

**Mork Family Department of Chemical Engineering and Material Sciences and
Department of Aerospace and Mechanical Engineering
University of Southern California**

JAY H. LEE

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I. EARNED DEGREES

- Ph.D. in Chemical Engineering, California Institute of Technology, Pasadena, California, June, 1991.
- B.S. in Chemical Engineering (*Magna Cum Laude*). University of Washington, Seattle, Washington June, 1986

II. EMPLOYMENT

- University of Southern California, Los Angeles, CA, USA
 - **Choong Hoon Cho Chair and Professor**, Mork Family Department of Chemical Engineering and Materials Science (main), Department of Aerospace and Mechanical Engineering (joint) (starting 2023-present)
- Korea Advanced Institute of Science and Technology, Daejeon, Korea.
 - **KEPCO Endowed Chair**, (March, 2021-February, 2023)
 - **Professor** of Chemical and Biomolecular Engineering (August 2010--February, 2023)
 - **Director**, Saudi Aramco-KAIST CO₂ Management Center (August 2013 – February, 2023).
 - **Director**, BK Plus Program “Multi-scale Chemical Engineering” (August 2010-May 2020)
 - **Associate Vice President**, International Office (March 2017-April 2019).
 - **Department Head**, Chemical and Biomolecular Engineering (August 2010 - August 2015)
- Georgia Institute of Technology, Atlanta, GA, USA
 - **Professor**, School of Chemical and Biomolecular Engineering (August 2000 – 2010).
 - **Adjunct Professor**, School of Chemical and Biomolecular Engineering (August 2010– now).
- Purdue University, West Lafayette, IN, USA.

- **Associate Professor**, School of Chemical Engineering (August 1998 – August 2000).
- Auburn University, Auburn, AL, USA.
 - **Associate Professor**, Chemical Engineering Department (September, 1995 – August, 1998).
 - **Assistant Professor**, Chemical Engineering Department (January, 1991 - September, 1995).
- ❖ Seoul National University, Seoul, Korea.
 - **Visiting Associate Professor** of Chemical Engineering Department (September, 1997 - December, 1997).
- ❖ DuPont Central Science Engineering, Wilmington, Delaware, USA.
 - **Visiting Scientist** (June - September, 1994).

III. HONORS AND AWARDS

- Powell Foundation Faculty Research Award, 2023.
- KIChE's "Seokmyung" Excellent Chemical Engineer Award, 2022.
- KAIST 51th Anniversary International Cooperation Award - Grand Prize, 2022 (for activities during 2017-2021).
- KAIST 50th Anniversary Contribution Award, 2021.
- IFAC 2020 World Congress Plenary Speaker, 2020
<https://www.youtube.com/watch?v=LbYa8dWy8zQ&t=339s>
<https://www.youtube.com/watch?v=aT6e1sQzeGo&t=260s>
- International Federation of Automatic Control (IFAC) Outstanding Service Award, 2020.
- IEEE Service Award as Program Co-Chair in 59th IEEE Conference on Decision and Control (IEEE CDC), 2020.
- KIChE's SW Park Academic Achievement Award (for contribution to the Korean chemical engineering industry development), 2019.
- ICCAS Achievement Award, by ICROS 2019.
- IJCAS (Springer) Activity Award, 2019.
- KIChE's Korean J. of Chem. Eng (Springer-Verlag) Best Paper Award (for authoring the most cited paper during the past five years), 2017.
- KAIST 46th Anniversary International Cooperation Award, 2017.
- **The 23rd Roger Sargent Lecture, Imperial College, UK, 2016**
- **National Academy of Engineering Korea (NAEK), Elected Foreign Member, 2015**
- PSE Model Based Innovation Award, 2014
- ICCAS Minister of Trade, Industry, and Energy (MOTIE)'s Best Paper Award, 2014
- **AIChE CAST Division "Computing in Chemical Engineering" Award, 2013**
- **AIChE Fellow, 2013**

- FEBS journal's most cited article during the past 2 years, 2011~2012.
- ICROS-WISET Young Woman Researcher Award – Advisor, 2012.
- **International Federation of Automatic Control (IFAC) Fellow, 2011**
- **IEEE Fellow, 2011**
- **Korean Academy of Science and Technology (KAST), Elected Senior Member, 2011.**
- SAIC Georgia Tech Student Paper Competition, 2009.
- ASMC 2006 ISMI Best Paper Award, 2006
- Ziegler Award for Outstanding Faculty Member, Georgia Tech, 2002.
- 2nd Prize for Best Contributed Papers for FOAP-O (Foundations of Computer Aided Process Operations) Conference, Coral Springs, FL.
- Omega Chi Epsilon Kimberly Clark Mentoring Award, Purdue University, 1999.
- CAST Director's Award, Honorable Mention for Best Poster Presentation at the AIChE Annual Meeting, Los Angeles, CA, 1997.
- Auburn Alumni Council Research Award (Senior Faculty Division), 1996.
- Auburn Pulp and Paper Foundation Professorship, 1995.
- **NSF National Young Investigator Award, 1993.**
- Outstanding Presentation Award at American Control Conference, 1991.

IV. RESEARCH INTEREST

- Optimization based approach to control and scheduling
- Approximate dynamic programming and reinforcement learning for multi-scale, multi-stage stochastic decision problems
- Production planning / scheduling / supply chain management
- Microalgal biorefinery: synthesis, design, analysis (TEA/LCA) and optimization
- CO₂ capture and conversion process synthesis, design, evaluation (TEA/LCA), and optimization

V. STUDENT ADVISING

Ph.D. Students

1. Zhenghong Yu, Ph.D., Auburn University, 1995, currently with AspenTech, Houston, TX.
2. Douglas Robertson, Ph.D., 1996, Auburn University, with Marathon Petroleum Company, Houston, TX.
3. Wei Li, Ph.D., Auburn University, 1996, currently with Owens Corning, Granville, OH.
4. Anjan Datta, Ph.D., Auburn University, 1996, currently with Yokogawa, Ltd, Kokata, India.
5. Yugender Chikkula, Ph.D., Auburn University, 1997, currently with Motiva Enterprises LLC, Missouri City, TX
6. Stephen Russell, Ph.D., Auburn University, 1997, currently with Valero Energy Corp, San Antonio, TX, USA.

7. Brian Cooley, Ph.D., Auburn University, 1997, currently with Insulet Corporation, Ocean Springs, MI, USA.
8. Parthasarathy Kesavan, Ph.D., Auburn University, 1998, currently with LyondellBasell, Houston, TX, USA.
9. Raja Amirthalingham, Ph.D., Purdue University, 1999, currently with Air Liquide, Houston, TX, USA..
10. Andrew Dorsey, M.S., 1998, Ph.D., Purdue University, 2001, currently with DuPont, Chattanooga, TN.
11. Yangdong Pan, M.S., 1998, Ph.D., Purdue University, 2003, currently with Conoco-Phillips, St. Louis, MS.
12. Jongmin Lee, Ph.D., Georgia Tech, 2004, currently a professor at Seoul National University, Korea.
13. Niket Kaisare, Ph.D., Georgia Tech, 2004, currently a professor at IIT, Madras, India.
14. Jaemin Choi, Ph.D., Georgia Tech, 2004, currently with Apple, CA, USA.
15. Thidarat Tosukhowong, Ph.D., Georgia Tech, 2006, currently with GC Ventures America, Boston, MA, USA.
16. Anshul Dubey, Ph.D., Georgia Tech, 2006, currently with PepsiCo, Dallas, TX, USA..
17. Nikolaos Pratikakis, Ph.D., Georgia Tech, 2008, currently with Adritz Group, Advanced Process Controls, Decatur, GA..
18. Wee Chin Wong, Ph.D., Georgia Tech, 2009, currently a professor at Singapore Institute of Technology
19. Rakshita Agrawal, Ph.D., Georgia Tech, 2009, currently with Wayfair, Boston, MA, USA.
20. Farminder Anand, Ph.D., Georgia Tech, 2010, currently with Avery Dennison, OH, USA.
21. Ugur Guner, Ph.D., 2011, Georgia Tech, currently with CCL Global, Death Plains, IL USA.
22. Prabudha Bansal, Ph.D., 2010, Georgia Tech, currently with Celanese, Kentucky, USA.
23. Kevin Yeh, Ph.D., 2014, Georgia Tech, GA, currently with Chevron, Houston, TX, USA.
24. Yuzhi Kang, Ph.D., 2014, Georgia Tech, GA.
25. Muhammad Zaman, Ph.D., 2015, KAIST, Korea, currently an Assistant Professor at Pakistan Institute of Engineering and Applied Science, Islamabad Pakistan.
26. Moonho Eom, Ph.D., 2015, KAIST, Korea, currently with GS Caltex, Korea.
27. Mohammad Rizwan, Ph.D., 2015, KAIST, Korea, currently an assistant professor at University of Bahrain.
28. Hong Jang, Ph.D., 2015, KAIST, Korea, currently with Korea Institute of Nuclear Safety, Korea.
29. Hyojin Lee, Ph.D. 2016, KAIST, Korea, ,currently with Korea Energy Research Institute, Korea.
30. Kosan Roh, M.S. KAIST, 2012, Ph.D., 2016, KAIST, Korea, currently an assistant professor at Chungnam National University, Korea.

31. Gyeongseok Noh, Ph.D., 2018, KAIST, Korea, currently with SK Innovation, Korea.
32. Kyunghwan Ryu, Ph.D., 2019, KAIST, Korea, currently an assistant professor at Sooncheon National University, Korea.
33. Joohyun Shin, M.S., 2015, Ph.D., 2019, KAIST, Korea, currently with SK Innovation, Korea.
34. Boeun Kim, M.S., , 2015, Ph.D., 2019, KAIST, Korea, currently an assistant professor at Gongju University, Korea.
35. Sunghwan Choi, Ph.D., 2019, KAIST, Korea, currently with Lotte Chemicals, Korea.
36. Hyeonyung Heo, Ph.D., 2019, KAIST, Korea, currently with LGChem, Korea.
37. Jongkoo Lim, Ph.D., 2019, KAIST, Korea, currently with GS Caltex, Korea.
38. Seunghwan Oh, Ph.D., 2019, KAIST, Korea, currently with LGChem, Korea.
39. Seongwoong Bae, M.S., 2019, Ph.D., 2020, KAIST, Korea, currently with LGChem, Korea.
40. Shinhyuk Kim, Ph.D. KAIST, 2020, currently a postdoc at KAIST, Korea.
41. Seongbin Ga, M.S., KAIST, 2016, Ph.D. KAIST, 2020, currently an assistant professor at Ulsan University, Korea.
42. Dasom Lim, M.S., KAIST, 2016, Ph.D. KAIST, 2021, currently with Samsung Electronics, Korea.
43. Jihyeon Lee, Ph.D. KAIST, 2021, currently with KEPCO, Korea.
44. Daewook Kim, Ph.D. KAIST, 2021, currently with LG Energy Solution, Korea.
45. Seonghwan Kang, Ph.D. KAIST, 2021, currently with LG Energy Solution, Korea
46. Haeun Byeon, Ph.D. KAIST, 2022, currently with LG Energy Solution, Korea
47. Haeun Yoo, Ph.D. KAIST, 2022, currently with Samsung Electronics, Korea
48. Jae Seo Lee, Ph.D. KAIST, 2022, currently with Samsung Electronics, Korea
49. Howoun Jung, Ph.D. KAIST, 2023, currently a postdoc at USC, CA, USA.
50. Wonsuk Jeong, Ph.D. KAIST, 2023, currently a postdoc at KIST, Korea.
51. Jeehwan Lee, Ph.D. KAIST, 2023, currently with Samsung Electronics, Korea
52. Yoseong Yoon, Ph.D. KAIST, 2023, currently with SK Lubricants, Korea.
53. Hongbum Choi, Ph.D., KAIST, 2024, currently with Samsung Electronics, Korea.
54. Sanghyun Shim, Ph.D., KAIST, 2023, currently with Hanhwa-Total.

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55. Hyungmuk Lim, currently a Ph.D. student at KAIST, Korea.
 56. Seongjin Bae, M.S., KAIST, 2019, currently a Ph.D. student at KAIST, Korea.
 57. Byung Gook Lee, currently with KEPCO and a Ph.D. student at KAIST, Korea.
 58. Yechan Choi, M.S., KAIST, 2019, currently a Ph.D. student at KAIST, Korea.
 59. Dongho Han, M.S., KAIST, 2020, currently a Ph.D. student at KAIST, Korea.
 60. Jooyoung Jeong, M.S., KAIST, 2020, currently a Ph.D. student at KAIST, Korea.
 61. Woohyeon Jeong, M.S., KAIST, 2021, currently a Ph.D. student at KAIST, Korea.
 62. Hyemin Choi, M.S., KAIST, 2021, currently a Ph.D. student at KAIST, Korea.
 63. Jeongho Park, currently a Ph.D. student at KAIST, Korea.
 64. Jaeuk Lee, currently a combined MS/PhD student at KAIST, Korea.
 65. Derrick Adams, currently a Ph.D. student at KAIST, Korea.
 66. Mujin Cheon, M.S., KAIST, 2022, currently a Ph.D student at KAIST, Korea
 67. Seonwoo Kim, M.S., KAIST, 2023, currently a Ph.D. student at KAIST, Korea

68. Jon Li, M.S., USC, 2022, currently a Ph.D. student at USC, CA.
69. Sairaj Patil, M.S., USC, 2023, currently a Ph.D. student at USC, CA.

MS Only Students

1. Jian Xiao, M.S., Purdue University, 2000.
2. Seshatre Natarajan, M.S., Purdue University, 2000, currently with Momentum Technology, Austin, TX.
3. Manish Gupta, M.S., Purdue University, 2004, currently with Praxair.
4. Hana Lee, M.S., KAIST, 2013, currently with LG Chem., Korea.
5. Yeseul Sim, M.S., KAIST, 2014, currently with LG Chem., Korea.
6. Minkyu Jeon, M.S., KAIST, 2014, currently with KIMM, Korea
7. Suhang Choi, M.S., KAIST, 2017, currently with PSE, Ltd., Korea.
8. Dabin Jung, M.S., KAIST, 2017, currently with LG Chem., Korea.
9. Joohwan Kim, M.S., KAIST, 2017, currently with Samsung SDI, Korea
10. Jooyoung Lee, M.S. , KAIST, 2018, currently with LG Chem., Korea.
11. Sohyun Jeong, M.S. , KAIST, 2018, currently with LG Chem., Korea.
12. Jaewoo Oh, M.S., KAIST, 2019, currently with SK Innovation, Korea.
13. Bumsu Kim, M.S., KAIST, 2022.
14. Suyeon Sohn, M.S., KAIST, 2022, currently with Samsung Electronics, Korea.
15. Jukbin Kim, M.S., KAIST, 2023.
16. Joonhyeok Kim, M.S., KAIST, 2023, currently a Ph.D. student at KAIST, Korea.

17. Woopil Cheon, currently a M.S. student at KAIST, Korea (MS expected in 2024).
18. Seyoung Park, currently a M.S. student at KAIST, Korea (MS expected in 2024).

Postdoctoral Fellow

1. Howoun Jung, 2023-now
2. Shinhyuk Kim, 2020-2023, currently an assistant professor at Hanbat University.
3. Boram Gu, 2020-2020, currently an assistant professor at Chonnam National University.
4. Boeun Kim, 2019, currently an assistant professor at Gonju University.
5. Seongmin Heo, 2015-2020, currently an assistant professor at KAIST, Korea.
6. Kyunghwa Ryu, 2019-2020, currently an assistant professor at SoonChoeon National University, Korea.
7. Yongho Sohn, 2018-2019, with a startup.
8. Kosan Roh, , 2017-2018, currently an assistant professor at Chonnam National University.
9. Sunghyun Kim, 2015-2017, currently with Korea Energy Research Institute.
10. Hong Jang, 2015-2016, currently with Korea Atomic Energy Research Institute
11. Liang Lu, 2014-2015.
12. Prakash C. Sahoo, 2013-2014, currently with Indian Oil R&D Center.
13. Sankararao Boddupalli, 2011-2012, currently with ABB, India.
14. Jinkyung Kim, 2008-2010, currently an assistant professor at Changwon University
15. Tamir Hegazy, 2004-2005, currently an assistant professor at VT-MENA in Egypt.
16. Yandgong Pan, 2003-2004, currently with Conoco-Phillips, USA

17. Kangwook Lee, 2000-2002, currently with Mars Wriggley, Chicago, IL.
18. Yudi Samyudia, 1999-2000, currently an assistant professor at Universitas Pembangunan, Indonesia
19. Suwhan Sung, 1998-1999, currently a professor at Kyungbook University, Korea.

VI. SCHOLARLY ACCOMPLISHMENTS

A. PUBLISHED BOOKS AND PARTS OF BOOKS

1. Heo, S. M. and J. H. Lee*, “Chapter 4. Algal Based Feedstocks,” in *A-Z of Biorefinery*, Ed. N. Thongchul, A. Kokossis, and S. Assabumrungrat, 1st Edition, pp. 121-142, Elsevier, 2022.
2. Heo, S. M. and J. H. Lee*, “Chapter 20. Superstructure Optimization of Microalgal Biorefinery,” in *A-Z of Biorefinery*, Ed. N. Thongchul, A. Kokossis, and S. Assabumrungrat, 1st Edition, pp. 713-738, Elsevier, 2022.
3. Yeh, K., C. Whittaker, M. J. Realff*, and J. H. Lee*, “Optimal Harvest Management for a New Biorefinery Investment in a Timberlands Supply Chain Using a Modified Cyclic Scheduling Method,” in *Sustainability of Products, Processes and Supply Chains, Theory and Applications* 1st Edition, Computers Aided Chemical Engineering Book Series, **36**, Edited by Fenqi You, pp. 521-554 2015.
4. Frauzem, R. P. Kongpanna, K. Roh, J.H. Lee, V. Pavarajarn, S. Assabumrungrat, and R. Gani*, “Sustainable process design: Sustainable Process Networks for Carbon Dioxide Conversion” in *Sustainability of Products, Processes and Supply Chains, Theory and Applications 1st Edition*, Computers Aided Chemical Engineering Book Series, **36**, Edited by Fenqi You, pp. 175-195, 2015.
5. Yeh, K., J. H. Lee, C. Whittaker, and M.J. Realff* “Representation of Biorefinery Investment Decision Making in a Preestablished Timberlands Supply Chain,” *Proc. Of the 8th International Conference on Foundations of Computer-Aided Process Design*, Ed. M. Eden, J. D. Siirola, G. P. Towler, pp. 645-651, CACHE, Elsevier, 2014.
6. Lee, J.H. and Kwang Soon Lee, *Process Control: Theory and Practice*, [textbook in Korean] A-jin, 2013.
7. Lee*, J. H. and M. Morari, “Linear Model Predictive Control in Process Industries,” *CRC Handbook of Control Systems*, 2nd Edition, CRC Press, 2010.
8. Pratikakis, N., M. J. Realff, and J. H. Lee*, “A Real Time Approximate Dynamic Programming Approach: A High Dimensional Supply Chain

Application,” Chapter 4 published in Papageorgiou, L., Georgiadis, M. (eds.) *Process Systems Engineering Volume 4: Supply Chain Optimization*, Wiley, 2007.

9. Jorgensen*, S. B. and J. H. Lee*, “Recent Advances and Challenges in Process Identification,” 6th International Conference on Chemical Process Control, edited by J. Rawlings, B. Ogunnaike, and J. Eaton, *AIChE Symposium Series*, Vol. 98, No. 326, pp. 55-74, 2002.
10. Lee*, J. H., “Modeling for Nonlinear Model Predictive Control: Requirements, Current Status and Future Research Needs,” *Nonlinear Model Predictive Control*, F. Allgower and A. Zheng (Eds.), *Progress in Systems and Control Theory Series*, Vol. 26, Birkhauser Verlag, Basel 2000.
11. Lee*, K. S. and J. H. Lee*, “Design of Quadratic Criterion-based Iterative Learning Control,” *Iterative Learning Control: Analysis, Design, Integration and Applications*, edited by Z. Bien and J. Xu, pp. 165-192, Kluwer Academic Publisher, Boston, MA, 1998.
12. Lee*, K. S. and J. H. Lee*, “Model-Based Predictive Control Combined with Iterative Learning for Batch or Repetitive Processes,” *Iterative Learning Control: Analysis, Design, Integration and Applications*, edited by Z. Bien and J. Xu, pp. 313-334, Kluwer Academic Publisher, Boston, MA, 1998.
13. Lee*, J. H. and B. Cooley, “Recent Advances in Model Predictive Control and Other Related Areas,” *5th International Conference on Chemical Process Control*, edited by J. Kantor, C. Garcia, and B. Carnahan, *AIChE Symposium Series*, Vol. 91, No. 316, pp. 201-216, 1997.
14. Lee*, J. H., “Model Predictive Control,” *CRC Industrial Electronics Handbook*, pp. 515-521, 1996.
15. Chikkula, Y. and J. H. Lee*, “Applications of Wavelets in Process Control,” *Wavelet Applications in Chemical Engineering*, pp. 175-208, Kluwer Academic Publisher, Boston, MA, 1994.
16. Morari*, M. and J. H. Lee, “Model Predictive Control - The Good, The Bad, and The Ugly,” *CPC IV*, Ed. by Y. Arkun and W. Ray, CACHE-AICHE, pp. 419-444, 1989.
17. Morari*, M. and J. H. Lee, “Robust Control Structure Selection,” *Signal Processing Part II: Application of Control Theory*, Springer-Verlag, pp. 195-219, 1989.

B. REFEREED PUBLICATIONS

Published or In Press

[Web of Science, 10700+ citations, avg # of citations/paper=42.6, h-index 46]

[Scopus, 13300+ citations, h-index 52]

[Google Scholar, 20900+ citations, h-index 65] as of December, 2023

* notes the corresponding author

1. Kim, S.W., J. H. Park, W. S. Chung, D. Adams, and J. H. Lee*, “Design and Management of International Green Hydrogen Supply Chain: A Temporal Integrated Planning Approach,” *Energy and Conversion Management*, **301**, 118010, <https://doi.org/10.1016/j.enconman.2023.118010>, 2024.
2. Daoutidis, P.*, J. H. Lee*, S. Rangarajanc, L. Chiang, B. Gopaluni, A. M. Schweidtmann, I. Harjunoski, M. Mercangoz, A. Mesbah, F. Boukouvala, F. V. Lima, A. del Rio Chanona, and C. Georgakis, “Machine Learning in Process Systems Engineering: Challenges and Opportunities,” *Computers and Chemical Engineering*, 181, 108523, <https://doi.org/10.1016/j.compchemeng.2023.108523>, 2024.
3. Lee, J. W. and J. H. Lee*, “Intra- and Inter-Cycle Feature Extraction to Predict Lithium-Ion Battery Lifespan Using Convolutional and Recurrent Neural Networks,” *Applied Energy*, 356, 122399, <https://doi.org/10.1016/j.apenergy.2023.122399>, 2024.
4. Yoo, J. H., H. B. Choi, H. D. Lee, J. H. Lee, and J. M. Bae,* “A design study on a flat membrane-reactor stack for on-site hydrogen production,” *Chemical Engineering Research and Design*, in press, 2024.
5. J. H. Park, S. H. Kang, S. W. Kim, H. S. Cho, S. M. Heo* and J. H. Lee*, “Techno-economic analysis of solar powered green hydrogen system based on multi-objective optimization of economics and productivity,” *Energy Conversion and Management*, **299**, 117823, <https://doi.org/10.1016/j.enconman.2023.117823>, 2024.
6. Kim, S.W., Y.C. Choi, J. H. Park, D. Adams, S. M. Heo and J. H. Lee*, “Multi-period capacity planning of hybrid micro-grids with green hydrogen under multi-timescale uncertainty,” *Renewable and Sustainable Energy Reviews*, 190, 114049, <https://doi.org/10.1016/j.rser.2023.114049>, 2024.

7. J. H. Lee, W. P. Chun, S., K. S. Rho, S. M. Heo* and J. H. Lee*, “Applying real options with reinforcement learning to assess commercial CCU deployment,” *Journal of CO₂ Utilization*, **77**, 102613, <https://doi.org/10.1016/j.jcou.2023.102613>, 2023.
8. Ikonen*, T. J., D. Han, J. H. Lee and I. Harjunkoski, “Stochastic programming of energy system operations considering terminal energy storage levels,” *Computers and Chemical Engineering*, **179**, 108449, <https://doi.org/10.1016/j.compchemeng.2023.108449>, 2023.
9. Shim, S. H. and J. H. Lee*, “Statistical kinetic modeling procedure to predict exo-olefin content in cationic polymerization and its application to polyisobutylene,” *Ind. Eng. Chem. Res.*, **62**, 17577-17591, <https://doi.org/10.1021/acs.iecr.3c02443>, 2023.
10. Jung, H. and J. H. Lee*, ““Flexible Operation of Post-combustion CO₂ Capture Process Enabled by NARX-MPC using Neural Network”,” *Computers and Chemical Engineering*, **179**, 108447, <https://doi.org/10.1016/j.compchemeng.2023.108447>, 2023.
11. Mongkhonsiri, G., N. Thongchul, A. Arpornwichanop, J. H. Lee, R. Gani, and S. Assabumrungrat*, “A comprehensive systematic analysis of synthesis and design of sustainable oil palm integrated biorefinery networks,” *Sustainable Production and Consumption*, <https://doi.org/10.1016/j.spc.2023.09.015>, 2023.
12. Jeong, W.S., S. W. Kim, A. S. Al-Hunaidy, H. Imran, A. Jamal and J. H. Lee*, “Identification of sustainable carbon capture and utilization (CCU) pathways using state-task network representation,” *Computers and Chemical Engineering*, **178**, 108408, <https://doi.org/10.1016/j.compchemeng.2023.108408>, 2023.
13. Kim, J. H., T. H. Ha, J. H. Kim, G. H. Jeong, S. O. Kim, W. S. Chung, K. Roh*, J. H. Lee*, and J. H. Oh*, “Design principles of efficient and economical CO₂ electrolysis in acids,” *Applied Catalysis B: Environmental*, **339**, 123160, <https://doi.org/10.1016/j.apcatb.2023.123160>, 2023.
14. Byun, H. E., B. Kim and J. H. Lee*, “Embedding active learning in batch-to-batch optimization using reinforcement learning,” *Automatica*, **157**, 111260, <https://doi.org/10.1016/j.automatica.2023.111260>, 2023.

15. Sucunthowong K., J. H. Lee, S. Powtongsook and K. Nootong*, "Simultaneous utilization of CO₂ and nitrate wastes from compact recirculating aquaculture system for improving algal biomass (*scenedesmus armatus*) production," *Algal Research*, 103224, <https://doi.org/10.1016/j.algal.2023.103224>, 2023.
16. Jeong, W. H., J. S. Lee, C. K. Ko, S. H. Yi and J. H. Lee*, "Development and evaluation of FINEX offgas capture and utilization processes for sustainable steelmaking industry," *International Journal of Greenhouse Gas Control*, **127**, 103936, <https://doi.org/10.1016/j.ijggc.2023.103936>, 2023.
17. Bae, S. J., B. R. Gu* and J. H. Lee*, "A 3D CFD study on the effects of feed spacer designs on membrane performance for high-permeance RO membranes," *Journal of Water Process Technology*, **53**, 103887, <https://doi.org/10.1016/j.jwpe.2023.103887>, 2023.
18. Park, J. H., K. H. Ryu, C. H. Kim, W. C. Cho, M. J. Kim, J. H. Lee, H. S. Cho*, J. H. Lee*, "Green hydrogen to tackle the power curtailment: Meteorological data-based capacity factor and techno-economic analysis," *Applied Energy*, **340**, 121016, <https://doi.org/10.1016/j.apenergy.2023.121016>, 2023.
19. Lee, B. K., S. C. Yang, D. Y. Kwak, H. K. Jo, Y. W. Lee, Y. M. Bae* and J. H. Lee* "Ammonium uranate hydrate wet reconversion process for the production of nucleargrade UO₂ powder from uranyl nitrate hexahydrate solution," *Nuclear Enigneering and Technology*, **55**, 2206-2214, <https://doi.org/10.1016/j.net.2023.02.019>, 2023.
20. Kim, S. W., S. Kang and J. H. Lee*, "Optimal design of offshore wind power farm in high resolution using geographical information system," *Computers and Chemical Engineering*, **174**, 108253, <https://doi.org/10.1016/j.compchemeng.2023.108253>, 2023.
21. Shim, S. H., J. K. Choi, S. C. Lee, and J. H. Lee*, "Statistical kinetic modeling procedure for cationic polymerization and its application to polyisobutylene," *AIChE Journal*, <https://doi.org/10.1002/aic.18036>, 2023.
22. Chung, W. S., W. H. Jeong, J. S. Lee, J. H. Kim, K. S. Roh* and J. H. Lee*, "Electrification of CO₂ conversion into chemicals and fuels: gaps and opportunities in process systems engineering," *Computers and Chemical Engineering*, **170**, 108106, <https://doi.org/10.1016/j.compchemeng.2022.108106>, 2023.

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261. Lundstrom, P., J. H. Lee, M. Morari* and S. Skogestad, "Limitations of Dynamic Matrix Control," *Comp. and Chem. Engr.*, pp. 409-421, 1995.
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266. Lee, J. H. and M. Morari*, "Robust Measurement Selection," *Automatica*, **27**, pp.519-527, 1991.

iii. Submitted

267. Cheon, M., H. E. Byun and J. H. Lee*, "Model free reinforcement learning based non-myopic Bayesian optimization and its empirical application to optimization in electro chemistry," *Computers and Chemical Engineering*, under revision, 2023.
268. Lee, Y. C., S. J. Bae, Y. J. Park, C. H. Ahn, A. Jamal, J. H. Lee* and T. H. Bae*, "Direct CO₂ mineralization using seawater reverse osmosis brine facilitated by hollow fiber membrane contactor," *Chemical Engineering Journal*, under review, 2023.
269. Park, K. H., K. R. Lee, H. Jo, J. Park, J. H. Lee and K. Jeong*, "Production of high-purity nano-calcium carbonate from waste cement powder," *Journal of CO₂ Utilization*, under review, 2023.
270. Park, J. M., M. Cheon, S. H. Park, J. H. Lee* and D. H. Koh, "Bayesian optimization for efficient separation of isopropyl alcohol and water mixtures using polypropylene hollow fiber membrane contactors," *Journal of Membrane Science*, under review, 2024.
271. Park, J. H., S. H. Kang, S. W. Kim, H. S. Cho, and J. H. Lee*, "Comparative techno-economic evaluation of alkaline and PEM electrolysis for hydrogen production considering volatilities of renewable energy sources," *Energy and Environmental Science*, under review, 2023.
272. Jeong, W. H. and J. H. Lee*, "Bayesian Optimization for Quick Determination of Operating Variables of Simulated Moving Bed Chromatography," *Engineering Applications of Artificial Intelligence*, under review, 2023.
273. Lee, J., S. M. Heo and J. H. Lee*, "Attention Mechanism for Lithium-Ion Battery Lifespan Prediction: Temporal and Cyclic Attention," *eTransportation*, submitted, 2023.
274. Park, J. H., S. H. Kang, S. W. Kim, H. Kim, H. S. Cho, and J. H. Lee*, "Enhancing the economics and reliability of electricity supply through Power-to-Gas-to-Power

(P2G2P) with green hydrogen,” *Renewable and Sustainable Energy Reviews*, submitted, 2023.

275. Kim, S.W., J. H. Park, and J. H. Lee*, “Design, Operation and Performance Assessment of Wind Energy-Based Hydrogen Production System with a Novel Rule-Based Control Strategy”,” *Renewable and Sustainable Energy Reviews*, submitted, 2024.
276. Choi, H. B., K. S. Roh, and J. H. Lee, “ Bayesian optimization for design and operating condition selection of a fermentation reactor,” *Biotechnology and Bioengineering*, submitted, 2023.
277. Bae, S. and J. H. Lee*, “Development of a compartmental model for a Spinning Cone Column performing monomer removal aided by CFD simulation and mass transfer analysis,” *International Journal of Heat and Mass Transfer*, in preparation, 2023.

C. OTHER PUBLICATION

Refereed Conference Proceeding Papers

160+ papers in various international conference proceedings (list provided upon request)

D. PRESENTATIONS

500+ presentations at technical meetings (list provided upon request)

(Recent) Plenary/ Keynote Presentations at Technical Meetings

1. Lee, J.H. “ Role of Process Systems Engineering in Decarbonization and Energy Transition,” an invited **plenary talk** at *HKUST 30th Anniversary Conference*, Hong Kong, 2023.
2. Lee, J.H. “ Role of Process Systems Engineering in Building Carbon Neutral Energy System,” an invited **plenary talk** at *AdCONIP Symposium*, Vancouver, BC, Canada, 2022.
3. Lee, J.H. “Reinforcement Learning for Control and Beyond,” an invited **plenary talk** at the *Asian Control Conference*, Busan, Korea, 2022.
4. Lee, J.H. “Role of Process Systems Engineering in Achieving Carbon Neutrality” an invited **keynote talk** at the *KIChE Spring Meeting*, Jeju, Korea, April 21, 2022.

5. Lee, J.H.“Methods and Software Tools for the Evaluation of CO₂ Utilization Technologies” an invited **keynote talk** at the ICCDU, Daejeon, Korea, July 18-22, 2021
6. Lee, J.H.“Reinforcement Learning vs Model Predictive Control: Alternative or Complementary?,” an invited **keynote talk** at the *IFAC Workshop Series on Control Systems and Data Science Towards Industry 4.0*, City University of Hong Kong, May 21, 2021.
7. Lee, J.H.“GIS based design and evaluation of biorefinery supply chain” an invited talk at the *ProBioRefine 2021*, Technical University of Denmark, May 7, 2021.
8. Lee, J.H.“Early Stage Evaluation and Analysis of Carbon-to-X technologies” an invited **keynote talk** at the *KIChE Spring Meeting*, Busan, Korea, April 22, 2021.
9. Lee, J.H.“Reinforcement Learning for Process Control and Beyond,” an invited **plenary talk** at the *IFAC World Congress*, Berlin, Germany, July 16, 2020.
10. Lee, J.H.“Reinforcement Learning: Model Based or Model Free?” an invited **keynote talk** at the “Machine Learning Meets Model Based Control” Workshop at *IFAC World Congress*, Berlin, Germany, July 11, 2020.
11. Lee, J.H.“Reinforcement Learning for Process Industry,” an invited **plenary talk** at the *3rd ICFMCE*, Bangkok, Thailand, December 17, 2019.
12. Lee, J.H.“Model based Control and Reinforcement Learning: Alternatives or Complementary?,” an invited **keynote talk** at the *Online Optimization – Grand Challenges and Opportunities*, Trondheim, Norway, November 08, 2019.
13. Lee, J.H.“Machine Learning Research at KAIST CBE,” an invited **keynote talk** at the *Tsinghua-KAIST Joint Workshop on Smart and Sustainable Chemical Engineering*, Beijing, PRC, Sept 27, 2019.
14. Lee, J.H.“Potential of Machine Learning in Process Industry”, an invited **keynote talk** at the *APCChE*, Sapporo, Japan, Sept 24, 2019.
15. Lee, J.H.“Reinforcement Learning: Recent Progress and Its Promises and Challenges for Industrial Process Control and Beyond”, an invited **plenary talk** at the *1st IEEE Industrial Artificial Intelligence*, Shenyang, PRC, July 23, 2019.
16. Lee, J.H.“ Reinforcement Learning: Recent Progress and Its Potential for Process Control and Beyond,” an **invited talk** at the *FOPAM Symposium*, Raleigh, NC, USA, August 8, 2019.

17. Lee, J.H. “Recent Progress in Machine Learning and Its Potential for PSE: From Materials Design to Process Operation,” an **invited talk** at the *FOCAPD Symposium, Copper Mountain, CO*, July 15, 2019.
18. Lee, J. H., “Development of a Computer-Aided Tool for Microalgal Process Synthesis and Evaluation”, an **invited key talk** at *KMB Symposium, Jejudo Island, Korea*, June 24, 2019
19. Lee, J.H. “Reinforcement Learning: Overview and Implications for Process Control and Beyond,” an **invited talk** at the *ASPEN Technology Advisory Board Meeting, Houtson, TX, USA*, May 16, 2019.
20. Lee, J.H., “Analysis of CO₂ Capture and Utilization Processes for Sustainable Carbon Management,” an invited **plenary talk** at the 2nd International Conference on Functional Materials and Chemical Engineering (*ICFMCE*), Abu Dhabi, November 21, 2018.
21. Lee, J.H., “Overview of Progress in Reinforcement Learning and Its Implications for Process Control and Beyond (Combining RL with Math Programming for Integrated Multi-Scale Decision Making) ,” an invited **keynote talk** at *CUHK SZ-TBSI Machine Learning for Industrial Intelligence Workshop, Shenzhen, PRC*, July 31, 2018.
22. Lee, J.H. and Thomas Badgwell, “Overview of Progress in Reinforcement Learning and Its Implications for Process Control,” an invited **plenary talk** at the *Process Systems Engineering (PSE) Symposium, San Diego, CA, USA*, July 4, 2018
23. Lee, J.H., “Overview of Progress in Machine Learning,” an **invited plenary talk** at *EDRC/KICHe PSE Workshop, Seoul, Korea*, January 17, 2018
24. Lee, J.H., “Superstructure Based Selection and Evaluation of CO₂ Capture and Conversion Pathways,” an **invited talk** at *Gordon Research Conference on CCUS, NH, USA*, June 13, 2017
25. Lee, J. H., “Capacity planning and operation of hybrid energy network by combining math programming and dynamic programming,” a **plenary lecture at ADCONIP**, in Taipei, Taiwan, May 30, 2017.
26. Lee, J. H., “Machine Learning: Recent Advances and Implications for PSE Problems,” an **invited talk** at *FOCAPO-CPC, Tucson, AZ*, January 2017
27. Lee, J. H. and K. Rho, “Optimal CO₂ reduction strategy for a refinery via CO₂ capture and conversion technologies,” a **keynote talk** at the *250th ACS Symposium, Boston, MA, USA*, August 16, 2015.
28. Lee, J. H., “CO₂ Management: An overview of research activities and Saudi Aramco-KAIST CO₂ Management Center and LENSE” an **invited talk** at *UKC, Atlanta, GA*,

USA, August 1, 2015.

29. Lee, J. H., “Use of Superstructure Modeling and Stochastic Optimization in Renewable Energy Problems,” **a keynote talk** at Process Systems Engineering (PSE) Conference, Copenhagen, Denmark, June 1, 2015.
30. Lee, J. H., “Energy Supply Chain Optimization: A Challenge for Control Engineers?” **a plenary talk** at Chinese Process Control Conference, Dalian, China, August 10, 2014.
31. Lee, J. H., “Optimization and energy systems engineering”, **an invited talk** at *KIChE Symposium*, Changwon, Korea, April 23 – 25, 2014.
32. Lee, J. H., “Model Predictive Control <On-line optimization based approach vs. explicit approach”, **an invited talk** at *ICCAS Symposium*, Jeju, Korea, Oct. 20, 2012.
33. Lee, J. H., “Multi-stage formulation of energy supply chain design and optimization”, **an invited talk** at *KIChE Symposium*, Busan, Korea, Oct. 24-26, 2012.
34. Lee, J. H., “Energy Supply Chain Optimization: A Challenge for Control Engineers?” **a plenary talk** at *IFAC ADCHEM*, Singapore, July 2012.
35. Lee, J. H., “Stochastic approach to state estimation: Current status and open problem,” **an invited talk** at FIPSE-1, Western Peloponnese, Greece, Aug. 29-31, 2012.
36. Lee, J. H., “Approximate Dynamic Programming Approach for Multi-Stage Decision Problems in Process Industries”, **a keynote talk** at ICROS Symposium, Seoul, Korea, Apr. 5-6, 2012.
37. Lee, J. H. and W. C. Wong, “Improved Disturbance and Fault Signal Modeling via Hidden Markov Models,” **a keynote talk** at *ADCONIP Symposium*, Hangzhou, Zhejiang, China, 2011.
38. Lee, J. H. and W. C. Wong, “Approximate Dynamic Programming Approach for Process Control,” **a keynote talk** at *IFAC ADCHEM Symposium*, Istanbul, Turkey, 2009.
39. Lee, J. H., “Model-free Control of Nonlinear Systems via Approximate Dynamic Programming,” **a keynote talk** at *International Workshop on Assessment and Future Directions of Nonlinear Model Predictive Control*, Pavia, Italy, 2008.
40. Lee, J. H. “Approximate Dynamic Programming: Process Control, Scheduling and Beyond,” **an invited keynote talk** at *Canadian Chemical Engineering Conference (CSChE Annual Meeting)*, Edmonton, Canada, October, 2007.
41. Lee, J. H., “Iterative Learning Control,” **an invited keynote talk** at *ADCHEM 2006*, Gramado, Brazil, April, 2006.

42. Lee*, J. H. and J. M. Lee, "Approximate Dynamic Programming Applied to Process Scheduling and Control," **an invited talk** at *CPC-VII*, Lake Louise, Canada, January, 2006.
43. Lee, J. H., "Approximate Dynamic Programming Framework for Process Control and Scheduling," **an invited keynote talk** at *PSE Asia*, Seoul, Korea, 2005.
44. Lee, J. H., "Simulation Based Dynamic Programming Framework for Process Control and Scheduling," **a keynote talk** at *International Conference on Control and Automation Systems (ICCAS)*, Kyungju, Korea, October, 2003.
45. Lee, J. H., "Model Predictive Control for Batch Processes and Other Novel Applications," **an invited keynote talk** at *Aspen World 2002*, Washington, D.C., 2002.
46. Jorgensen, S. B. and J. H. Lee, "Recent Advances and Challenges in Process Identification," **an invited talk** at *6th International Conference on Chemical Process Control (CPC-VI)*, 2002.
47. Lee, K. S. and J. H. Lee, "A Generic Framework for Integrated Quality and Profile Control for Industrial Batch Processes," **a keynote talk** at *IFAC DYCOPS-6*, Jeju Island, Korea, 2001.
48. N. Kaisare, R. Amirthalingam, and J. H. Lee, "Inferential Kappa Number Control in A Two-Vessel Kamyrdigester," **an invited talk** at *Pulp Digester Modeling and Control Workshop*, Annapolis, MD, 2001.
49. W. Dorsey, J. H. Lee, V. Saucedo, R. Hodges, and G. Krishnagopalan, "Production of Low-Lignin, High-Strength, and Easily Bleachable Pulp through Sensor Development, Process Modification, Optimization and Control," **an invited talk** at *Pulp Digester Modeling and Control Workshop*, Annapolis, MD, 2001.
50. Lee, J. S., K. S. Lee, J. H. Lee, and S. W. Park, "An On-Line Batch Span Minimization and Quality Control Strategy," **a keynote talk** at *IFAC ADCHEM 2000 Conference*, Pisa, Italy, June, 2000.
51. Lee, J. H., "Nonlinear Model Predictive Control," **an invited talk** at *Aspenworld 2000*, Orlando, FL, February, 2000.
52. Lee, J. H. and B. Cooley, "Recent Advances in Model Predictive Control and Other Related Areas," **an invited talk** at *5th International Conference on Chemical Process Control*, 1996.

E. Patents

1. “기계학습을 이용한 인자 예측 및 최적화 프로그램”, 저작권 등록 C-2021-034539, 2021. 08. 30,
2. “PRODUCTION OF ACETIC ACID THROUGH CRYOGENIC SEPARATION OF SYNGAS,” US Patent, (Appl. No.17/206,350, 2021/03/19), (Publication No. 20220298095, 2022/9/22)
3. “THE PROCESS DESIGN OF RAW MATERIAL FOR ACETIC ACID STNTHESIS” (“이산화탄소를 이용하는 건식 개질 반응을 이용한 아세트산의 생성 방법 및 그 시스템”), KR, PCT/KR2018/005074 (PCT Appl. No.), 2018. 05. 02. (PCT Appl. Date)
4. “THE PROCESS DESIGN OF RAW MATERIAL FOR ACETIC ACID STNTHESIS” (“이산화탄소를 이용하는 건식 개질 반응을 이용한 아세트산의 생성 방법 및 그 시스템”), KR, 10-2017-0027347 (Appl. No.), 2017. 03. 02. (Appl. Date)
5. “MICROALGAE-DERIVED ANODIC CATALYST FOR DIRECT ALKALINE SULFIDE FUEL CELL AND METHOD FOR PREPARING THE SAME” (“직접 알칼라인 황화이온 연료전지용 미세조류 유래 애노드 촉매 및 이의 제조방법”), KR, 10-2015-0068673 (Appl. No.), 2015. 05. 18. (Appl. Date), 10-1654835-0000 (Patent No.), 2016. 08. 31. (Patent Date)
6. “DEVICE FOR CONTROLLING THE GASIFIER AND METHOD FOR CONTROLLING THE GASIFIER USING THE DEVICE” (“가스화기 제어 장치 및 이를 이용한 가스화기 제어 방법”), KR, 10-2015-0004330 (Appl. No.), 2015. 01. 12. (Appl. Date), 10-1625026-0000 (Patent No.), 2016. 05. 23. (Patent Date)
7. “IMPROVED METHODS OF TREATING A BIOMASS FOR ENZYMATIC HYDROLYSIS”, US, PCT/US2010/058960 (PCT Appl. No.), 2010.12.03. (PCT Appl. Date)
8. “IMPROVED METHODS OF ENZYMATIC HYDROLYSIS”, US, PCT/US2010/056072 (PCT Appl. No.), 2010.11.09. (PCT Appl. Date)
9. “METHODS OF ENZYMATIC HYDROLYSIS”, US, 12/942906 (Appl. No.), 2010. 11. 09. (Appl. Date), 9631057 (Patent No.), 2017. 04. 25. (Patent Date)
10. “UNIFIED MODEL BASED PREDICTIVE CONTROL OF BATCH PROCESSES AND END PRODUCT QUALITY” (“품질 제어 기능이 통합된

회분 공정의 모델 기반 예측 제어 방법”), KR, 10-1998-0035949 (Appl. No.), 1998. 09. 01. (Appl. Date), 10-0313967-0000 (Patent No.), 2001. 10. 25. (Patent Date)

11. “MODEL BASED PREDICTIVE CONTROL SYSTEM AND METHOD” (“모델기반 예측제어 시스템 및 방법”), KR, 10-1997-0019156 (Appl. No.), 1997. 05. 17. (Appl. Date), 10-0221231-0000 (Patent No.), 1999. 06. 26. (Patent Date)

F. Technology Transfer

1. “ArKaTAC³ (Aramco-KAIST Tool for Analyzing CO₂ Capture, Conversion Technologies) Software Ver 3.0, to Aspen Technology through Saudi Aramco Technology Company, 2023.

VII. SERVICE

A. PROFESSIONAL CONTRIBUTION

- Appointments

Journal Editorial Boards

- *Korean Journal of Chemical Engineering (Springer)*, **Editor-in-Chief**, 2021-now.
- *Computers and Chemical Engineering (Elsevier)*, **Editor** of Dynamics and Controls Area, 2007-now.
- *IFAC Papers-On-Line (POL)*, **Editor**, 2017-now.
- *Discover Chemical Engineering (Springer-Nature)*, Associate Editor, 2020-now.
- *IFAC Journal of Process Control (Elsevier)*, Associate Editor, 2005-Now. Guest Editor of IFAC WC Special Issue: 2017-2018
- *International Journal of Control, Automation, and Systems (Springer)*, **Editor**, 2018-2022.
- *BMC Chemical Engineering (Springer-Nature)*, **Subject Editor** of Plant Design, Management and Control, 2018-2020.
- *ACS Ind. Eng. Chem. Res. (Wiley)*, Editorial Board, Member, 2018-2020.
- *Optimal Control Applications and Methods*, Editorial Board: Subject Editor, 2008-2014.
- *IEEE Transactions in Control System Technology* Editorial Board: Associate Editor, 2005-2011.
- *IFAC Journal Automatica* Editorial Board: Associate Editor 2002 – 2007
- *IEEE Conference* Editorial Board: Associate Editor, 2001-2004

Professional Society

- *IFAC (International Federation of Automatic Control)*
 - Coordinating Committee 6 *Process and Power Systems*, Chair, 2017-2023.
 - Awards Committee – Application Paper Chair, 2020-2023.
 - Technical Area Committee 6.1 *Chemical Process Control*: Chair 2011-2017, Member, 2000-now.
 - *AIChE (American Institute of Chemical Engineers)*
 - *AIChE* CAST Division, Past Chair (2021), Chair (2020), 1st Vice Chair (2019), 2nd Vice Chair (2018).
 - *AIChE* CAST Division (Area 10) Director, 2002-2004
 - *AIChE* CAST Area 10B Programming Chair, 2000-2002
 - Fellows Council, 2014-2016.
 - *FIPSE (Frontiers in Process Systems Engineering) Symposium Series.*
 - Trustee, 2014-now
 - *ICROS (Institute of Control, Robotics, and Systems)*
 - Vice President, 2018-2021
 - Director, 2011-2015, 2017
 - *IEEE CSS Technical Committee on Industrial Process Control*, Steering Committee Member, 2007-now
 - *PSE Symposium Executive Committee Chair*, 2019-now
 - *Korean Academy of Science and Technology (KAST)*, External Relations Committee, 2016-now
 - *National Academy of Engineering Korea (NAEK)*, International Relations Committee, 2015-now
 - *KIChE (Korean Institute of Chemical Engineers)*
 - Process Systems Engineering Division Chair, 2018
 - Chairman of the International Relations Committee, 2011-2012
 - American Control Conference Society Review Chair for AIChE, 2002
- Conference Programming
 - 2026 IFAC World Congress, Busan, Korea, **General Chair**
 - 2022 IFAC DYCOPS Symposium, Busan, Korea, **General Chair**
 - 2021 PSE Symposium, Kyoto Japan: **ExCom Chair** and **IPC Member**
 - 2020 IEEE CDC (Control and Decision Conference), Jeju Island, Korea, **Program Co-Chair**
 - 2020 the IFAC World Congress, Berlin, Germany: **Editor**
 - 2019 Chemindix, Bahrain: **Panel Chair** on “Circular Carbon Economy”
 - 2019 ICRO ICCAS, Jeju Island, Korea, **General Chair**
 - 2018 IFAC ADCHEM Symposium, Shenyang, China: International Programming Committee
 - 2018 PSE-ESCAPE, San Diego, CA, USA: **IPC Area Co-Chair**
 - 2017 Mission Innovation CCUS Workshop, Houston, TX: **“Cross-Cut” Panel Co-Lead**
 - 2017 ADCONIPS Conference: Publication Chair and IEEE CSS Representative, IPC member

- 2017 World Congress of Chemical Engineering, Scientific Committee
- 2017 the IFAC World Congress, Toulouse, France: **Associate Editor**
- 2017 CPC IX: Technical Advisory Committee
- 2016 PSE Asia, Tokyo, Japan: International Programming Committee
- 2016 6th Int. Conference Foundations of Systems Biology in Engineering (FOSBE), Magdeburg, Germany: International Programming Committee
- 2016 IFAC DYCOPS-CAB Symposium, Trondheim, Norway: International Programming Committee
- FIPSE (Frontiers in Process Systems Engineering) 3, Session Organizer, Rhodes, Greece, June, 2016.
- 2015 IFAC ADCHEM Symposium, Whistler, Canada: International Programming Committee
- 2015 PSE ESCAPE, Copenhagen, Denmark: **IPC Area Chair**
- 2014 ADCONIPS Conference: **IPC co-Chair** and IEEE CSS Representative
- 2014 the IFAC World Congress, **Editor**
- 2013 the IEEE Conference on Control Applications, Associate Editor
- 2013 IFAC DYCOPS-9: **IPC Area Chair** (Batch Process Modeling, Optimization and Control)
- 2012 ICROS ICCAS Conference: International Relations Chair
- 2012 9th World Congress of Chemical Engineering: Scientific Programming Committee
- 2012 Chemical Process Control 8 (CPC8): Conference Programming Advisory Committee
- 2011 ADCONIPS Conference: IEEE representative for the conference
- 2011 ESCAPE Conference: Area Chair of IPC (Optimization and Control)
- 2010 American Control Conference: Programming Committee
- 2009 IFAC ADCHEM: International Programming Committee.
- 2007 IFAC DYCOPS-7 Conference: Program Committee.
- 2005 IFAC Workshop on “Advanced Control for Semiconductor Manufacturing,” Singapore, **IPC Co-Chair.**
- 2006 Chemical Process Control Conference 7: Programming Committee.
- 2006 IFAC Conference on System Identification (SYSID) 2006: International Programming Committee.
- 2006 IFAC ADCHEM: International Programming Committee.
- 2005 AIChE Annual Meeting: Organized and chaired “New Directions for Process Control Research”
- 2005 PSE Asia: International Programming Committee.
- 2004 IFAC DYCOPS-7 Conference: Program Committee.
- 2003 IFAC ADCHEM Conference: Program Area Chair (Model Based Control) for Organized and ran the review process for the papers submitted to the Model Based Control area.
- 2003 AIChE Annual Meeting: Organized and chaired “New Directions for Process Control Research”
- 2002 AIChE CAST Division Awards Committee Chair: Managed the 2002 CAST Division Awards tasks

- 2003 IFAC SYSID Conference: Member of the International Programming Committee. Proposed two invited sessions.
 - 2002 Asian Control Conference: Member of the International Programming Committee
 - 2002 AIChE Annual Meeting: Chaired the poster session “Process Systems Engineering.”
 - 2001 IFAC DYCOPS-6 symposium (an international conference on process control): **IPC Co-Chair**, Organized the technical portion of the meeting. Created the International Programming Committee. Created and managed the conference website. Selected and invited the plenary and keynote speakers. Managed the whole review process (involving ~200 papers). Edited the conference proceedings. Chaired the 3-day meeting. Managed various post-conference activities.
 - 2002 American Control Conference: Society Review Chair. Managed the review process for the AIChE papers submitted to the conference. Helped organize 5 invited sessions at the conference.
 - 2001 AIChE Annual Meeting: Chaired the session “Practical Approaches to Nonlinear Process Control”
 - IFAC ADCHEM Conference, 2000: Area Chair
 - American Control Conference, 2001: Programming Committee
 - Chemical Process Control Conference 6: Chair of Process Identification Area
 - PSE2000: International Programming Committee
 - 1998 IFAC DYCOPS-4 Conference: Program Committee.
 - 1997 IFAC ADCHEM Conference: Member, International Program Committee.
- Reviews
 - Journals: Frequent Reviewers for AIChE Journal, Chemical Engineering Science, Computers and Chemical Engineering, I&ECR, Automatica, IEEE Transactions in Control Systems Technology, IEEE Transactions in Automatic Control, International Journal of Robust and Nonlinear Control, etc.
 - Conferences: Reviewed for American Control Conferences, IEEE CDCs, IFAC World Congresses, IFAC ADCHEMs, IFAC DYCOPSs, PSE conferences, IFAC Sys-ID, AIChE Annual Meetings, etc.
 - Proposals: Reviewers for NSF, ACS-PRF, NRF
 - Panel Reviews for NSF: ITR, CTS.
- Workshops
 - Invited Participant in the NSF Workshop, “Complex Systems,” Anchorage, Alaska, June, 2002.
 - Invited Participant in the IMA Workshop, “Data-Driven Optimization and Control,” Univ. of Minnesota, December, 2002.
 - Invited Participant in NSF Workshop, “Multi-Scale Systems.” Denver, CO, 2003.

- Invited Participant in NSF Workshop, “Sustainable Manufacturing.” Pittsburgh, PA, 2012.
- “Crosscut” **Panel Co-Lead** in *Mission Innovation CCUS Workshop*, Houston, TX, September 24-29, 2017
- Consulting (recent)
 - Weyerhaeuser, 2002.
 - LGChem, 2003
 - SKHynix, 2012-2013.
 - Noroo, Ltd, 2020

3. CAMPUS CONTRIBUTIONS

KAIST:

- NYC Campus Task Force (2011)
- Director for Saudi Aramco-KAIST CO2 Management Center (2013-now): In charge of an annual budget of up to \$10million
- Associate Vice President of International Office (2017-2019)
- Advisor to President (2019-now)

Georgia Tech

Department of Chemical and Biomolecular Engineering

- Graduate Studies Committee
 - Chair (2001-2003) Organized and ran monthly meetings. Initiated discussion on the PhD qualifying procedure. Organized and executed the Ph.D. qualifiers in the winter03 and in the spring 03. Resigned as the Chair in September. Still remaining as a member.
 - Member since 2003.
- Tenure, Promotion, and Reappointment Committee, Member 2001-2010.
 - Worked on one case for tenure and four cases for promotion
- Information Technology Committee
 - Member in 2000-2001. Member since 2004
- Faculty Search Committee, Member (2001-2003)
 - Helped interview and evaluate candidates.

College of Engineering

- CPSE Director (2003-2008): Started a research center / industrial consortium on process systems engineering. Organized an inaugural symposium and annual meetings. Attended and gave talks at the partner Imperial College’s CPSE Annual Meetings in London. Worked on securing funding from the Institute. Secured funding from four companies and made a number of trips to potential sponsors. Organized a research workshop between Georgia Tech and Imperial College.

- Tenure, Promotion, and Reappointment Committee for College of Engineering, 2009-now.
- Korea Strategy Committee (2008-2010): Attended regular meetings to discuss the Institute's strategies for Korea, Worked on a proposal for a GT "Sustainable Energy Systems" center at IFEZ of Korea.

VIII. SPONSORS / COLLABORATORS (PRESENT AND PAST)

- Company Sponsors: Saudi Aramco, LG Chem, LG Energy Solution, Samsung Electronics, Samsung Heavy Industry, KSOE, Kolon, Hanhwa Solution, Noroo, GS Caltex, GS E&C, KT&G, SK Hynix, SK Innovation, POSCO, Owens Corning, Weyerhaeuser, Honeywell, Celanese, Aspen Tech, DuPont, ConocoPhillips,
- Federal Agencies: National Research Foundation of Korea, Korea Institute for Advancement of Technology, Ministry of Science and ICT, US National Science Foundation, US Department of Energy, ACS-PRF
- Researchers: Jim Rawlings (Wisconsin), Manfred Morari (ETH), Babatunde Ogunnaike (Delaware), G. Krishnagopalan (Auburn), Kwang Soon Lee (Sogang Univ., Korea), Sunwon Park (KAIST, Korea), Matthew Realff (Georgia Tech), Andreas Bommarius (Georgia Tech), Rafiq Gani (DTU, Denmark), Richard Braatz (MIT), Andre Bardow (ETH), Alexander Mitsos (RWTH, Aachen), Rafiqul Gani (PSE3Speed)