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RESEARCH INTERESTS / EXPERTISE

- Energy use and emissions from the road transportation sector
- Life-cycle energy and environmental assessment (LCA)
- Material and energy flow analysis in industrial systems

QUALIFICATIONS

- 2010 **Ph.D., Engineering Systems**
Massachusetts Institute of Technology (MIT), Cambridge, Massachusetts, USA
- 2002 **M.Sc., Management Science & Engineering**
Stanford University, Stanford, California, USA
- 2001 **B.Sc., Environmental Engineering, B.Sc., Civil Engineering**
Northwestern University, Evanston, Illinois, USA

RESEARCH EXPERIENCE

- 2014-present **Assistant Professor**
Engineering Systems & Design
Singapore University of Technology & Design (SUTD), Singapore
- 2011-2013 **Research Scientist**
Institute of Chemical and Engineering Sciences (ICES)
Agency for Science, Technology and Research (A*STAR), Singapore
- 2010-2011 **Postdoctoral Research Associate**
Materials Systems Laboratory, MIT
- 2005-2010 **Research Assistant**
Sloan Automotive Laboratory, MIT

OTHER EXPERIENCE

- 2002-2005 **Research Council Officer**
Agency for Science, Technology and Research, Singapore

JOURNAL PUBLICATIONS ([Google Scholar h-index](#) = 13)

- Kurniawan, H., C. Ong, **L. Cheah**. 2018. Examining values and influences affecting public expectations of future urban mobility: a Singapore case study. *Transport Policy*. *Manuscript accepted*.
- Ross, S., **L. Cheah**. 2018. Uncertainty quantification in life cycle assessments: exploring the marginal benefit of additional data collection. *Journal of Industrial Ecology*. *Manuscript accepted*.
- Dalla Chiara, G., **L. Cheah**, 2017. Data stories from loading bays. *European Transport Research Review* (2017) 9:50. doi:[10.1007/s12544-017-0267-3](https://doi.org/10.1007/s12544-017-0267-3).
- Wilhelm, E., J. Hofer, **L. Cheah**. 2017. Applying optimal choices for real powertrain and lightweighting options to passenger vehicles under uncertainty. *Transport* 32(2) 2017. doi: [10.3846/16484142.2017.1286611](https://doi.org/10.3846/16484142.2017.1286611).

- Ross, S., **L. Cheah**. 2016. Uncertainty quantification in life cycle assessments: Interindividual variability and sensitivity analysis in LCA of air-conditioning systems. *Journal of Industrial Ecology* 21:1103-1114. doi:[10.1111/jiec.12505](https://doi.org/10.1111/jiec.12505).
- Finenko, A., **L. Cheah**. 2016. Temporal CO₂ emissions associated with electricity generation: case study of Singapore. *Energy Policy* 93 (2016): 70-79. doi:[10.1016/j.enpol.2016.02.039](https://doi.org/10.1016/j.enpol.2016.02.039).
- Yang, B., A. Verma, **L. Cheah**, C. Monterola. 2016. Self-organized Traffic Flow at the Lightless Intersection: Algorithms, Policies and Simulations of the Environmental Impact. *Clean Technologies and Environmental Policy* (2016) 18: 1443. doi:[10.1007/s10098-015-1077-8](https://doi.org/10.1007/s10098-015-1077-8).
- Noshadravan, A., **L. Cheah**, R. Roth, F. Freire, L. Dias, J. Gregory. 2015. Stochastic comparative assessment of environmental life cycle for conventional and electric vehicles. *International Journal of Life Cycle Assessment* (2015) 20: 854. doi:[10.1007/s11367-015-0866-y](https://doi.org/10.1007/s11367-015-0866-y).
- Cheah, L.**, N. Ciceri, E. Olivetti, S. Matsumura, D. Forterre, R. Roth, R. Kirchain. 2013. Manufacturing-focused Emissions Reductions in Footwear Production. *Journal of Cleaner Production* 44 (2013): 18-29. doi:[10.1016/j.jclepro.2012.11.037](https://doi.org/10.1016/j.jclepro.2012.11.037).
- Cheah, L.**, J. Heywood. 2011. Meeting U.S. Passenger Vehicle Fuel Economy Standards in 2016 and Beyond. *Energy Policy* 39 (2011): 454-466. doi:[10.1016/j.enpol.2010.10.027](https://doi.org/10.1016/j.enpol.2010.10.027).
- Cheah, L.**, J. Heywood, and R. Kirchain. 2009. Aluminum Stock and Flows in U.S. Passenger Vehicles and Implications on Energy Use. *Journal of Industrial Ecology* 13(5): 718-734. doi:[10.1111/j.1530-9290.2009.00176.x](https://doi.org/10.1111/j.1530-9290.2009.00176.x).
- Evans, C., **L. Cheah**, A. Bandivadekar, and J. Heywood. 2009. Getting More Miles per Gallon. *Issues in Science and Technology*. Winter 2009, Vol. XXV Number 2. National Academy Press.
- Cheah, L.**, A. Bandivadekar, K. Bodek, E. Kasseris, and J. Heywood. 2009. The Trade-off between Automobile Acceleration Performance, Weight, and Fuel Consumption. *SAE Int. J. Fuels Lubr.* 1(1): 771-777. doi:[10.4271/2008-01-1524](https://doi.org/10.4271/2008-01-1524).
- Bandivadekar, A., **L. Cheah**, C. Evans, T. Groode, J. Heywood, E. Kasseris, M. Kromer, and M. Weiss. 2008. Reducing the fuel use and greenhouse gas emissions of the US vehicle fleet. *Energy Policy* 36(7): 2754-2760. doi:[10.1016/j.enpol.2008.03.029](https://doi.org/10.1016/j.enpol.2008.03.029).

BOOK CHAPTERS

- Cheah, L.** 2014. Automotive Environmental Life Cycle Assessment. In D. Crolla, D.E. Foster, T. Kobayashi and N. Vaughan (Eds.) *Encyclopedia of Automotive Engineering*, John Wiley & Sons Ltd: Chichester. doi:[10.1002/9781118354179.auto165](https://doi.org/10.1002/9781118354179.auto165).
- Cheah, L.**, C. Evans, A. Bandivadekar, and J. Heywood. 2008. Factor of Two: Halving the Fuel Consumption of New U.S. Automobiles by 2035. Chapter 4 in *Reducing Climate Impacts in the Transportation Sector*, edited by D. Sperling and J. Cannon. New York: Springer.

RESEARCH REPORTS AND COMMENTARIES

- Cheah, L.** 2017. Commentary: Driverless vehicles can reshape Singapore, but do consider the human elements, [Channel NewsAsia](http://channelnewsasia.com), MediaCorp, 2 December 2017, Singapore.
- Cheah, L.** 2016. Cleaner Alternative Technologies to Diesel for New Vehicles in Singapore. Report prepared for the Ministry of the Environment and Water Resources, Singapore.
- Cheah, L.** et al. 2015. Environmental sustainability in the Singapore business events industry. Report prepared for the Singapore Exhibition and Convention Bureau, Singapore. *Featured on economist.com*.
- Cheah, L.** 2011. NiMH and Li-ion Batteries for Electric Vehicles: A Review. Independent consultant report prepared for the Natural Resources Defense Council, New York.
- Heywood, J. et al. 2009. An Action Plan for Cars: The Policies Needed to Reduce U.S. Petroleum Consumption and Greenhouse Gas Emissions. Cambridge, Massachusetts: MIT Energy Initiative.
- Bandivadekar, A., K. Bodek, **L. Cheah**, C. Evans, T. Groode, J. Heywood, E. Kasseris, M. Kromer, and M. Weiss. 2008. On the Road in 2035: Reducing Transportation's Petroleum

Consumption and GHG Emissions. LFEE 2008-05 RP. Cambridge, Massachusetts: MIT Laboratory for Energy and the Environment.

SELECT CONFERENCE PAPERS / PRESENTATIONS

- Ding-Mastera, J., **L. Cheah** et al, 2018. Combining GPS data collection with assisted machine learning to enhance freight vehicle and driver surveys: methodology and demonstration, Transportation Research Board (TRB) 97th Annual Meeting, Jan 7-11, 2018, Washington, D.C.
- Lu, F., F. Zhao, **L. Cheah**, 2018. Inferring urban truck driver activity patterns, TRB 97th Annual Meeting, Jan 7-11, 2018, Washington, D.C.
- Cheah, L.**, M. Stinson et al, 2017. Future Freight Surveys of Shipments, 7th METRANS International Urban Freight Conference, Oct 17-20, 2017, Long Beach, California.
- Sun, X., J. Ding, G. Chiara, **L. Cheah**, N. Cheung, 2017. A Generic Framework for Monitoring Local Freight Traffic Movements Using Computer Vision-based Techniques, 5th IEEE International Conference on Models and Technologies for Intelligent Transportation Systems, June 26-28, 2017, Naples, Italy.
- Cheah, L.**, S. Ross, 2017. Characterizing the variation in real-world driving behavior using vehicle telematics and its impact on road vehicle emissions, ISIE Conference, June 25-29, 2017, Chicago, U.S.A.
- Cheah, L.**, F. Zhao, M. Stinson, F. Lu, J. Ding-Mastera, V. Marzano, M. Ben-Akiva, 2017. Next-Generation Commodity Flow Survey: A Pilot in Singapore. City Logistics, Jun 14-16, 2017, Phuket, Thailand.
- Verma, A., **L. Cheah**, 2017. A Pilot Vehicle Survey to Examine Driving Performance and Real-World Fuel Consumption Using OBD/GPS Devices in Singapore. 27th Coordinating Research Council (CRC) Real World Emissions Workshop, Mar 26-29, 2017, Long Beach, California.
- Wilhelm, E., D. MacKenzie, Y. Zhou, **L. Cheah**, N. Tippenhauer, 2017. Evaluation of Transport Mode Using Wearable Sensor Data from Thousands of Students. TRB 96th Annual Meeting, Jan 8-12, 2017, Washington, D.C.
- Dalla Chiara, G., **L. Cheah**, C. Courcoubetis, 2017. Evaluating the Impact of Centralized Goods Receiving Stations at Urban Retail Malls. TRB 96th Annual Meeting, Jan 8-12, 2017, Washington, D.C.
- Cheah, L.** et al, 2016. On the Move in 2040: A Foresight Study on Urban Mobility in Singapore. LTA-UITP Singapore International Transport Congress and Exhibition, Oct 19-21, 2016, Singapore.
- Zahraei, S. M., C. Choo, W. Cheema, **L. Cheah**. 2016. Foresight study on Singapore urban mobility: methodologies and preliminary insights. 2nd Asia-Pacific Conference on Complex Systems Design & Management, Feb 24-26, 2015, Singapore.
- Verma, A., **L. Cheah**. 2016. Extracting Vehicle Trip Patterns Using a Radial-based Clustering Method. TRB 95th Annual Meeting, Jan 11-15, 2016, Washington, D.C.
- Chiara, G., **L. Cheah**, C. Courcoubetis. 2015. A game of supply chains and an Urban Consolidation Center. URban freight and BEhavior change (URBE) conference, Oct 1-2, 2015, Rome, Italy.
- Teo, J., **L. Cheah**, et al. 2015. An integrated sensing-based urban freight data collection framework: methodology and pilot projects in Singapore. URBE conference, Oct 1-2, 2015, Rome, Italy.
- Li, Y., N. Teo, **L. Cheah**. 2015. Hosting Sustainable Events – Carbon Footprints of Wedding banquets. World Engineers Summit on Climate Change, Jul 21-24, 2015, Singapore.
- Wei, W. and **L. Cheah**. 2015. Exploring a Mileage-based Fee in Singapore. TRB 94th Annual Meeting, Jan 11-15, 2015, Washington, D.C.
- Wei, W. and **L. Cheah**. 2014. Singapore Road Vehicle Fleet Evolution. Designing Smart Cities: Proceedings of the First Asia-Pacific Conference on Complex Systems Design & Management, Dec 10-12, 2014, Singapore. M-A. Cardin, D. Krob, P.C. Lui, Y.H. Tan, K. Wood (eds.), Springer, 2014. (*Best Student Paper award winner*)
- Cheah, L.** 2013. Use Phase Parameter Variation and Uncertainty in LCA: Automobile Case Study. Re-engineering manufacturing for sustainability, Proceedings of the 20th CIRP International

Conference on Life Cycle Engineering, April 17-19, 2013, Singapore. A. Nee, B. Song, and S-K. Ong (eds.), New York: Springer, 2013.

Cheah, L. et al. 2011. Not All Electric Vehicles are Green: Variation in Greenhouse Gas Emissions associated with Electric Vehicles. International Society for Industrial Ecology (ISIE) Conference, June 7-10, 2011, Berkeley, California.

Cheah, L., J. Heywood, and R. Kirchain. 2010. The Energy Impact of U.S. Passenger Vehicle Fuel Economy Standards. IEEE International Symposium on Sustainable Systems and Technology (ISSST), May 17-19, 2010, Arlington, Virginia.

Cheah, L. and J. Heywood. 2010. The Cost of Vehicle Electrification: A Literature Review. The Electrification of the Transportation System: Issues and Opportunities. MIT Energy Initiative Symposium, April 8, 2010, Cambridge, Massachusetts.

Cheah, L., J. Heywood, and R. Kirchain. 2009. Dynamic Material Flow and Life Cycle Analysis of Lightweight Automotive Materials in the U.S. Passenger Vehicle Fleet. International Society for Industrial Ecology (ISIE) Conference, June 21-24, 2011, Lisbon, Portugal.

FELLOWSHIPS

- 2011 Offered Singapore-MIT Alliance (SMART) Postdoctoral Fellowship
- 2006 The Martin Family Society of Fellows for Sustainability at MIT
- 2004 Singapore National Science Scholarship
- 1997 Singapore Inc. undergraduate scholarship

AWARDS & HONORS

- 2017 Finalist, ASEAN-U.S. Science Prize for Women
- 2015 Chartered Engineer (Transportation Engineering), Institution of Engineers, Singapore
- 2014 Co-author in best student paper award, CSD&M Asia-Pacific conference
- 2013 \$100K Singapore Challenge prize, Global Young Scientists Summit
- 2011 Best poster, Energy & Environment category, MIT Transportation Showcase
- 2010 3rd place, Student Paper Competition, IEEE ISSST 2010
- 2010 MIT Graduate Woman of Excellence
- 2008 SAE Award for Excellence in Oral Technical Presentation
- 2006 3rd prize, Society of Women Engineers National Collegiate Poster Competition

PROFESSIONAL ACTIVITIES

- Programme Subcommittee, 26th Intelligent Transport System (ITS) World Congress, 2019
- Scientific Committee, International Conference on Resource Sustainability (icRS), 2018
- Organizing Committee, 3rd Asian Materials Education Symposium, 2018
- Rail & Transportation Technical Committee, Institution of Engineers, Singapore, 2017-present
- Nominating Committee, International Society for Industrial Ecology, 2017-present
- Organizing Committee, International Society for Industrial Ecology conference, 2017
- Program Committee, Asia-Pacific Conference in Complex Systems Design & Management (CSD&M), 2014 and 2016
- Member, International Society for Industrial Ecology, 2012-present
- Reviewer, *Environmental Science & Tech*, *Energy Policy*, *Transportation Research Part A*, *IEEE Intelligent Transportation Systems Transactions*, *J. Industrial Ecology*, *Int. J. Sustainable Transportation*