YUHE TIAN

Assistant Professor
Department of Chemical and Biomedical Engineering, West Virginia University
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RESEARCH ACTIVITIES

Process Systems Engineering
Process synthesis and optimization, Multi-parametric model predictive control, Machine learning, Modular chemical process intensification, Sustainable energy systems

EDUCATION

Texas A&M University, College Station, TX	Ph.D. in Chemical Engineering	*2016-2021*
Tsinghua University, Beijing, China	B.Sc. in Chemical Engineering B.Sc. in Pure & Applied Mathematics	*2012-2016*

PROFESSIONAL EXPERIENCE

West Virginia University, Morgantown, WV
Assistant Professor, Department of Chemical and Biomedical Engineering *2021-present*
Stuart and Karen Goodman Fellow *2024-present*

Cornell University, Ithaca, NY
Visiting Assistant Professor, Smith School of Chemical and Biomolecular Engineering *2024-2025*

HONORS AND AWARDS

- Doctoral New Investigator Award, American Chemical Society Petroleum Research Funds *2024*
- Outstanding Doctoral Dissertation Award, Foundations of Computer Aided Process Design *2024*
- Finalist, AIChE CAST Division Directors' Student Presentation Awards *2021*

TEACHING ACTIVITIES

- **Curriculum teaching**
  - Elective: CHE 412/512 Advanced Topics on Process Systems Engineering (Fall 2022-2024)
  - Core course: CHE355 Process Simulation and Design (Spring 2022-2024)
- **Guest Lectures**
  - North Carolina State University, Process Control, CHE 435/525 *2025*
  - Louisiana State University, Process Control, CHE 4198 *2025*
- **Faculty advisor for experiential learning**
  - EPA People, Prosperity and the Planet (P3) Student Design Competition *2024*
  - AVEVA Academic Competition *2023-present*
- **K-12 Education and Outreach**
  - WVU High School Engineering Challenge Camp *2025*
- **Research-oriented eLearning courses and workshops**
  - Synthesis and Operability for Computer-Aided Process Intensification, Houston Dow *2022*
  - CH377: Strategies for Computer-Aided Process Intensification. Virtual course *2021*
  - AIChE RAPID eLearning ELA350: Process Design for Process Intensification *2019*
  - AIChE RAPID eLearning ELA351: Modeling and Simulation for Process Intensification *2019*

SERVICE ACTIVITIES

- **Service to College and Department**
  - Department Undergraduate Curriculum Committee *2023-present*

- Graduate advisory committees: chemical engineering, industrial and management engineering, mechanical and aerospace engineering, etc.

- **Involvement in AIChE Activities**
  - Early Career Community, Programming Chair *2025,2026*
  - Early Career Community, Vice Programming Chair *2024*
  - Computing & Systems Technology Division, Young Professionals Academic Liaison *2023-2025*
  - RAPID ChemE Cube Competition, Pitch Judge *2025*
  - Education Division Future Faculty Program, Junior mentor *2021,2025*
  - Session Chair/co-Chair *2021-2025*
- **Service to Professional Community**
  - ESCAPE 35 Scientific Committee, Member *2025*
  - ACS Fall Meeting, Symposium Organizer *2024*
  - American Control Conference, Invited Session Organizer *2024*
  - FOCAPD International Scientific Committee, Member *2023*
- **Journal Editorial Activities**
  - Systems & Control Transactions, Editorial board *2025-present*
  - Digital Chemical Engineering, Editorial board *2023-present*

MENTORING AND STUDENT SUCCESS

- **Ph.D. Student Mentoring**
  - Dylan Miller *(2025-present)*, Dylan Nice *(2025-present)*, Beatriz Dantas *(2024-present)*, Austin Braniff *(2023-present)*, Md Masud *(2023-present),* Ayooluwa Akintola *(2021-2025)*
- **M.Sc. Student Mentoring**
  - Ethan Robey *(2025-present)*, Yazhou Jiang *(2023-2025)*, Benjamin Akoh *(2021-2023)*
- **Undergraduate Student Mentoring**
  - Ethan Brown *(2025-present)*, Adalaide Hickey *(2025-present)*, Samuel Zaloudek *(2025-present)*, Nam Khuu *(2025-present),* Jared Marsh *(2025-present)*, Theodore Malencia (*2024-present)*, Ethan Robey *(2025)*, Kaden Schreiber *(2024-2025)*, Dylan Miller *(2024-2025)*, Dylan Nice *(2024-2025)*, Thisali Wadunambu *(2023-2024)*, Larry Clevenger *(2023-2024)*, Austin Braniff *(2022-2023)*, Tyler Dennis *(2022-2023)*, Joshua Swecker *(2021-2024)*
- **Student Success**
  - Dylan Nice, WVU Ruby Fellow *(2025-2028)*
  - Austin Braniff, AIChE CAST Director's Award *(2025)*, NSF Graduate Research Fellow *(2024-2027)*, WVU Provost Fellow *(2023-2024)*
  - Beatriz Dantas, Semi-Finalist CAST Best Poster Competition *(2025)*, WVU Statler Dianne Dubetz Anderson Fellow *(2024-2025)*
  - Md Masud, WVU Statler James and Betty Hall Fellow *(2025-2026)*, North American Membrane Society Elias Klein Founders Travel Supplement Award *(2025)*, ACS I&EC Graduate Student Award 3rd Place *(2024)*
  - Samuel Zaloudek, AIChE 2nd place Computing and Process Control Section II Poster Award *(2025)*
  - Theodore Malencia, WVU NASA Scholar *(2024)*, 2nd place AIChE CAST Division Undergraduate Poster Award *(2024)*, 1st place Computing and Process Control Section II Poster Award *(2024)*
  - Joshua Swecker, AVEVA Academic Competition Best Steady State Simulation *(2024)*

INVITED TALKS

1. **Tian, Y.** YANNs: Y-wise Affine Neural Networks for Exact Representations of Piecewise Affine Functions for Advanced Modeling and Explicit MPC. 2025 AIChE Annual Meeting. CAST Plenary Session.
2. **Tian, Y.** Reinforcement Learning for Process Control via Y-wise Affine Neural Networks. Great Lakes PSE Workshop, The Ohio State University, May 2025.

3. **Tian, Y.** Sustainable Design of Modular Intensified Processes with Hybrid Mechanistic/Data-Driven Modeling. AIChE Environmental Division Webinar, April 2025.
4. **Tian, Y.** Toward Safe and Sustainable Process Systems via Risk-based Design, Intensification, and Control. PSE Seminar at University of Minnesota, September 2024.
5. **Tian, Y.** Synthesis of Sustainable Process Intensification Systems. CAST Webinar Series, July 2024.
6. **Tian, Y.** Synthesis Strategies for Computer-Aided Modular Process Intensification. Keynote, FOCAPD, July 2024, CO.
7. **Tian, Y.** Systematic Process Design, Intensification, and Innovation of Chemical and Energy Systems. Ezra's Round Table/Systems Seminar, Cornell University, April 2024, NY.
8. **Tian, Y.** Toward Systematic Process Design, Intensification, and Innovation. Department of Chemical and Biomolecular Engineering, University of Notre Dame, January 2024, IN.
9. **Tian, Y.** Synthesis and Operability Strategies for Computer-Aided Modular Process Intensification. Seminar on Process Intensification Applied to the Oil and Energy Industry, Mexican Petroleum Institute, March 2023, Virtual.
10. **Tian, Y.** Synthesis and Operability Strategies for Computer-Aided Modular Process Intensification. Second Symposium of Process Intensification Challenges and Opportunities: Towards Sustainable Chemical Processes in the XXI Century, January 2023, Virtual.
11. **Tian, Y.** Fault-Prognostic Predictive Control via Multi-Parametric Optimization, BioCON 4.0 Online Conference, August 2022, Virtual.
12. **Tian, Y.**, Akintola, A. Modular Process Intensification Synthesis of Membrane-Based Reactive Separation Systems for Sustainable Hydrogen Production, Advanced Manufacturing and Processing Conference, June 2022, Bethesda, MD.
13. Zitney, S., Bhattacharyya, D., Lima, F., **Tian, Y.** Science-Informed Virtual Digital Twin for an Integrated Energy System with Carbon Capture: Research, Training, and Education. Advanced Manufacturing and Processing Conference, June 2022, Bethesda, MD.
14. **Tian, Y.** Synthesis and Operability Strategies for Computer-Aided Modular Process Intensification. Joint Del Rio Chanona and Zhang Research Group Meeting. May 2022, Virtual.
15. **Tian, Y.**, Innovation-Driven Sustainable Process Systems Engineering. AIChE Student Chapter Meeting, February 2022, Morgantown, West Virginia.
16. **Tian, Y.**, Pistikopoulos, E. N. A Framework for Synthesis of Operable Process Intensification Systems. AIChE Annual Meeting, CAST Director's Student Presentation Award Session, November 2020.
17. **Tian, Y.**, Pistikopoulos, E. N. Design and Optimization of Operable Process Intensification Systems. Texas A&M Chemical Engineering Departmental Seminar, October 2020.

AUTHORED BOOK

1. Pistikopoulos, E. N., **Tian, Y.** Synthesis and Operability Strategies for Computer-Aided Modular Process Intensification, Elsevier, 2022.

BOOK CHAPTERS (Corresponding author is underlined)

1. **Tian, Y.**, Bindlish, R., Pistikopoulos, E. N. Integrated Design and Operability Optimization of Sustainable Process Intensification Systems. Optimization of Sustainable Process Systems: Multiscale Models and Uncertainties. Accepted.
2. Dantas, B., Braniff, A., Akundi, S. S., Liu, Y., Niknezhad, S. S., Khan, F., Pistikopoulos, E. N., Lima, F., **Tian, Y.** (2024) An Operability-based Approach for Integrated Process Design, Operations, and Risk Management. MCPS Vol 8: Method of Process Systems in Energy Systems, Chapter 4, 115-131.
3. Akundi, S. S., Braniff, A., Dantas, B., Liu, Y., **Tian, Y.**, Niknezhad, S. S., Khan, F., Pistikopoulos, E. N. (2024) Model Predictive Control for enhanced safety and efficiency of process and energy systems. MCPS Vol 8: Method of Process Systems in Energy Systems, Chapter 8, 243-260.
4. Liu, Y., Akundi, S. S., Braniff, A., Dantas, B., **Tian, Y.**, Niknezhad, S. S., Khan, F., Pistikopoulos, E. N. (2024) Cyber-Physical Systems in Chemical and EnergyProcesses: Concepts, Applications, and

Methodology Framework. MCPS Vol 8: Method of Process Systems in Energy Systems, Chapter 7, 215-241.

JOURNAL ARTICLES (Corresponding author is underlined)

1. Dantas, B., Braniff, A., Liu, Y., Akundi, S. S., Tizon, Z. A., Niknezhad, S. S., Khan, F., Pistikopoulos, E. N., Lima, F., **Tian, Y.** Hybrid Mechanistic/Data-Driven Modeling for Enhancing Dynamic Operations in Electrolysis-based Hydrogen Production. Under Review.
2. Liu, Y., Akundi, S. S., Tizon, Z. A., Braniff, A., Dantas, B., **Tian, Y.**, Niknezhad, S. S., Khan, F., Pistikopoulos, E. N. Next-Generation Safety-Aware Cyber-Physical System Integration: A PEM Water Electrolysis Demonstration. Under Review.
3. Braniff, A., **Tian, Y.** Reinforcement Learning-based Control via Y-wise Affine Neural Networks (YANNs). Under Review. arXiv Link: https://www.arxiv.org/abs/2508.16474.
4. Braniff, A., **Tian, Y.** YANNs: Y-wise Affine Neural Networks for Exact and Efficient Representations of Piecewise Linear Functions. Under Review. arXiv Link: https://arxiv.org/abs/2505.07054.
5. Masud, M. A. A., Schreiber, K., Wang, Y., Hu, J., **Tian, Y.** Surrogate-Based Superstructure Optimization for Techno-Economic and Sustainability Analysis of Microwave-Assisted Ammonia Production Process. Chemical Engineering and Processing - Process Intensification, 110648.
6. Akundi, S. S., Liu, Y., Braniff, A., Dantas, B., Niknezhad, S. S., **Tian, Y.**, Khan, F., Pistikopoulos, E. N. Towards Intelligent Safety-aware Control Systems - A Stochastic Risk-Based Explicit Model Predictive Control Strategy. Chemical Engineering Science, 123052.
7. Wang, W., **Tian, Y.**, Wu, Z. (2025) Explicit Machine Learning-Based MPC for Distributed Control of Nonlinear Processes. Control Engineering Practice, 165, 106534.
8. Ball, M. R., Sanyal, O., **Tian, Y.** (2025) Advancing Junior Chemical Process Design Education via Combined Course Projects. Computers & Chemical Engineering, 109314. (Invited Special Issue: FOCAPD 2024)
9. Akintola, A., Lima, F., Palanki, S., **Tian, Y.** (2025) Membrane Reactor for Sustainable Hydrogen Production: Modeling, Simulation, and Multi-Objective Optimization Studies. Industrial & Engineering Chemistry Research, 64(29), 14429-14448.
10. Devarakonda, V. S., Sun, W., Tang, X., **Tian, Y.** (2025) Recent Advances in Reinforcement Learning for Chemical Process Control. Processes, 13(6), 1791. (Feature Paper)
11. Lima, F. V., **Tian, Y.**, Durand, H. E., Paulson, J. A., Biegler, L. T. (2025) Innovations in Chemical Process Control: Challenges and Opportunities. Current Opinion in Chemical Engineering, 48, 101148.
12. Liu, Y., Akundi, S. S., Braniff, A., Dantas, B., Niknezhad, S. S., **Tian, Y.**, Khan, F., Pistikopoulos, E. N. (2025) Process Monitoring and Safety-informed Control of Proton Exchange Membrane Water Electrolysis System. AIChE Journal, e18909.
13. Masud, M. A. A., Khuu, N. H., Sanyal, O., **Tian, Y.** (2025) Advances in Membrane-Assisted Reactors: An Integrative Review for Modeling and Experiments. Separation and Purification Technology, 133095.
14. Dantas, B., Braniff, A., Nascimento, C. A., Malencia, T., Lima, F. V., **Tian, Y.** (2025) Risk-based Process Design and Operations through an Operability Approach. Chemical Engineering Research and Design, 217, 1-12.
15. Braniff, A., Akundi, S. S., Liu, Y., Dantas, B., Niknezhad, S. S., Khan, F., Pistikopoulos, E. N., **Tian, Y.** (2025) Real-Time Process Safety and Systems Decision-Making Toward Safe and Smart Chemical Manufacturing. Digital Chemical Engineering, 100227. (Invited Special Issue: Pioneering Digital Chemical Engineering)
16. Masud, M. A. A., Araia, A., Wang, Y., Hu, J., **Tian, Y.** (2025) Machine Learning-Aided Process Design Using Limited Experimental Data: A Microwave-Assisted Ammonia Synthesis Case Study. AIChE Journal, e18621.
17. Wang, W., Zhang, H., Wang, Y., **Tian, Y.**, Wu, Z. (2024) Fast Explicit Machine Learning-Based Model Predictive Control of Nonlinear Processes Using Input Convex Neural Networks. Industrial & Engineering Chemistry Research, 63 (40), 17279-17293.

18. Braniff, A., **Tian, Y.** (2024) A Hierarchical Multi-Parametric Programming Approach for Dynamic Risk-based Model Predictive Quality Control. Control Engineering Practice, 152, 106062.
19. Ji, C., Dai, J., Zhai, C., Wang, J., **Tian, Y.**, Sun, W. (2024) A Review on Lithium-ion Batteries Modelling: From Mechanism-Based and Data-Driven Perspectives. Processes, 12(9), 187. (Feature Paper)
20. Arunthavanathan, R., Sajid, Z., Amin, M. T., **Tian, Y.,** Khan, F., & Pistikopoulos, E. N. (2024) Process Safety 4.0: Artificial Intelligence or Intelligence Augmentation for Safer Process Operation? AIChE Journal. e18475. (Cover Feature)
21. Wang, W., Wang, Y., **Tian, Y.,** & Wu, Z. (2024) Explicit Machine Learning-Based Model Predictive Control of Nonlinear Processes via Multi-Parametric Programming. Vol. 186: 108689.
22. Pistikopoulos, E. N., & **Tian, Y.** (2024) Advanced Modeling and Optimization Strategies for Process Synthesis. Annual Review of Chemical and Biomolecular Engineering. Vol. 15: 10.1–10.23.
23. Ang, T., Tsai, C-Y., Adi, V. S. K., **Tian, Y.**, Kong, Z. Y., & Sunarso, J. (2023) Toward a flexible design for the bioethanol dehydration using extractive distillation. Part II: Control validation. Industrial & Engineering Chemistry Research, 62(51), 22058-22070.
24. Kong, Z. Y., Tsai, Y-T., **Tian, Y.**, Sunarso, J., & Adi, V. S. K. (2023) Inherent flexibility design strategy of extractive distillation for binary azeotropic separation: Novel multi-objective approach with penalty values. Separation and Purification Technology, 124705.
25. Ali, M., Cai, X., Khan, F., Pistikopoulos, E. N., **Tian, Y.** (2023) Dynamic Risk-based Process Design and Operational Optimization via Multi-Parametric Programming. Digital Chemical Engineering, 7, 100096.
26. **Tian, Y.**, Meduri, V., Bindlish, R., Pistikopoulos, E. N. A Process Intensification Synthesis Framework for the Design of Dividing Wall Column Systems, Computers & Chemical Engineering, 160, 107679, 2022.
27. **Tian, Y.**, Pistikopoulos, E. N. A process intensification synthesis framework for the design of extractive separation systems with material selection, Journal of Advanced Manufacturing and Processing, e10097, 2021.
28. Pistikopoulos, E. N., **Tian, Y.**, Bindlish, R. Operability and Control in Process Intensification and Modular Design: Challenges and Opportunities, AIChE Journal, e17204, 2021.
29. **Tian, Y.**, Pappas, I., Burnak, B., Katz, J., Pistikopoulos, E. N. Simultaneous Design & Control of a Reactive Distillation System – A Parametric Optimization & Control Approach, Chemical Engineering Science, 230, 116232, 2021.
30. **Tian, Y.**, Pistikopoulos, E. N. Towards an Envelope of Design Solutions for Combined/Intensified Reaction/Separation Systems. Industrial & Engineering Chemistry Research, 59(24), 11350–11354, 2020.
31. **Tian, Y.**, Pappas, I., Burnak, B., Katz, J., Pistikopoulos, E. N. A Systematic Framework for Synthesis of Operable Process Intensification Systems – Reactive Separation, Computers & Chemical Engineering, 134, 106675, 2020.
32. Avraamidou, S., Baratsas, S., **Tian, Y.**, Pistikopoulos, E. N. Circular Economy – A Challenge and an Opportunity for Process Systems Engineering. Computers & Chemical Engineering, 133, 106629, 2020.
33. **Tian, Y.**, Pistikopoulos, E. N. Synthesis of Operable Process Intensification Systems – Steady-State Design with Safety and Operability Considerations. Industrial & Engineering Chemistry Research, 58(15), 6049-6068, 2019.
34. **Tian, Y.**, Pistikopoulos, E. N. Synthesis of Operable Process Intensification Systems: Advances and Challenges. Current Opinion in Chemical Engineering, 25, 101-107, 2019.
35. **Tian, Y.**, Demirel, S. E., Hasan, M. M. F., Pistikopoulos, E. N. An Overview of Process Systems Engineering Approaches for Process Intensification: State of the Art. Chemical Engineering and Processing: Process Intensification,133, 160-210, 2018.

36. Niziolek, A. M., Onel, O., **Tian, Y.**, Floudas, C. A., Pistikopoulos, E. N. Municipal Solid Waste to Liquid Transportation Fuels – Part III: An Optimization-Based Nationwide Supply Chain Management Framework. Computers & Chemical Engineering, 116, 468-487, 2018.

REFEREED CONFERENCE PROCEEDINGS (Corresponding author is underlined)

1. Braniff, A., You, F., **Tian, Y**. Enhanced Reinforcement Learning-driven Process Design via Quantum Machine Learning. 35th European Symposium on Computer Aided Process Engineering (ESCAPE-35). Systems and Control Transactions, 4, 1403-1408.
2. Dantas, B., Akundi, S. S., Liu, Y., Braniff, A., Niknezhad, S. S., Khan, F., Pistikopoulos, E. N., Lima, F., **Tian, Y.** Model-based Operability and Safety Optimization for PEM Water Electrolysis. 35th European Symposium on Computer Aided Process Engineering (ESCAPE-35). Systems and Control Transactions, 4, 2007-2012.
3. Akundi, S. S., Liu, Y., Dantas, B., Braniff, A., Niknezhad, S. S., Khan, F., **Tian, Y.**, Pistikopoulos, E. N. Integrating Dynamic Risk Assessment with Explicit Model Predictive Control via Chance-Constrained Programming. 35th European Symposium on Computer Aided Process Engineering (ESCAPE-35). Systems and Control Transactions, 4, 1065-1070.
4. Masud, M., Araia, A., Wang, Y., Hu, J., **Tian, Y.** (2024) Machine Learning-Aided Process Design for Microwave-Assisted Ammonia Production. In Systems & Control Transactions Volume 3, 316-321.
5. **Tian, Y.**, Akintola, A., Jiang, Y., Wang, D., Bao, J., Zamarripa, M. A., Paul, B., Chen, Y., Gao, P., Noring, A., Iyengar, A., Liu, A., Marina, O., Koeppel, B., Xu, Z. (2024) Reinforcement Learning-Driven Process Design: A Hydrodealkylation Example. In Systems & Control Transactions Volume 3, 387–393 (2024).
6. Ball, M., Sanyal, O., **Tian, Y.** Integration of Process Design and Intensification Learning Via Combined Junior Course Project. In Systems & Control Transactions Volume 3, 959–965 (2024).
7. Braniff, A., **Tian, Y.** (2024) Dynamic Risk-based Model Predictive Quality Control with Online Model Updating. American Control Conference 2024. Accepted.
8. Braniff, A., Akundi, S. S., Liu, Y., Khan, F., Pistikopoulos, E. N., **Tian, Y.** (2024) A Real-Time Risk-Based Optimization Framework for Safe and Smart Operations. In Computer Aided Chemical Engineering (Vol. 53, pp. 1915-1920). Elsevier.
9. **Tian, Y.,** Akintola, A., Akoh, B. (2023) A Process Design, Intensification, and Modularization Approach for Membrane-Assisted Reaction Systems. 33rd European Symposium on Computer Aided Process Engineering (ESCAPE-33).
10. Ali, M., **Tian, Y.,** De, S., van Bavel, A. P., Pappas, I., Demirhan, C. D., & Pistikopoulos, E. N. (2023) Process Design and Intensification of Circulating Catalytic Fluidized Bed Membrane Reactor for Oxidative Coupling of Methane. 33rd European Symposium on Computer Aided Process Engineering (ESCAPE-33).
11. Ali, M., Cai, X., Khan, F., **Tian, Y.** Dynamic Risk-based Design and Explicit Model Predictive Control via Multi-Parametric Programming. FOCAPO/CPC 2023, January 2023.
12. Vedant, S., Atencio, M. R., **Tian, Y.,** Meduri, V., Pistikopoulos, E. N. Towards a Software Prototype for Synthesis of Operable Process Intensification Systems. 31st European Symposium on Computer Aided Process Engineering (ESCAPE-31), June 2021. In Computer Aided Chemical Engineering, 50, 767-772. Elsevier.
13. **Tian, Y.,** Pistikopoulos, E. N. Operability and Safety Considerations in Process Intensification. 21st International Federation of Automatic Control (IFAC) World Congress, July 2020. In IFAC-PapersOnLine, 53(2), 11434-11439.
14. **Tian, Y.,** Pistikopoulos, E. N. Generalized Modular Representation Framework for the Synthesis of Extractive Separation Systems. Foundations of Computer-Aided Process Design (FOCAPD 2019), July 2019, Copper Mountain, Colorado. In Computer Aided Chemical Engineering, 7, 475-480. Elsevier.
15. **Tian, Y.,** Pappas, I. S., Burnak, B., Katz, J., Avraamidou, S., Diangelakis, N. A., Pistikopoulos, E. N. Towards a Systematic Framework for the Synthesis of Operable Process Intensification Systems – Application to Reactive Distillation Systems. 29th European Symposium on Computer-Aided Process

Engineering (ESCAPE-29), June 2019, Eindhoven, Neitherlands. In Computer Aided Chemical Engineering, 46, 73-78. Elsevier.

16. **Tian, Y.,** Mannan, M. S., Pistikopoulos, E. N. Towards a Systematic Framework for the Synthesis of Operable Process Intensification Systems. 13th International Symposium on Process Systems Engineering (PSE 2018), July 2018, San Diego, California. In Computer Aided Chemical Engineering, 44, 2383-2388. Elsevier.
17. **Tian, Y.,** Mannan, M. S., Kravanja, Z., Pistikopoulos, E. N. Towards the Synthesis of Process Intensification Systems with Safety and Operability Considerations – Application to Heat Exchanger Network. 28th European Symposium on Computer-Aided Process Engineering (ESCAPE-28), June 2018, Graz, Austria. In Computer Aided Chemical Engineering, 43, 705-710. Elsevier.

CONFERENCE PRESENTATIONS

1. Braniff, A., **Tian, Y.** An Accelerated Reinforcement Learning Algorithm for Process Control Via Y-Wise Affine Neural Networks. AIChE Annual Meeting, November 2025, Boston, MA.
2. Braniff, A., You, F., Tian, Y. Quantum-Accelerated Reinforcement Learning-Driven Process Synthesis. AIChE Annual Meeting, November 2025, Boston, MA.
3. Masud, M., **Tian, Y.** Machine Learning-Aided Design and Operational Optimization for Sustainable Chemical Process Systems. AIChE Annual Meeting, November 2025, Boston, MA.
4. Masud, M., Braniff, A., Baddam, S. R., Jiang, C., Palanki, S., Hu, J., **Tian, Y.** Machine Learning-Based Modeling and Dynamic Optimization of Microwave-Enhanced Methane Coupling with Programmable Heating. AIChE Annual Meeting, November 2025, Boston, MA.
5. Masud, M., Piash, K. P. S., Sanyal, O., **Tian, Y.** Optimization-Based Membrane Design for Selective Nutrient Recovery from Wastewater. AIChE Annual Meeting, November 2025, Boston, MA.
6. Masud, M., Schreiber, K., Wang, Y., Hu, J., **Tian, Y.** Sustainable Process Design and Optimization for Microwave-Assisted Ammonia Production. AIChE Annual Meeting, November 2025, Boston, MA.
7. Dantas, B., Braniff, A., Lima, F., **Tian, Y.** A Hybrid Approach for Flexible Design of Nonlinear Process Systems. AIChE Annual Meeting, November 2025, Boston, MA.
8. Dantas, B., Braniff, A., Liu, Y., Akundi, S. S., Tizon, Z. A., Niknezhad, S., Khan, F., Pistikopoulos, E. N., Lima, F., **Tian, Y.** Hybrid Mechanistic/Data-Driven Modeling for Enhancing Dynamic Operations in PEM Water Electrolyzers. AIChE Annual Meeting, November 2025, Boston, MA.
9. Dantas, B., Lima, F., **Tian, Y.** Hybrid Modeling and Design Strategies for Enhancing Flexibility, Operability and Dynamic Operations in Process Systems Engineering. AIChE Annual Meeting, November 2025, Boston, MA.
10. Nice, D., Ribeiro, D., Bindlish, R., Pistikopoulos, E. N., **Tian, Y.** Reinforcement Learning-Driven Process Intensification Synthesis - Application to Reaction/Separation Systems. AIChE Annual Meeting, November 2025, Boston, MA.
11. Robey, E., Sanyal, O., **Tian, Y.** Optimization of a Wastewater-Solids to Fertilizer Supply Chain in West Virginia. AIChE Annual Meeting, November 2025, Boston, MA.
12. Malencia, T., **Tian, Y.**, Dantas, B. Data-Driven Modeling and Predictive Control of Proton Exchange Membrane Water Electrolyzers for Green Hydrogen Production. AIChE Annual Meeting, November 2025, Boston, MA.
13. Zaloudek, S., **Tian, Y.**, Braniff, A. Implementation of Y-Wise Affine Neural Networks in Nonlinear Model Predictive Control Approximation. AIChE Annual Meeting, November 2025, Boston, MA.
14. Khuu, N., Braniff, A., **Tian, Y.** Reinforcement Learning-Based Control for Inverted Pendulum System - Computational Study and Hardware Validation. AIChE Annual Meeting, November 2025, Boston, MA.
15. Braniff, A., Masud, M. A. A., Baddam, S. R., Jiang, C., Palanki, S., Hu, J., **Tian, Y.** Data-driven modeling and optimization of microwave-assisted methane coupling reaction with programmable heating. ACS Fall Meeting, August 2025, Washington, DC.

16. Masud, M. A. A., Braniff, A., Baddam, S. R., Jiang, C., Palanki, S., Hu, J., **Tian, Y.** Machine Learning-based Modeling and Dynamic Optimization of Microwave-enhanced Methane Coupling with Programmable Thermal Heating. MPC Academy, August 2025, Detroit, MI.
17. Braniff, A., **Tian, Y.** Y-wise Affine Neural Networks (YANNs) for Interpretable and Efficient Initializations in Reinforcement Learning-based Control. MPC Academy, August 2025, Detroit, MI.
18. Khuu, N., Braniff, A., **Tian, Y.** Reinforcement Learning for Process Control. WVU Summer Undergraduate Research Symposium, July 2025, Morgantown, WV.
19. Braniff, A., You, F., **Tian, Y.** Enhanced Reinforcement Learning-driven Process Design via Quantum Machine Learning. ESCAPE 35, July 2025, Ghent, Belgium.
20. Dantas, B., Akundi, S. S., Liu, Y., Braniff, A., Niknezhad, S. S., Khan, F., Pistikopoulos, E. N., Lima, F., **Tian, Y.** Model-based Operability and Safety Optimization for PEM Water Electrolysis. ESCAPE 35, July 2025, Ghent, Belgium.
21. Akundi, S. S., Liu, Y., Braniff, A., Dantas, B., Niknezhad, S. S., Khan, F., **Tian, Y.**, Pistikopoulos, E. N. Integrating Dynamic Risk Assessment with Explicit Model Predictive Control via Chance-Constrained Programming. ESCAPE 35, July 2025, Ghent, Belgium.
22. Masud, M. A. A., Piash, K. P. S., Sanyal, O., **Tian, Y.** A Process-Structure-Property Modeling and Optimization Framework for Membrane-based Selective Nutrient Recovery. North American Membrane Society Conference, May 2025, Nashville, TN.
23. Dantas, B., Braniff, A., Liu, Y., Akundi, S. S., Tizon, Z. A., Niknezhad, S. S., Khan, F., Pistikopoulos, E. N., Lima, F., **Tian, Y.** Hybrid Mechanistic/Data-Driven Modeling for Enhancing Dynamic Operations in PEM Water Electrolyzers. Great Lakes PSE Workshop, May 2025, Columbus, OH.
24. Masud, M. A. A., Wang, Y., Hu, J., **Tian, Y.** Surrogate-Based Superstructure Optimization Framework for Microwave-Assisted Ammonia Production. Great Lakes PSE Workshop, May 2025, Columbus, OH.
25. Nice, D., **Tian, Y.** Modelling and Optimization of Industrial-Scale Modular Intensified Systems. WVU Annual Spring Undergraduate Research Symposium, April 2025, Morgantown, WV.
26. Dantas, B., Lima, F. V. & **Tian, Y.** Dynamic Risk-based Operability and Control Strategies for Smart and Sustainable Process Operations, April 2025, Morgantown, WV.
27. Malencia, T., Dantas, B., Braniff, A., Lima, F. V., **Tian, Y.** A Process Operability Approach for Safety-Critical Chemical and Energy Production. AIChE Annual Student Conference, October 2024, San Diego, CA.
28. Wadunambu, T., Masud, M. M. A., **Tian, Y.** Data-Driven Surrogate Modeling and Optimization for Ammonia Production. AIChE Annual Student Conference, October 2024, San Diego, CA.
29. Miller, D., Braniff, A., **Tian, Y.** Explicit pH and Temperature Control of Complex Pharmaceutical Bioprocesses. AIChE Annual Student Conference, October 2024, San Diego, CA.
30. Akintola, A., **Tian, Y.** Development of a Machine Learning-Driven Surrogate Model for Steam Methane Reforming-Kinetics Towards Sustainable Hydrogen Production. AIChE Annual Meeting, October 2024, San Diego, CA.
31. Wang, W., Wang, Y., **Tian, Y.**, Wu, Z. Explicit Machine Learning-Based Model Predictive Control of Nonlinear Processes. AIChE Annual Meeting, October 2024, San Diego, CA.
32. Masud, M., Araia, A., Wang, Y., Hu, J., **Tian, Y.** Process Synthesis Optimization for Microwave-Assisted Ammonia Production with Data-Driven Modeling. AIChE Annual Meeting, October 2024, San Diego, CA.
33. Masud, M., Wadunambu, T., Piash, K. P. S., Sanyal, O., **Tian, Y.** Using Data-Driven Modeling and Systems Optimization for Advancing Sustainable Nutrient Recovery Technologies from Concentrated Wastewater Sources. AIChE Annual Meeting, October 2024, San Diego, CA.
34. Dantas, B., Akundi, S. S., Liu, Y., Niknezhad, S., Braniff, A., Khan, F., Pistikopoulos, E. N., **Tian, Y.**, Lima, F. V. An Operability-Based Approach for Integrated Process Design, Operations, and Risk Management. AIChE Annual Meeting, October 2024, San Diego, CA.
35. Braniff, A., Dantas, B., Akundi, S. S., Liu, Y., Niknezhad, S., Khan, F., Pistikopoulos, E. N., **Tian, Y.** Dynamic Risk-Based Batch Reactor Quality Control through Hierarchical Multi-Parametric Optimization. AIChE Annual Meeting, October 2024, San Diego, CA.

36. **Tian, Y.**, Pistikopoulos, E. N., Khan, F., Niknezhad, S., Liu, Y., Akundi, S. S., Dantas, B., Braniff, A. RETRO: A Real-Time Risk-Based Optimization Framework for Safe and Smart Operations. AIChE Annual Meeting, October 2024, San Diego, CA.
37. Braniff, A., Clevenger, L., Dantas, B., Akundi, S. S., Liu, Y., Niknezhad, S., Khan, F., Pistikopoulos, E. N., **Tian, Y.** Uncertainty-Informed Dynamic Risk Control of Safety-Critical Reaction Processes with Bayesian State Estimation. AIChE Annual Meeting, October 2024, San Diego, CA.
38. Braniff, A., Miller, D., Dantas, B., Akundi, S. S., Liu, Y., Niknezhad, S., Khan, F., Pistikopoulos, E. N., **Tian, Y.** Risk-Based Quality Control for the Safe and Efficient Biotechnological Batch Production of Lactic Acid. AIChE Annual Meeting, October 2024, San Diego, CA.
39. Liu, Y., Akundi, S. S., Braniff, A., Dantas, B., **Tian, Y.**, Niknezhad, S., Khan, F., Pistikopoulos, E. N. Real-Time Monitoring and Control of Lab-Scale Hydrogen Energy Systems: An Experimental and Modeling Approach. AIChE Annual Meeting, October 2024, San Diego, CA.
40. Liu, Y., Akundi, S. S., Braniff, A., Dantas, B., **Tian, Y.**, Niknezhad, S., Khan, F., Pistikopoulos, E. N. Modeling Challenges in the Analysis of Proton Exchange Membrane Water Electrolysis System. AIChE Annual Meeting, October 2024, San Diego, CA.
41. Akundi, S. S., Liu, Y., Braniff, A., Dantas, B., Niknezhad, S., **Tian, Y.**, Khan, F., Pistikopoulos, E. N. Integration of Dynamic Risk and Control for Enhanced Safety and Operational Efficiency. AIChE Annual Meeting, October 2024, San Diego, CA.
42. Masud, M., **Tian, Y.** Design Optimization of Microwave-Assisted Ammonia Production Processes: An Integrated Machine Learning and Superstructure-based Approach. ACS Fall, August 2024, Denver, CO.
43. Miller, D., Braniff, A., **Tian, Y.** Improved Fidelity Modeling of Pharmaceutical Bioprocesses for Advanced Control Applications. Summer Undergraduate Research Symposium, July 2024, Morgantown, West Virginia.
44. Ball, M., Sanyal, O., **Tian, Y.** Integration of Process Design and Intensification Learning Via Combined Junior Course Project. FOCAPD, July 2024, Breckenridge, CO.
45. **Tian, Y.**, Akintola, A., Jiang, Y., Wang, D., Bao, J., Zamarripa, M. A., Paul, B., Chen, Y., Gao, P., Noring, A., Iyengar, A., Liu, A., Marina, O., Koeppel, B., Xu, Z. Reinforcement Learning-Driven Process Design: A Hydrodealkylation Example. FOCAPD, July 2024, Breckenridge, CO.
46. Masud, M., Araia, A., Wang, Y., Hu, J., **Tian, Y.** Machine Learning-Aided Process Design for Microwave-Assisted Ammonia Production. FOCAPD, July 2024, Breckenridge, CO.
47. Braniff, A., **Tian, Y.** Dynamic Risk-Based Model Predictive Quality Control with Online Model Updating. American Control Conference. July 2024, Toronto, Canada.
48. Akundi, S. S., Liu, Y., Braniff, A., Dantas, B., Niknezhad, S. S., **Tian, Y.**, Khan, F., Pistikopoulos, E. N. Integrating Dynamic Risk Assessment with Model Predictive Control for Enhanced Safety and Operational Efficiency. American Control Conference. July 2024, Toronto, Canada.
49. Akundi, S., Liu, Y., Braniff, A., Dantas, B., Niknezhad, S. S., **Tian, Y.**, Khan, F., Pistikopoulos, E. N. A Real-Time Risk-Based Optimization Frameworkfor Safe and Smart Operations. ESCAPE 34, June 2024, Florance, Italy.
50. Masud, M., & **Tian, Y.** Design Optimization of Microwave-Assisted Ammonia Production Processes: An Integrated Machine Learning and Superstructure-Based Approach. Statler Research Week Open House, April 2024, Morgantown, West Virginia.
51. Braniff, A., Dantas, B., Akundi, S. S., Liu, Y., Niknezhad, S. S., Khan, F., Pistikopoulos, E. N. & **Tian, Y.** Smart and Safe Manufacturing via Risk-Aware Control and Data-Driven Uncertainty Analysis. Statler Research Week Open House, April 2024, Morgantown, West Virginia.
52. Wadunambu, T., Masud, M., Piash, K. P. S., Sanyal, O., & **Tian, Y.** Model-based analyses of fertilizer nutrient recoveries from wastewater. WV Undergraduate Research Day at the Capitol, February 2024, Charleston, West Virginia.
53. **Tian, Y.**, Zamarripa, M. A., & Paul, B. Systematic Process Design Via Reinforcement Learning: An Hydrodealkylation Example. AIChE Annual Meeting, November 2023, Orlando, Florida.

54. Masud, M., & **Tian, Y.** Machine Learning-Aided Process Design and Intensification using Sparse Experimental Data: An Ammonia Production Example. AIChE Annual Meeting, November 2023, Orlando, Florida.
55. Braniff, A., & **Tian, Y.** Multi-Time-Scale Model Predictive Quality Control via Multi-Parametric Programming. AIChE Annual Meeting, November 2023, Orlando, Florida.
56. Braniff, A., & **Tian, Y.** Fault-Prognostic Explicit Model Predictive Control with Physics-Data Driven Monitoring. AIChE Annual Meeting, November 2023, Orlando, Florida.
57. Ali, M., Kenefake, D., **Tian, Y.**, & Pistikopoulos, E. N. Optimal Operation of Intensified Fluidized Bed Membrane Reactor for Oxidative Coupling of Methane. AIChE Annual Meeting, November 2023, Orlando, Florida.
58. Braniff, A., Masud, M., & **Tian, Y.** Fault-Prognostic Model Predictive Control with Physics-Data Driven Monitoring. American Control Conference. June 2023, San Diego, California.
59. Ball, M. R., Sanyal, O., & **Tian, Y.** Combined ChemE junior level course project: Green methanol synthesis. ASEE North Central Section Conference. March 2023, Morgantown, West Virginia.
60. Masud, M., & **Tian, Y.** Machine Learning in Limited Data Regime – A Literature Survey & Motivating Chemical Example. Statler Research Week Open House. March 2023, Morgantown, West Virginia.
61. Akoh, B., Akintola, A., & **Tian, Y.** Machine Learning-Assisted Chemical Process Design. Statler College Artificial Intelligence Research Forum. December 2022, Morgantown, West Virginia.
62. **Tian, Y.,** & Akintola, A. Modular Process Intensification Synthesis of Membrane-Based Reactive Separation Systems Towards Sustainable Hydrogen Production. AIChE Annual Meeting, November 2022, Phoenix, Arizona.
63. **Tian, Y.,** & Akoh, B. An Operational Optimization Approach for Supply Network Decarbonization for Energy-Chemical Co-Production. AIChE Annual Meeting, November 2022, Phoenix, Arizona.
64. Ali, M., Cai, X., Khan, F., Pistikopoulos, E. N., & **Tian, Y.** A Systematic Safety-Oriented Process Design and Explicit Model Predictive Control Optimization Approach. AIChE Annual Meeting, November 2022, Phoenix, Arizona.
65. Ali, M., **Tian, Y.,** De, S., van Bavel, A. P., Demirhan, C. D., & Pistikopoulos, E. N. Dynamic Modeling and Explicit/Multi-Parametric Model Predictive Control Optimization of an Intensified Fluidized Bed Membrane Reactor for Oxidative Coupling of Methane. AIChE Annual Meeting, November 2022, Phoenix, Arizona.
66. Cai, X., Ali, M., Su-Feher, D., Pistikopoulos, E. N., **Tian, Y.** Systematic Incorporation of Safety Assessment in Process Design, Intensification, and Control. AIChE Spring Meeting, April 2022, San Antonio, Texas.
67. Ali, M., **Tian, Y.,** De, S., van Bavel, A. P., Demirhan, C. D., Pistikopoulos, E. N. Model-Based Design and Intensification of a Catalytic Fluidized Bed Membrane Reactor for Oxidative Coupling of Methane. AIChE Spring Meeting, April 2022, San Antonio, Texas.
68. Akintola, A., **Tian, Y.** Computer Aided Process Intensification for Hydrogen Production. Statler Research Open House, April 2022, Morgantown, West Virginia.
69. Ali, M., **Tian, Y.,** De, S., van Bavel, A. P., Demirhan, C. D., Pistikopoulos, E. N. Process Modeling, Design, and Intensification of Oxidative Coupling of Methane Process. ACS Spring Meeting, April 2022, San Diego, California.
70. **Tian, Y.**, Pistikopoulos, E. N. A Process Intensification Synthesis Approach to Adsorption-Based Reactive Separation Systems. AIChE Annual Meeting, November 2021, Boston, Massachusetts.
71. **Tian, Y.**, Meduri, M., Bindlish, R., Pistikopoulos, E. N. A Process Intensification Synthesis Framework for the Design of Divided Wall Columns. AIChE Annual Meeting, November 2021, Boston, Massachusetts.
72. Rivera, M., Vedant, S., Pistikopoulos, E. N., **Tian, Y.** A Data-Driven Optimization Approach and Software Toolkit for Modular Process Intensification Synthesis. AIChE Annual Student Conference, November 2021, Boston, Massachusetts.

73. **Tian, Y.** Process Intensification Synthesis of Multi-Scale and Multi-Functional Reaction Systems. 2021 Annual Meeting of Pittsburgh-Cleveland Catalysis Society, October 2021, Pittsburgh, PA.
74. **Tian, Y.**, Vlachos, D. G., Pistikopoulos, E. N. Generalized Modular/Collocation Framework for Representation and Synthesis of Intensified Multi-Scale Reaction Systems. AIChE Annual Meeting, November 2020.
75. **Tian, Y.**, Meduri, V., Vedant, S., Bindlish, R., Pistikopoulos, E. N. Process Design and Intensification of Dividing Wall Column for a Methyl Methacrylate Separation Process. AIChE Annual Meeting, November 2020.
76. **Tian, Y.** A Modular Approach to Process Intensification – Modeling, Optimization and Control. AIChE Annual Meeting, November 2020.
77. García-López, C. A., **Tian, Y.**, Pistikopoulos, E. N., Jiménez-Gutiérrez, A. Design and Control Optimization of Pressure Swing Adsorption Systems for Hydrogen Recovery from IGCC Plants with Co-Capture of Carbon Dioxide. AIChE Annual Meeting, November 2020.
78. **Tian, Y.**, Pistikopoulos, E. N. Material Selection in Process Intensification – Application to Extractive Separation Systems. AIChE Spring Meeting, August 2020.
79. **Tian, Y.**, Pappas, I. S., Burnak, B., Katz, J., Pistikopoulos, E. N. Process Intensification Framework for Reactive Separation Systems. AIChE Annual Meeting, November 2019, Orlando, Florida.
80. **Tian, Y.**, Pappas, I. S., Avraamidou, S., Pistikopoulos, E. N. A Modular Approach to Process Integration and Intensification. AIChE Annual Meeting, November 2019, Orlando, Florida.
81. **Tian, Y.,** Pappas, I. S., Avraamidou, S., Pistikopoulos, E. N. Process Intensification Framework for Extractive Separation Systems. AIChE Annual Meeting, November 2019, Orlando, Florida.
82. **Tian, Y.**, Demirel, S. E., Li, J., Avraamidou, S., Tula, A. K., Eden, M. R., Hasan, M. M. F., Gani, R., Pistikopoulos, E. N. Towards a Unified Strategy and Prototype Software Platform for the Synthesis of Operable & Sustainable Process Intensification Systems. AIChE Annual Meeting, November 2019, Orlando, Florida.
83. **Tian, Y.**, Pappas, I. S., Katz, J., Burnak, B., Pistikopoulos, E. N. Towards the Incorporation of Operability and Safety in the Synthesis of Intensified Reactive Separation Systems. AIChE Spring Meeting, April 2019.
84. **Tian, Y.,** Mannan, M. S., Pistikopoulos, E. N. Towards a Systematic Process Intensification Framework for Advanced Distillation Systems. AIChE Annual Meeting, October 2018, Pittsburgh, Pennsylvania.
85. Pistikopoulos, E. N., Sholl, D., Hasan, M. M. F., Demirel, S. E., **Tian, Y.** Modeling and Simulation Challenges for Process Intensification. AIChE Annual Meeting, October 2017, Minneapolis, Minnesota.
86. **Tian, Y.**, Pistikopoulos, E. N., Mannan, M. S. Towards a Systematic Framework for the Synthesis of Safely Operable Process Intensification Systems. Mary Kay O'Connor Safety Center 2017 International Symposium, October 2017, College Station, Texas.