18-21, 2016, Portland, OR
 24. Messier KP, Gani S, Vermeulen RCH, Apte JS. “Spatial Variability of Air Quality Data from Extensive Mobile Monitoring with Google Street View cars.” Presented at the International Society for Exposure Assessment, October 9-13, Utrecht, NL.
 23. McKone TE, Hodas N, Apte JS, Jantunen M, Jolliet O, Fantke P, Evans J, Fantke P. “Integrated Indoor and Outdoor Exposure Assessment Framework for Fine Particulate Matter Pollution.” Presented at the International Society for Exposure Assessment, October 9-13, Utrecht, NL.
 22. Apte JS. “Obtaining useful data with real-time instruments.” Oral workshop presentation at the annual meeting of the International Society for Environmental Epidemiology, Sept 1-4, 2016, Rome, Italy.

21. Messier KP, Gani S, Lunden MM, Vermeulen RCH, Marshall JD, Hamburg SP, Apte JS. "Lessons Learned from Extensive Mobile Air Quality Monitoring with Google Street View Cars." Oral presentation at the annual meeting of the International Society for Environmental Epidemiology, Sept 1-4, 2016, Rome, Italy.
20. Krasowsky T, Tang N, Daher N, Apte J, Sioutas C, Martien P, Ban-Weiss G, Kirchstetter TW. "Measurement of In-Use Freight and Passenger Locomotive Black Carbon Emissions in California." Poster presentation at annual meeting of American Association for Aerosol Research. October 12-16, 2015, Minneapolis, MN.
19. Apte JS, Gani S, Steyn D, Tripathi SN. "Episodic Ambient PM_{2.5} in Beijing and Delhi." Oral presentation at annual meeting of American Association for Aerosol Research. October 12-16, 2015, Minneapolis, MN.
18. Apte JS, Marshall JD. "Addressing Global Mortality from PM_{2.5} ." Oral presentation at annual meeting of American Association for Aerosol Research. October 20-24, 2014, Orlando, FL.
17. Apte JS, Marshall JD. "Addressing Global Mortality from PM_{2.5}." Poster presentation at annual meeting of International Society for Environmental Epidemiology. August 25-28, 2013, Seattle, WA.
16. Apte JS, Marshall JD, Nazaroff WW. "Inhalation Intake of Urban Emissions of Semivolatile Organic Compounds from Vehicles." Poster presentation at annual meeting of American Association for Aerosol Research. September 30 - October 4, 2013, Portland, OR.
15. Apte JS, Goodkind AL, Coggins JS, Marshall JD. "Blue Skies Bluer? Puzzling Implications of a Possible Supra-Linear Relationship Between PM Exposure and Mortality." Poster presentation at annual meeting of International Society for Environmental Epidemiology. August 18 - 22, 2013, Basel, Switzerland.
14. Apte JS, Marshall JD, Nazaroff WW. "Intraurban Intake Fraction of Vehicle Emissions: Asian Cities in Global Context." Oral presentation at Better Air Quality 2012 meeting, December 5-7 2012, Hong Kong.
13. Apte JS. "Health Impact Modeling: Linking Emissions Scenarios with Health Outcome Estimates." Workshop presentation at Better Air Quality 2012 meeting, December 5-7, 2012, Hong Kong.
12. Lippsit J, Su J, Jerrett M, Apte JS, de Nazelle A, Beckerman B, Texcalac. "Estimates of Population Exposure to Traffic-Related Air Pollution in Asia, North America and Europe." Poster presentation at annual meeting of International Society for Environmental Epidemiology. August 26-30, 2012, Columbia, SC.
11. Apte JS, Marshall JD, Nazaroff WW. "Inhalation Intake Fraction for Vehicle-Attributable Organic PM_{2.5}." Oral presentation at annual meeting of American Association for Aerosol Research. October 8-12, 2011, Minneapolis, Minnesota.
10. Apte JS, Bombrun E, Marshall JD, Nazaroff WW. "Intake Fraction of Nonreactive Ground-Level Pollutant Emissions in 3,646 Global Urban Areas." Poster presentation at annual meeting of American Association for Aerosol Research. October 3-7, 2011, Orlando, Florida.
9. Apte JS, Marshall JD, Nazaroff WW. "Transient Exposure to Vehicle Exhaust Plumes inside New Delhi Auto-Rickshaws." Poster presentation at annual meeting of International Society for Environmental Epidemiology. September 13-16, 2011, Barcelona, Spain.
8. Maddalena R, Ortiz AC, Lee W-Y, Russell M, Apte JS, Apte MG. "Identifying Sources of Volatile Organic Compounds and Aldehydes in a High Performance Building." Oral presentation at Indoor Air meeting. June 5-10, 2011, Austin, TX.

7. Su JG, Jerrett M, Lipsitt J, Apte JS, Beckerman B, de Nazelle A. "Estimates of Population Exposure to Traffic-Related Air Pollution in Asia, North America and Europe." Poster presented at Health Effects Institute Annual Conference. May 1-3, 2011, Boston, MA.
6. Apte JS, Kirchstetter TW, Marshall JD, Nazaroff WW. "An Instrumentation Package for Measuring Commuter Exposure to Vehicle Exhaust Pollutants in New Delhi, India." Presented at AWMA Symposium on Air Quality Measurement Methods and Technology. November 2-4, 2010. Los Angeles, CA.
5. Apte JS, Kirchstetter TW, Marshall JD, Nazaroff WW. "Commuter exposure to vehicle exhaust plumes in New Delhi, India." Symposium presentation at ISES/ISEE joint meeting. August 28-September 1, 2010. Seoul, South Korea.
4. Apte JS, Bombrun E, Marshall JD, Nazaroff WW. "Intake Fractions for Vehicle Emissions in 88 Worldwide Urban Areas." Poster presented at ISES/ISEE joint meeting. August 28-September 1, 2010. Seoul, South Korea.
3. Apte MG, Apte JS. "A Study of the Effectiveness of Indoor Plants for Removal of Volatile Organic Compounds in Indoor Air in a Seven-Story Office Building." Poster presented at ISES/ISEE joint meeting. August 28-September 1, 2010. Seoul, South Korea
2. Selkowitz SE, Arasteh D, Apte JS, Lafrance M. "Zero Energy Windows." Conference paper presented at ACEEE Summer Study on Building Energy Efficiency. August 13-18, 2006. Asilomar, CA.
1. Apte JS, Arasteh D, Huang YJ. "Future Advanced Windows for Zero Energy Homes". Conference paper presented at annual meeting of ASHRAE. June 28-July 3, 2003. Kansas City, MO.

Professional experience

Technical Advisor and Consultant, International Council on Clean Transportation, San Francisco, CA. 2011-2013.

Global population exposure modeling for urban vehicle emissions; development of global health risk assessment models for urban air quality.

Research Associate, Building Technologies Program, Lawrence Berkeley National Laboratory, Berkeley, CA. 2004-06 (full-time), 2006-2013 (part-time).

Regional and national energy savings potential analysis for energy efficient building technologies; building energy simulation using DOE-2.

Graduate Student Researcher, Energy Biosciences Institute, UC Berkeley. 2008-09.

Operations Consultant. Client: WaterHealth International. Vijayawada, India. 2005.

Independent Consultant. Berkeley, CA. 2005-06.

Designed and performed research on the energy savings potential of high-efficiency products for the US residential lighting market. Client: Wal-Mart Stores, Inc.

Undergraduate Research Assistant, Building Technologies Program, Lawrence Berkeley National Laboratory, Berkeley, CA. 2002-04.

Professional society affiliations

American Association for Aerosol Research, International Society for Exposure Science, International Society for Environmental Epidemiology, American Chemical Society, Association of Environmental Engineering Science Professors

Professional service

Member, ambient air pollution expert group, Global Burden of Disease study

Scientific Advisory Committee, "Breathe London" air quality campaign

Air quality advisor to US State Department

Peer reviewer for the following journals: *Environmental Science & Technology*, *Environmental Science & Technology Letters*, *Environmental Health Perspectives*, *Atmospheric Environment*, *Indoor Air*, *Aerosol Science & Technology*, *Journal of the Air & Waste Management Association*, *Risk Analysis*, *Science of the Total Environment*, and *Journal of Transportation and Land Use*.

Selected media coverage of research group activities

- "Air pollution is shortening lives worldwide." *Science News*, 29 September 2018.
- "Google Street View cars are now mapping air pollution around the world." *Fast Company*, 12 September 2018.
- "Air pollution is shortening your life. Here's how much." *New York Times*, 22 Aug 2018
- "Air pollution is shaving a year off our average life expectancy," *Science News*, 22 Aug 2018
- "Google uses Street View cars to collect pollution data", *CNN*, 05 June 2015.
- "A race to develop pollution sensing tech plays out in Oakland", *Wired*, 05 June 2017
- "A lesson for India in a fog so thick it could kill a cow," *New York Times*, 10 Nov 201
- "Streets, if not the air, clear out as Delhi tests car restrictions," *New York Times*, 04 Jan 2016
- "For Indians, smog and poverty are higher priority than talks in Paris," *NY Times*, 09 Dec 2015
- "Google Street View cars to start measuring air pollution," *The Onion*, 03 Aug 2015
- "Some Google Street View cars now track pollution levels," *NPR*, 29 July 201
- "India and China need cleaner air just to keep death rate steady," *Associated Press*, 16 Jun 2015
- "New Delhi has world's most toxic air," *CNN*, 13 April 2015
- "Indians lose billions of life years to pollution," *The New Scientist*, 25 Feb 2015
- "US Scientist runs pollution check on Capital in an auto," *Hindustan Times*, Delhi, 23 Feb 2015
- "US embassies to monitor air quality," *Voice of America*, 18 Feb 2015
- "Delhi wakes up to an air pollution problem it cannot ignore," *New York Times*, 15 Feb 2015
- "Delhi air is often more polluted than Beijing's," *New York Times*, 15 Feb 2015
- "Experts bank on US air quality alert," *Times of India*, New Delhi, 28 January 2015
- "India's air pollution problem," *National Public Radio Marketplace*, 23 January 2015
- "Pollution Patrol," *Nature* 517, p. 136-138, 08 January 2015
- "Study offers new insight into New Delhi's air pollution woes," *Deutsche Welle*, 2 Dec 2014
- "DIY pollution tests challenge government data," *Times of India*, New Delhi, 2 Dec 2014
- "American does reality check on road," *Times of India*, New Delhi, 27 November 2014
- "Rickshaw research reveals extreme Delhi pollution," *Associated Press*, 26 November 2014

Foreign languages

German: conversationally fluent | Hindi: proficient | Spanish: proficient | Marathi: elementary