

# John P. Eason

Carnegie Mellon University  
Department of Chemical Engineering  
Pittsburgh, PA 15213

Phone: (636) 692-3292  
Email: [jeason@andrew.cmu.edu](mailto:jeason@andrew.cmu.edu)  
Google Scholar: [click here](#)

## Education

Ph.D. Carnegie Mellon University, Expected May 2018.  
Department of Chemical Engineering. Advisor: Lorenz T. Biegler.

B.S. The University of Tulsa, May 2013.  
Department of Chemical Engineering.

## Research

Research Interests: energy systems, optimization, multi-scale systems, numerical methods.

## Honors and Awards

NSF Graduate Fellow, *NSF GRFP* - 2015 to 2018

Thomas and Adrienne Klopach Graduate Fellowship, *CMU* - 2013

Wilbur L. Nelson Award for Outstanding Academic Achievement in Chemical Engineering, *TU* - 2013

Donald F. and Milfred Topp Othmer National Scholarship Award, *AIChE* - 2011

Harry West Student Paper Award, *AIChE Fuels and Petrochemicals Division* - 2011

## Publications

### *Journal Articles*

Yu, H., **Eason, J.**, Biegler, L.T., and Feng, X. "Process integration and superstructure optimization of Organic Rankine Cycles (ORCs) with heat exchanger network synthesis." *Computers & Chemical Engineering*. Available online 17 May 2017.

Zhu, D., **Eason, J.**, and Biegler, L.T. "Energy-efficient CO<sub>2</sub> liquefaction for oxy-combustion power plant with ASU-CPU integration enhanced by cascaded sub-ambient energy utilization and waste heat recovery." *Intl. Journal of Greenhouse Gas Control*. Vol. 61, June 2017, pages 124-137.

Yu, H., **Eason, J.**, Biegler, L.T., and Feng, X. "Simultaneous heat integration and techno-economic optimization of Organic Rankine Cycle (ORC) for multiple waste heat stream recovery." *Energy*. Vol. 119, January 2017, pages 322-333.

Yu, H., Feng, X., Wang, Y., Biegler, L.T., and **Eason, J.** "A systematic method to customize an efficient organic Rankine cycle (ORC) to recover waste heat in refineries." *Applied Energy*. Vol. 179, October 2016, pages 302-315

**Eason, J.P.**, Biegler L.T. "A trust region filter method for glass box/black box optimization." *AIChE Journal*. Vol. 62, September 2016, pages 3124-3136.

Ma, J., **Eason, J.P.**, Dowling, A.W., Biegler, L.T., and Miller, D.C. "Development of a first-principles hybrid boiler model for oxy-combustion power generation system." *Intl. Journal of Greenhouse Gas Control*. Vol. 46, March 2016, pages 136-157.

**Eason, J.**, Cremaschi, S. "Adaptive sequential sampling for surrogate model generation with artificial neural networks." *Computers & Chemical Engineering*. Vol. 68, September 2014, pages 220-232.

**Eason, J.**, Cremaschi, S. "A multi-objective superstructure optimization approach to biofeedstocks-to-biofuels systems design." *Biomass and Bioenergy*. Vol. 63, April 2014, pages 64-75.

### *Proceedings and technical reports*

**Eason, J.P.**, Biegler, L.T. "Reduced model trust region methods for embedding complex simulations in optimization problems." In: Krist V. Gernaey, Jakob K. Huusom and Rafiqul Gani, Editors, *Computer Aided Chemical Engineering*, Elsevier, 2015, Volume 37, Pages 773-778.

Dowling, A.W., **Eason, J.P.**, Ma, J., Miller, D.C., and Biegler, L.T. "Coal oxycombustion power plant optimization using first principles and surrogate boiler models." *Energy Procedia*. Vol 63, 2014, pages 352-361.

Dunn, J., **Eason, J.**, and Wang, M. "Updated Sugarcane and Switchgrass Parameters in the GREET Model." Center for Transportation Research, Argonne National Laboratory. Published online: [http://greet.es.anl.gov/publication-updated\\_sugarcane\\_switchgrass\\_params](http://greet.es.anl.gov/publication-updated_sugarcane_switchgrass_params) October 2011.

### *Book Chapters*

Dowling, A.W., **Eason, J.P.**, Ma, J., Miller, D.C., and Biegler, L.T. "Equation-Based Design, Integration, and Optimization of Oxycombustion Power Systems." In: Mariano Martin, Editor, *Alternative Energy Sources and Technologies*. Springer International, 2016, pages 119-158.

### **Presentations**

**Eason, J.P.** and Biegler L.T. "Rigorous Surrogate-Based Optimization Strategies That Integrate Glass Box/Black Box Process Models." 2016 AIChE Annual Meeting, San Francisco, CA. 16 November 2016.

**Eason, J.P.** and Biegler L.T. "A trust region method for glass box/black box optimization." Invited talk at International Conference on Continuous Optimization, Tokyo, Japan. 8 August 2016

**Eason, J.P.**, and Biegler L.T. "Large-scale optimization with multi-scale models." Poster presented at Workshop on Nonlinear Optimization Algorithms and Industrial Applications, Toronto, ON, Canada. 2 June 2016.

**Eason, J.P.**, Dowling, A.W., Ma, J., Miller, D.C., and Biegler, L.T. "Multi-Scale Optimization Methods for Oxycombustion Power System Design." 2015 AIChE Annual Meeting, Salt Lake City, UT. 11 November 2015.

**Eason, J.P.** and Biegler L.T. "Trust region methods for optimization with reduced order models embedded in chemical process models." ISMP 2015, Pittsburgh, PA. 16 July 2015.

**Eason, J.**, Dowling, A., Ma, J., Miller, D., and Biegler, L.T. "A Framework for Equation Based Optimization of Coal Oxycombustion Power Plants." 2014 AIChE Annual Meeting, Atlanta, GA. 17 November 2014.

**Eason, J.**, Biegler, L.T. "Embedding Complex Simulations in Flowsheet Optimization Problems: A Reduced Model Trust Region Framework." Poster presented at AIChE 2014 Annual Meeting, Atlanta, GA. 17 November 2014.

**Eason, J.**, Biegler, L.T. "Reduced Order Models for Oxycombustion Boiler Optimization." Presented at Energy Systems Initiative Meeting, Carnegie Mellon University. 9 March 2014.

**Eason, J.**, Cremaschi, S. (2012) "Efficient surrogate model generation." Invited talk for APMonitor Webinar series on modeling and optimization. 13 November 2012.

**Eason, J.**, Cremaschi, S. (2012) "Efficient surrogate model generation with adaptive sequential sampling." Presented to Advances in Optimization session, 2012 AIChE Annual Meeting. 31 October 2012, Pittsburgh, PA.

**Eason, J.**, Cremaschi, S. (2011). "A Multi-Objective Superstructure Optimization Approach to Biofeedstocks-to-Biofuels Systems Design." Poster Presentation at 2011 AIChE Annual Student Conference, Minneapolis, MN.

**Eason, J.**, Cremaschi, S. (2011) "Estimation of biofuel yields and production route optimization with biofeedstock-to-biofuel superstructure." AIChE Mid-America Conference. 9 April 2011, Fayetteville, AR.

**Eason, J.**, Cremaschi, S. (2010) "A Systematic Comparison of Biofuel Production Routes." Poster Presentation at 2010 AIChE Annual Student Conference, Salt Lake City, UT.

Dean, C., Lee, D., Hanneman, K., **Eason, J.** and Winters, M. (2010) University of Tulsa Chem-E Car Poster Presentation. AIChE Mid-America Conference, 9 April 2010, Ames, IA.

**Eason, J.**, Wilson, W., Laizure, M., and Seing, S. (2010). University of Tulsa Chem-E Car Poster Presentation. AIChE Annual Student Conference, 5-8 November, 2010, Salt Lake City, UT.

## Research Experience

**2013-** Research Assistant, Advisor: Lorenz T. Biegler.

**2011-2013** Undergraduate Research Assistant, Advisor: Selen Cremaschi.

**2011** Argonne National Laboratory REU. Advisors: Jennifer Dunn and Michael Wang.

## Teaching Experience

**2013-2014** Teaching Assistant, Unit Operations (S14) and Chemical Process System Design (F13 and F14).

## Advising

M.S. Student - Dehao Zhu (2016)

Thesis topic: Energy-efficient CO<sub>2</sub> liquefaction for oxy-combustion power plant

## Affiliations

American Institute of Chemical Engineers (AIChE)

Society for Industrial and Applied Mathematics (SIAM)

## Referee Activity

Industrial & Engineering Chemistry Research (x2), AIChE Journal, Journal of Global Optimization, Energy, Latin American Applied Research, Optimization Methods and Software

Last updated: June 30, 2017