

Youngsub Lim, Curriculum Vitae

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CAREER

- Professor, Dept. Naval Architecture and Ocean Eng., SNU, 2023.03-now
- Associate Professor, Dept. Naval Architecture and Ocean Eng., SNU, 2018.03-2022.02
- Visiting Professor (sabbatical year), Dept. Energy and Process, NTNU, 2020.01-2020.10
- Assistant Professor, Dept. Naval Architecture and Ocean Eng., SNU, 2014.02-2018.02
- Postdoctoral Researcher, Department of Chemical Engineering, MIT, 2012.12-2013.12
- Postdoctoral Researcher, Institute of Chemical Processes, SNU, 2011.09-2012.09

EDUCATION

- Ph. D., School of Chemical and Biological Engineering, SNU, S. Korea, 2011.08
- M. Sc., Chemical Engineering, SNU, S. Korea, 2008.02
- B. Sc., Chemical Engineering and Electric/Computer Engineering (Double Major), SNU, S. Korea, 2006.02

PROJECT AND RESEARCH EXPERIENCE (RECENT THREE YEARS)

CCUS (Carbon Capture, Utilization and Storage)

- Evaluation of CO₂ mineralization process for a ship, with Samsung Heavy Industries, 2022
- CCSShip: Deploying Carbon Capture and Storage for ships, with SINTEF, Wärtsilä et al., 2021-2024
- CO₂ separation and recycle for an electrochemical CO₂ reduction, with KIST, 2021-2023
- Feasibility study of CCUS for a ship, with Korea Shipbuilding & Offshore Eng. (KSOE), 2021-2022

LNG and BOG Process Design and Operation

- Design and feasibility study of a LNG sub-cooling process for a bunkering ship, with KSOE, 2022
- LNG weathering simulation, with Daewoo Shipbuilding & Marine Engineering, 2019-2020
- Dynamic simulation and control of a BOG re-liquefaction process, with KSOE, 2019
- Process design of a non-flammable BOG re-liquefaction process, with KSOE, 2018-2019
- Optimization of Liquefaction process, with KSOE, 2017-2019

Hydrogen Processing

- Life-cycle assessment of hydrogen transportation, with Samsung Heavy Industries (SHI), 2022
- Hydrogen production by SMR considering catalyst deactivation, with SHI, 2022
- Hydrogen properties estimation and simulation for a H₂ liquefaction process, with SHI, 2021
- Optimal design and operation of a hydrogen charging station, Hyundai Motors, 2019-2020

JOURNAL PUBLICATIONS (RECENT FIVE YEARS)

- 1) Lee, J., Son, H., Yu, T., Oh, J., Park, M. G., & Lim, Y. (2023). Process design of advanced LNG subcooling system combined with a mixed refrigerant cycle. *Energy*, 278, 127892.
- 2) Jin, C., Lim, Y., & Xu, X. (2023). Performance analysis of a boil-off gas re-liquefaction process for LNG carriers. *Energy*, 278, 127823.
- 3) Son, H., Austbø, B., Gundersen, T., Hwang, J., & Lim, Y. (2022). Techno-economic versus energy optimization of natural gas liquefaction processes with different heat exchanger technologies. *Energy*, 245, 123232.
- 4) Jin, C., Yuan, Y., Son, H., & Lim, Y. (2022). Novel propane-free mixed refrigerant integrated with nitrogen expansion natural gas liquefaction process for offshore units. *Energy*, 238, 121765.
- 5) Oh, J., Anantharaman, R., Zahid, U., Lee, P., & Lim, Y. (2022). Process design of onboard membrane carbon capture and liquefaction systems for LNG-fueled ships. *Separation and Purification Technology*, 282, 120052.
- 6) Jung, B., Park, K., Sohn, Y., Oh, J., Lee, J. C., Jung, H. W., ... & Lim, Y. (2022). Prediction model of LNG weathering using net mass and heat transfer. *Energy*, 247, 123325.
- 7) Son, H., Yu, T., Hwang, J., & Lim, Y. (2022). Simulation methodology for hydrogen liquefaction process design considering hydrogen characteristics. *International Journal of Hydrogen Energy*, 47(61), 25662-25678.
- 8) 홍수민, 김한휘, 임철일, 임영섭, 비대면 공학교육에서 공개 및 실명 여부에 따른 학습자 질문 방식의 전략과 효과에 관한 연구, *공학교육연구*, 25(3), 26-34, 2022
- 9) Hwang, C., Oh, S., Kim, D., Gundersen, T., & Lim, Y. (2022). Energy, economic and environmental analysis of a BOG re-liquefaction process for an LNG carrier. *Energy reports*, 8, 2351-2362.
- 10) Park, K. H., Lee, J. W., Lim, Y., & Seo, Y. (2022). Life cycle cost analysis of CO₂ compression processes coupled with a cryogenic distillation unit for purifying high-CO₂ natural gas. *Journal of CO₂ Utilization*, 60, 102002.
- 11) Jung, B., Park, S., Lim, C., Lee, W. H., Lim, Y., Na, J., ... & Lee, U. (2021). Design methodology for mass transfer-enhanced large-scale electrochemical reactor for CO₂ reduction. *Chemical Engineering Journal*, 424, 130265.
- 12) Ko, C., Lee, H., Lim, Y., & Lee, W. B. (2021). Development of augmented virtual reality-based operator training system for accident prevention in a refinery. *Korean Journal of Chemical Engineering*, 38, 1566-1577.
- 13) Hwang, C., Yu, T., & Lim, Y. (2021). Optimal Process Design of Small Scale SMR Process for LNG Vessel. *Energies*, 14(12), 3677.
- 14) Kim, H., Jung, J., Lim, Y., May, E. F., & Seo, Y. (2020). Performance Degradation of the Monoethylene Glycol Regeneration Process in the Presence of Electrolytes: Pilot-Scale Experiments and Dynamic Simulations. *Industrial & Engineering Chemistry Research*, 59(48), 21205-21216.
- 15) 손희창, & 임영섭. (2020). LNG 액화공정 초구조 모델 최적화 연구. *한국가스학회지*, 24(1), 1-9.
- 16) Kim, D., Hwang, C., Gundersen, T., & Lim, Y. (2019). Process design and economic optimization of boil-off-gas re-liquefaction systems for LNG carriers. *Energy*, 173, 1119-1129.
- 17) Jin, C., Son, H., & Lim, Y. (2019). Optimization and economic analysis of liquefaction processes for offshore units. *Applied Thermal Engineering*, 163, 114334.
- 18) Jin, C., & Lim, Y. (2019). Optimization and economic evaluation of integrated natural gas liquids (NGL) and liquefied natural gas (LNG) processing for lean feed gas. *Applied Thermal Engineering*, 149, 1265-1273.
- 19) Ahn, J., Noh, Y., Joung, T., Lim, Y., Kim, J., Seo, Y., & Chang, D. (2019). Safety integrity level (SIL) determination for a maritime fuel cell system as electric propulsion in accordance with IEC 61511. *International Journal of Hydrogen Energy*, 44(5), 3185-3194.
- 20) Lee, Y., Lim, Y., & Lee, W. B. (2019). Integrated process design and optimization of nitrogen recovery in natural gas processing. *Industrial & Engineering Chemistry Research*, 58(4), 1658-1674.
- 21) You, W., Park, J., Jung, S., & Lim, Y. (2019). Risk and efficiency analysis of dual mixed refrigerant liquefaction process configurations for floating liquefied natural gas at conceptual design stage. *Process Safety Progress*, 38(1), 87-98.

BOOKS AND ARTICLES

- 임영섭. (2023). **친환경 선박의 이해**. 성안당. (Textbook in Korean, Understanding to Environmentally-friendly ships)
- 임영섭. (2021). **친절한 공학 열역학**. 성안당. (Textbook in Korean, Friendly Introduction to Engineering Thermodynamics)
- 임영섭. (2020). **친환경 선박 잡학지식: 석유, LNG, 수소까지 선박 연료의 변신**. 지성사. (Scientific book in Korean, Miscellaneous Knowledge about Environment-friendly ship: Oil, LNG and Hydrogen)
- 한종훈 외. (2012). **기후변화의 불편한 진실**. 세오미디어. (Scientific book in Korean, Uncomfortable Truth about the Climate Change)

PATENTS

- Yutaek Seo, Youngsub Lim, Sanggyu Kang, "A CO₂ recovery ship capturing carbon dioxide from exhaust gas" (kr1020220039601)
- Taejong You and Youngsub Lim, "Low explosive eco-friendly boil-off gas(bog) re-liquefaction system using hydrofluoro-olefin(HFO) refrigerants" (kr10-2021-0109076)
- Chonghun Han, Youngsub Lim, Ung Lee, "System and Method for Transferring Cryogenic Fluids" (kr10-2010-0089977)
- Chonghun Han, Ung Lee, Youngsub Lim, Seeyub Yang, "System and Method for Storing Cryogenic Fluids" (kr10-2011-0050892)
- Chonghun Han, Seeyub Yang, Ung Lee, Young Su Jeong, Jaeheum Jung, Youngsub Lim, "Apparatus and Method for Liquefying Feed Stream Using Mixture Refrigerants, and System for Transferring That Apparatus" (kr10-2011-0097067)
- Chonghun Han, Ung Lee, Seeyub Yang, Young Su Jeong, Jaeheum Jung, Youngsub Lim, "Apparatus and Method for Liquefying, and System for Transferring That Apparatus" (kr10-2011-0097619)

EDUCATION EXPERIENCE

Undergraduate Courses

- Offshore Engineering Thermodynamics, 3 credits, 2021-2022 Fall semester
- Offshore Process Systems Design, 3 credits, 2021-2022 Spring semester
- Fundamentals of Thermodynamics and Electricity in Ocean Engineering, 3 credits, 2014-2019 Spring semester
- Process Systems Engineering for Offshore Plant, 3 credits, 2014-2019 Fall semester
- Offshore Plant Safety Design, 3 credits, 2016-2019 Spring semester
- Engineering Mathematics, 3 credits, 2014 Fall semester

Graduate Courses

- Technology Seminar 2 for Smart Ocean Mobility Convergence, 3 credits, 2022 Fall semester
- Advanced Design of Environmental-Friendly Process Systems for Ship and Offshore Platform, 3 credits, 2022 Fall semester

- Advanced Topics in Naval Architecture, 1.5(/3) credits, 2018-2022 Fall semester
- Topics in Ocean Engineering Design, 3 credits, 2019-2022 Spring semester
- Advanced Topics in Ocean Engineering, 3 credits, 2016-2021 Fall semester
- Thermodynamics for Process Systems Engineering, 3 credits, 2016-2018 Spring semester
- Topside Process Engineering, 3 credits, 2014-2015 Fall semester

AWARDS & VOLUNTEER WORKS

- Excellence in Teaching Award in Engineering school, SNU ENG, 2022
- Best practices for non-face-to-face classes, SNU CTL, 2021
- Excellent Paper Award, KHNES Conference, 2021
- Excellent Paper Award, KIHM Conference, 2019
- Excellent Paper Award, KIGAS Spring Conference, 2019
- Excellent Paper Presentation Award, KSOE Fall Conference, 2018
- Excellent Paper Presentation Award, KSOE Spring Conference, 2018
- Creative Young Researchers, SNU, 2017
- Advisory Committee Member of Environment-friendly Ship Life Cycle Innovation Technology Development Project, 2022-now
- Head of Environment-friendly/smart Ship R&D Expert Training Program, 2021-now
- Committee member of the Korean Society of Ocean Engineers, 2021-now
- Editorial board member of Journal of Ocean Engineering and Technology, 2018-now
- Literature reviews: 130+ journal papers (30+ international journals)