

CURRICULUM VITAE

Haiqing Lin, Ph.D., Professor

Department of Chemical and Biological Engineering
University at Buffalo (UB), The State University of New York (SUNY)
Buffalo, New York 14260
(716) 645-1856, haiqingL@buffalo.edu
Web: www.cbe.buffalo.edu/lin

EDUCATION:

- 2005 Ph.D. Chemical Engineering The University of Texas at Austin
- 2001 M.S. Chemical Engineering North Carolina State University
- 1999 M.S. Chemical Engineering Xiamen University, P.R. China
- 1996 B.S. Chemical Engineering Xiamen University, P.R. China

PROFESSIONAL EXPERIENCE:

- Aug. 2021 – present Professor, University at Buffalo, SUNY
- Aug. 2018 – Jul. 2021 Associate Professor, University at Buffalo, SUNY
- Aug. 2013 – Jul. 2018 Assistant Professor, University at Buffalo, SUNY
- Sep. 2005 – Jul. 2013 Senior Research Engineer and Team Leader, Membrane Technology and Research, Inc. (MTR), Newark, CA

MAJOR RESEARCH INTERESTS

- Advanced membranes for gas separations such as carbon capture
- Advanced membranes for water purification
- Small molecular transport in polymeric materials
- Structure/property relationship of polymer-based materials

KEY ACHIEVEMENTS AND RECOGNITION

- Dr. Lin is internationally recognized as a leading researcher in the field of advanced membranes for gas separation, carbon capture, and water purification.
- Awarded more than \$12 M in grant funding from federal, state, industries, and international funding agencies since joining UB. Involved in projects with total award sizes of \$22 M.
- Published more than 100 peer-reviewed scientific papers in prestigious journals including Science, Advanced Materials, Advanced Functional Materials, ACS Nano, Energy and Environmental Science, Joule, Journal of Membrane Science, Macromolecules, Journal of Polymer Science, ACS Applied Materials & Interfaces, Journal of Materials Chemistry A, etc., along with 10 patents and patent applications, 7 invited book chapters, and over 100 presentations.
- Published invited perspective articles and progress reports on membrane technologies in prestigious journals including Chemistry - A European Journal, Current Opinion in Chemical Engineering, Journal of Polymer Science, Materials Advances, and Membranes.
- Work has garnered 8,010 citations, leading to citation metrics of h index: 39, i10 index: 82 (Google Scholar)
- Completed more than 500 manuscript peer-reviews (1-2 per week) for renowned journals including ACS Nano; Advanced Functional Materials; Advanced Materials; Energy & Environmental Science, Science; Science Advances, and many others.

- Served as a panelist or proposal reviewer for the U.S. National Science Foundation (NSF), U.S. Department of Energy (DOE), American Chemical Society Petroleum Research Fund (ACS PRF), and many others
- Serving as board directors of North American Membrane Society (NAMS) and American Institute of Chemical Engineers (AIChE) Separation Division
- Received Innovation Award by AIChE Separation Division and NSF CAREER Award
- Led the development of commercial Polaris™ membranes for hydrogen purification and carbon capture during the tenure at MTR

ACADEMIC AWARDS / SCHOLARSHIPS

- 2021 Exceptional Scholar: Sustained Achievement Award, University at Buffalo
- 2021 Buffalo Blue Sky Gold Coin, University at Buffalo
- 2020 AIChE Separation Division Innovation Award
- 2019 Buffalo Blue Sky Gold Coin, University at Buffalo
- 2016 CAREER Award, National Science Foundation
- 2015 SEAS Early Career Researcher of the Year Award, University at Buffalo
- 2011 Distinguished Alumni Award, Chemical Engineering of Xiamen University
- 2006 University of Texas CO-OP Research Excellence Award for Best Research Paper
- 2006 AIChE Separation Division Graduate Student Research Award
- 1999 DuPont Fellowship, Xiamen University

HONORS

- Editorial board member of *Journal of Polymer Science*, *Journal of Membrane Science Letters*, *Scientific Reports*, *Membranes*, and *Carbon Capture Science and Technology*
- 2020 I&EC Research Excellence in Review Awards
- 2020 Keynote speaker for International Congress on Membranes and Membrane Processes (ICOM)
- 2020 Contributor to *Future Series* of AIChE Journal
- 2019 SEAS Top 10 Impactful Research Projects, University at Buffalo
- 2017 I&EC Research Excellence in Review Awards

AWARDS OF GRADUATE STUDENTS AND POSTDOCTORAL RESEARCHERS

2021:

- Vinh Bui: Elias Klein traveling award from NAMS
- Xiaoyi Chen: ACS I&EC Division Graduate Student Award Symposium

2020:

- Xiaoyi Chen: Women in Chemical Engineering (WIC) Travel Award of AIChE
- Talieh Alebrahim: Elias Klein traveling award from NAMS;
- Talieh Alebrahim: Women in Chemical Engineering (WIC) Travel Award of AIChE
- Thien Tran: Graduate Research Award of Membranes of AIChE Separation Division

2019:

- Liang Huang: Young Investigator Fellowship from NAMS
- Junyi Liu: Graduate Research Award of Membranes of AIChE Separation Division
- Thien Tran: Student Speaker Award by the CBE Department
- Hien Nguyen: First Prize Poster Award of Separation Division at AIChE
- Hien Nguyen: First Prize Poster Award at Graduate Research Symposium of CBE

- Xiaoyi Chen: Elias Klein traveling award from NAMS

2018:

- Lingxiang Zhu: Chinese Government Award for Outstanding Self-financed Students Abroad
- Lingxiang Zhu: Graduate Research Award of Membranes of AIChE Separation Division
- Lingxiang Zhu: Student Fellowship from NAMS
- Lingxiang Zhu: Dean's Graduate Achievement Award from UB
- Nima Shahkaramipour: First Prize Poster Award at NAMS
- Nima Shahkaramipour: First Prize Poster Award at Graduate Research Symposium of CBE
- Nima Shahkaramipour: A&WMA Student Award
- Junyi Liu: Student Speaker Award by the CBE Department
- Thien (James) Tran: Finalist of ACS Graduate Research Award of PMSE
- Hien Nguyen: Third Prize Poster Award from NAMS
- Hien Nguyen: Elias Klein traveling award from NAMS

2017:

- Lingxiang Zhu: Finalist of AIChE Graduate Research Award of Polymers
- Lingxiang Zhu: Student Speaker Award by the CBE Department
- Milad Yavari: Air & Waste Management Association (A&WMA) Scholarship
- Junyi Liu: Student Speaker Award by the CBE Department
- Thien (James) Tran: Elias Klein traveling award from NAMS

2016:

- Nima Shahkaramipour: 2nd place NY P2I Student Competition by Pollution Prevention Program
- Nima Shahkaramipour: Elias Klein traveling award from NAMS

2015:

- Lingxiang Zhu: Elias Klein traveling award from NAMS

PROFESSIONAL MEMBERSHIPS AND ACTIVITIES

- Board member of North American Membrane Society (NAMS) (2020-2023)
- Director of Separation Division of AIChE (2019 – 2024)
- Vice-chair and chair of Membranes Area of Separation Division of AIChE (2015 – 2019)
- American Association for the Advancement of Science (AAAS), Member
- American Chemical Society (ACS), Member
- American Institute of Chemical Engineers (AIChE), Senior Member
- American Physics Society (APS), Member
- Materials Research Society (MRS), Member
- North American Membrane Society (NAMS), Member

UNIVERSITY SERVICES

- Member, Faculty Search Committee for Chemistry, September 2018 – April 2019
- Member, Faculty Search Committee for RENEW, September 2016 – April 2017

SCHOOL COMMITTEES

- Member, Tenure and Promotion Committee, September 2018 – 2021
- Member, Academic grievance, September 2015 - present

DEPARTMENT COMMITTEES

- Direct of Graduate Study, expected to start on January 1, 2022
- Member, Graduate Study Committee, September 2018 – present
- Member, Faculty Search Committee, September 2015 – April 2017
- Member, Faculty Search Committee, September 2015 – April 2017
- Member, Undergraduate Study Committee, September 2014 – August 2018
- Member, Annual Graduate Research Symposium, September 2013 – July 2018

PROFESSIONAL SERVICES

Editor and Symposium Organizer

- Editor of Scientific Reports (2016-present)
- Associate Editor of Journal of Membrane Science and Research (2018 – present)
- Editorial board member of Journal of Membrane Science Letter (2021-present)
- Editorial board member of Journal of Polymer Science (2021-present)
- Editorial board member of Membranes (2020-present)
- Editorial board member of Advances in Polymer Technology (2018-present)
- Editorial board member of Heliyon (2018-2020)
- Editor of Frontiers in Environmental Chemistry (2020- present)
- Guest editor of a special issue entitled “Polymeric Membranes: Chemistry, Physics, and Applications” for *Journal of Polymer Science* (2020)
- Guest editor of a special issue entitled “Polymeric Membranes for Gas Separation” for *Membranes* (2018)
- Symposium organizer of ACS Pacificchem “Polymeric, inorganic, and hybrid materials for breakthrough membrane applications: advancing the science, engineering and process design” (December 2021)
- Symposium co-organizer of MRS Advanced Membranes for Energy-efficient Molecular Separation and Ion Conduction (November 2019)
- Symposium co-organizer of MRS Functional Nanostructured Polymers for Emerging Energy Technologies (November 2016)
- Symposium co-organizer of ACS Polymeric Materials Science and Engineering (PMSE) “Nanostructured Porous Polymers: Synthesis, Property, and Function” (March 2015)

Journal Reviewer (>50 manuscripts per year)

Accounts of Chemical Research; ACS Applied Materials and Interfaces; ACS Applied Polymers; ACS Macro Letters; ACS Nano; Advanced Functional Materials; Advanced Materials; AIChE Journal; Chemistry of Materials; Energy & Environmental Science, Industrial & Engineering Chemistry Research; Journal of Materials Chemistry A; Journal of Membrane Science; Journal of Polymer Science; Macromolecules; Membranes; Nano Letter; Nature Communications; Polymer; Progress in Polymer Science; Science; Science Advances

Proposal Reviewer

- NSF Review Panel (2014 - 2021)
- ACS Petroleum Research Fund Program (2014-2020)
- DOE ARPA-E (2020); SBIR (2019, 2021); LANL (2021); EERE (2007, 2009)
- University of Wisconsin-Milwaukee Research Foundation (2018, 2020, 2021)
- UK EPSRC Program (2014-2017)

- Israel Science Foundation and Agricultural Research and Development Fund (2013, 2017 - 2020)
- Czech Science Foundation (2018 – 2021)
- Singapore A*STAR (2021)

COURSES TAUGHT

- CE540 Materials Principles (Fall), 30-50 graduate: 2017 - present
- CE318 Heat and Mass Transfer (Spring), 60 – 90 undergraduate: 2014 - 2020
- CE500 Materials Characterization (Fall), 20-40 graduate: 2014 - 2016

RESEARCH SUPERVISION

Prior Advisees

- Postdocs (2): *Wenji Guo (female)* (China), Liang Huang (China)
- Ph.D. students (8): *Xiaoyi Chen (female)*, graduate in August 2021 (Bolt Threads); Hien Nguyen, graduated in May 2020 (Repligen Corporation); Thien Tran, graduated in May 2020 (Postdoc at UB); Nima Shahkaramipour, graduated in December 2019 (Pentair); *Maryam Omidvar (female)*, graduated in May 2019 (Technical University of Denmark); Junyi Liu, graduated in December 2018 (Air Liquide); Milad Yavari, graduated in December 2017 (Averatek); Lingxiang Zhu, graduated in December 2017 (DOE National Energy Technology Laboratory)
- M.S. students (22): *Alisa Chakraborty (female)* (PhD at Penn State), Himangshu Mondal (PhD at Houston), *Xiao-Ci Lin (female)*, Darius Rub, Erda Deng (PhD at UB), *Riliwan Sanni (African American)* (Energy Materials Corporation), *Janavi Gohil (female)* (Pall Corporation), Sarthak Doshi (Cytiva), Gengyi Zhang (PhD at UB), Weiguang Jia (Jushi, USA), *Shabdiki Chaurasia (female)* (Nantero), *Xiaoyi Chen (female)* (Bolt Threads), *Haley Valentine (female)* (Thermo Fisher Scientific), Praphulla Mandadapu (India), *Yichen Tu (female)* (Intel), Sankara Ramanan (Dynatemp Refrigerants Company), Nachiket Paranjape (Yahoo), Xianda Hou (Daqing Pure Hemp Technology Corp.), Junyi Liu (Air Liquide), Shawreen Shah (Akorn), Benjamin Lam (Helios-NRG), and Shizhong Zhao (Biopeptech)
- Undergraduate Researchers (47): *Elizabeth Jacobia (female)* (2021); Vinh Bu, Nicholas Rawda, and Skye Schaefer (2020); Vinh Bu, *Wilhemina Duah (female)*, Zhihao Feng, *Sarah Howard (female)*, Mohamed Kawy, Robert Kirisits, Omran Omar, Darius Rub, and Skye Schaefer (2019); *Tanahiry Escamilla (female)*, Suting Huang, Zhihao Feng, Chen Lin, Mohamed Kawy, and Omran Omar (2018); *Stephanie Hall (female)*, Suting Huang, Mingi Ji, *Fleurie Kelley (female)*, Chen Lin, and Yash Savla (2017); *Jennifer Park (female)*; Hunter Steven; *Sumbal Zaman (female)*; *Tanahiry Escamilla (female)*; *Beatrices Bacolod (female)*; and Chris Chan (2016); Ananthan Balachandran; Kaipin Huang; James Kim; Tho Le; John Schneible; Brandon Chin; Ryan Fair; Ken He; *Azza Hosny (female)*; Tony Huynh; *Vivian Huyhn (female)*; and Norman Ng (2015); and Po-Han Chen; *Dana Havas (female)*; Weiguang Jia; and Min Wei (2014)

Current Advisees

- Postdocs (2): Thien Tran, Leiqing Hu
- Ph.D. students (6): *Taliehsadat Alebrahim (female)*, Vinh Bui, Erda Deng, Sankhajit Pal, Ameya Tandel, Gengyi Zhang,
- M.S. students (3): Nicholas Rawda, Skye Schaefer, *Shweta Singh (female)*

- Undergraduate researcher (1): *Elizabeth Baddat (female)*

GRANTS AND CONTRACTS AT UB

To date (September 2020), Prof. Lin had secured more than **\$12 M** for his laboratory from federal, state, industries, and international funding agencies. His laboratory has been involved with various projects with total awards of **≈\$22 M**. (All of the funding amounts shown in **bold** are for Lin's laboratory)

As PI of Federal Grants and Contracts (Total: \$9,457,755)

1. Tunable Two-Dimensional (2D) Porous Material/Polymer Composite Hollow Fiber Membranes for Advanced Water Resource Recovery, PI: Haiqing Lin, 9/1/2021 – 8/31/2024, Department of Energy, Office of Energy Efficient & Renewable Energy, **\$2,000,000** (20% share)
2. PFI-TT: Development of Polymeric Organosilica Membranes for Hydrogen Purification at 100 – 300 °C, PI: Haiqing Lin, 1/1/2021 – 12/31/2022, National Science Foundation, **\$249,998** (95% share)
3. Membrane Adsorbents Comprising Self-Assembled Inorganic Nanocages (SINCs) for Super-fast Direct Air Capture Enabled by Passive Cooling, PI: Haiqing Lin, 10/1/2020 – 3/31/2022, Department of Energy National Energy Technology Laboratory, **\$800,000** (35% share)
4. Rational Development of Novel Metal-Organic Polyhedra-based Membranes for CO₂ Capture, PI: Haiqing Lin, Co-PIs: Tim Cook, Tim Merkel, Andrew Sexton, Chulsung Bae, and Zhen-Gang Wang, 7/1/2019 – 6/30/2023; Department of Energy National Energy Technology Laboratory, **\$2,857,557** (25% share)
5. Rational Development of Novel Metal-Organic Polyhedra-based Membranes for CO₂ Capture, PI: Haiqing Lin, Co-PI: Tim Cook, 7/1/2019 – 12/31/2022; Empire State Development Division of Science, Technology & Innovation (NYSTAR) **\$599,999** (50% share)
6. Development of ultrahigh-flux hollow fiber membranes based on carbon molecular sieve with superior H₂/CO₂ separation properties, PI: Haiqing Lin, Co-PIs: Andrew Sexton and Raj Singh, 10/1/2018 – 9/30/2021; Department of Energy National Energy Technology Laboratory, **\$800,000** (67% share)
7. CAREER: SusChEM: Design and Discovery of Polymers with Pendant Rings for Membrane Gas Separations, PI: Haiqing Lin, 3/1/16-2/28/22, National Science Foundation (1554236), **\$500,000** (100% share)
8. Collaborative Research: SusChEM: Molecular Design of Durable Lewis Basic Elastomeric Membranes for Clean Energy Conversion and CO₂ Separation, PI: Haiqing Lin, 7/1/15 - 6/30/19, National Science Foundation (1506211), **\$180,102** (100% share)
9. AOI [1L2] Sorption Enhanced Mixed Matrix Membranes for CO₂ Capture from Precombustion Processes, PI: Haiqing Lin, Co-PI: Mark Swihart and Tim Merkel, 10/1/15 - 12/31/19, DOE NETL, **\$1,470,099** (50% share)

As PI at UB for Federal Grants and Contracts (Lin's share: ≈\$1,802,938)

1. Engineering-Scale Testing and Validation of Algae-Based Technology and Bi-Products, PI: Haiqing Lin, 10/1/2021 – 9/30/2024, Department of Energy and Helios-NRG, \$2,000,000 (**\$200,000 share**)

2. CO₂-philic Block Copolymers with Intrinsic Microporosity (BCPIMs) for Postcombustion CO₂ Capture, PI: Ravi Prasad, Co-PI: Haiqing Lin, 9/1/2021 – 8/31/2023, Department of Energy STTR Phase II Program through Helios-NRG, \$1,500,000 (**\$500,000 share**)
3. Novel Algae Technology to Utilize CO₂ for Value Added Products, PI: Ravi Prasad, Co-PI: Haiqing Lin, 7/1/2019 – 6/30/2022, Department of Energy National Energy Technology Laboratory through Helios-NRG (DE-FE-0031710), \$1,499,558 (**\$200,000 share**)
4. Development of Self-Assembly Isoporous Supports Enabling Transformational Membrane Performance for Cost-Effective Carbon Capture, PI: Hans Wijmans, Co-PIs: Haiqing Lin, 4/1/18 – 10/31/22; Department of Energy National Energy Technology Laboratory, \$2,907,219 (**\$377,938 share**)
5. CO₂-philic Block Copolymers with Intrinsic Microporosity (BCPIMs) for Postcombustion CO₂ Capture, PI: Ravi Prasad, Co-PI: Haiqing Lin, 6/29/2020 – 7/28/2021, Department of Energy STTR Phase I Program through Helios-NRG (DE-SC0020730), \$256,420 (**\$150,000 share**)
6. Novel Algae Technology for CO₂ Utilization, PI: Ravi Prasad, Co-PI: Haiqing Lin, 5/20/21–12/31/20, DOE SBIR Phase II, \$1,000,000 (**\$200,000 share**)
7. Scalable Polymerized Metal-Organic Frameworks with CO₂-philic Rubbery Polymers for Membrane CO₂/N₂ Separation, PI: Ravi Prasad, Co-PI: Haiqing Lin, 7/2/18 – 4/1/19, DOE STTR Phase I, \$150,000 (**\$75,000 share**)
8. Novel Algae Technology for CO₂ Utilization, PI: Ravi Prasad, Co-PI: Haiqing Lin, 2/21/17–11/20/17, DOE SBIR Phase I, \$150,000 (**\$45,000 share**)
9. Novel Integrated Technology Incorporating Anti-fouling Membranes to Dewater Algal Harvests, PI: Ravi Prasad, Co-PI: Haiqing Lin, 6/8/15 - 3/7/16, DOE SBIR Phase I, \$150,000 (**\$45,000**)
10. Advanced Membrane Technology for Helium Recovery, PI: Ravi Prasad, Co-PI: Haiqing Lin, 4/1/14 - 3/31/15, DOE SBIR Phase 2, \$1,000,000 (**\$10,000 share**)

As co-PI at UB for Federal Grants and Contracts (Lin share: ≈\$323,000)

1. Manufacturing USA: GOALI: Designing Catalytic Membrane Reactors (CMRs) for Low-Temperature CO₂ Utilization and Methane Dry Reforming, PI: Mark Swihart, Co-PI: Haiqing Lin, Carl Lund, and Shiguang Li, 9/1/18-8/31/21, National Science Foundation (1804996), \$360,000 (**\$120,000 share**)
2. Laser Chip Lithography-Patterned Nanomembranes for Wastewater Treatment, PI: Liang Feng, Co-PI: Haiqing Lin, 9/1/16-8/31/20, National Science Foundation (1635026), \$250,000 (**\$87,000 share**)
3. Innovative Seawater Desalination Systems Coupling Peroxide Oxidation and Reactive Graphene Oxide Modified Membranes, PI: Ning Dai, Co-PI: Haiqing Lin, 3/1/18 – 8/31/19, Department of Interior (R17AC00147), \$150,000 (**\$75,000 share**)
4. Nanoporous Membranes Based on Sub-Nanometer Pores, PI: Bing Gong, Co-PI: Haiqing Lin, 6/15/15-5/31/19, National Science Foundation (1512164), \$300,000 (**\$45,000 share**)

Industries and Internal Agencies (Lin share: ≈\$429,065)

1. Evaluation of anti-fouling membranes, PI: Haiqing Lin, 9/1/2021 – 8/31/2022, Rochester Institute of Technology, **\$9,484**
2. Nanofiltration membranes for Li recovery, PI: Haiqing Lin, 12/5/14 – 6/5/15, FMC, **\$3,600** (100% share)

3. Membrane Testing for Lubrizol, PI: Haiqing Lin, 12/5/14 – 6/5/15, Lubrizol, **\$8,995** (100% share)
4. Study of Chlorine Adsorption in Scrubber Bed Material, PI: Mark Swihart, Co-PI: Haiqing Lin, 8/1/14-10/31/14, AVOX Systems, \$13,972 (**(\$6,986 share)**)
5. Stable Ultrathin Film Composite Membranes with High CO₂ Flux, PI: Haiqing Lin, 6/1/14 - 5/31/17, Korea Carbon Capture and Sequestration R&D Center, **\$400,000** (100% share)

New York State, SUNY, and UB Internal Funding (Lin share: ≈\$360,984)

1. Rational Design of Mixed Matrix Membranes for the Production of Blue and Green Hydrogen, PI: Haiqing Lin, Co-PI: Mark Swihart, 10/1/2021 – 7/31/2022, University at Buffalo, \$49,997 (**\$24,999 share**)
2. Facile fabrication of high performance membranes for industrial gas separations, PI: Haiqing Lin, 2/1/2021 – 10/31/2021, University at Buffalo Technology Accelerator Program, **\$66,000** (100% share)
3. Advanced materials for carbon utilization, PI: Nirupam Aich, Co-PIs: Haiqing Lin and Gang Wu, 2/1/2021 – 1/31/2023, Buffalo Blue Sky by University at Buffalo, \$45,000 (**\$20,000 share**)
3. Molecular-level design of conductive polymer electrolytes for electrochemical energy storage, PI: Tim Cook, Co-PIs: Haiqing Lin and Javid Rzayev, 6/13/19 – 6/30/21, Buffalo Blue Sky by University at Buffalo, \$45,000 (**\$20,000 share**)
4. Rational Development of Robust Membranes for Nitrate Removal from Wastewater, PI: Haiqing Lin, Co-PI: Jeffrey Errington, 10/1/17 – 9/30/18, Stony Brook University, \$35,000 (**\$17,500 share**)
5. Mixed Matrix Membranes Comprising Polymers and Metal-Organic Polyhedra for Olefin/Paraffin Separation, PI: Tim Cook, Co-PI: Haiqing Lin, 1/15/17 – 1/14/18, UB IMPACT, \$32,000 (**\$16,000 share**)
6. Zero Energy Adaptive Façade (ZEAF) for Energy Efficient Buildings, PI: Haiqing Lin, Co-PI: JinYoung Song and Jongmin Shim, 4/1/16-3/31/17, UB SMART, \$34,981 (**\$11,660 share**)
7. Isoporous Ultrafiltration Membranes by Self-Assembly of Block Copolymers for Water Purification, PI: Javid Rzayev, Co-PI: Haiqing Lin, 2/1/16-1/31/17, UB IMPACT, \$35,000 (**\$17,500 share**)
8. IMPACT: Robust Nanoscale-Patterned Membranes for Wastewater Treatment Using Laser Chips-Based Lithography, PI: Liang Feng, Co-PI: Haiqing Lin, 5/15/15 - 4/14/16, UB IMPACT, \$34,354 (**\$11,451 share**)
9. Development of Advanced Membrane Materials for Industrial Gas Separation and Water Reuse, PI: Haiqing Lin, 2/1/15 – 6/30/15, UB CMI, **\$25,000** (100% share)
10. Nanostructured Membranes with Sub-Nanometer Channels for Energy Efficient Seawater Desalination and Food Processing, PI: Haiqing Lin, Co-PI: Bing Gong, 9/1/14 – 8/31/15, UB RENEW, **\$25,300** (100% share)
11. Feasibility Study of Antifouling Membranes for Wastewater Reuse, PI: Haiqing Lin, Co-PI: Chong Cheng, 8/1/14 - 12/31/16, NY Pollution Prevention Program, **\$93,925** (100% share)
12. Ultrathin High Flux Atomic Layer Deposited (ALD) Metal Membranes for Green H₂ Production, PI: Uttam Singisetti, Co-PI: Haiqing Lin and Qiaoqiang Gan, 4/1/14 - 3/31/15, UB IMPACT, \$34,947 (**\$11,649 share**)

GRANT AND CONTRACT BEFORE UB (Total: \$5,837,804)

16. California Energy Commission, Energy Innovations Small Grant Programs, “Prototype and Demonstration of Membrane Processes for Natural Gas Dehydration,” \$94,995, 1/2012-12/2012
15. DOE Small Business Innovation Program (SBIR) Phase II, “Advanced Membrane Technology for Helium Recovery,” \$67,000, 11/2011 – 9/1013, [subcontractor to Helios-NRG (PI)]
14. EPA SBIR Phase II, “Novel Membrane Process to Utilize Dilute Methane Streams,” \$225,000, 5/2011 – 4/2013
13. DOE SBIR Phase I, “Novel Thermally Rearranged Polymers for Olefin-Paraffin Separations,” \$150,000, 6/2011 – 3/2012 (with University of Texas at Austin)
12. EPA SBIR Phase I, “Novel Membranes for Natural Gas Dehydration,” \$80,000, 3/2011 – 8/2011
11. DOE SBIR Phase III Xlerator program, “Field Demonstration of CO₂ Capture from Coal-Derived Syngas,” \$1,499,990, 9/2010 – 6/2013
10. DOE Industrial Technology Program Grand Challenge Project, “Novel Membrane and Processes for Oxygen Enrichment,” \$385,819, 8/2010 – 8/2011 (with Gas Technology Institute and Tetramer Technology)
9. EPA SBIR Phase I, “Novel Membrane Process to Utilize Dilute Methane Streams,” \$70,000, 3/2010 – 9/2010
8. EPA SBIR Phase I, “High Flux Membranes to Upgrade Biogas from Anaerobic Digesters,” \$70,000, 2/2009 – 7/2009
7. DOE SBIR Phase II, “Membrane System for Coal Bed CO₂ Sequestration and Methane Production,” \$750,000, 8/2008 – 7/2010
6. NSF SBIR Phase II, “New Synthesis Approach to High Performance, Low Cost CO₂/CH₄ Gas Separation Membranes,” \$500,000, 2/2008 – 2/2010 (subcontract to Tetramer Technologies)
5. EPA SBIR Phase II, “A Membrane Pre-concentrator for Portable Trace VOC Detector,” \$225,000, 5/2007 – 4/2009
4. DOE NETL, “Membrane Process to Sequester CO₂ from Power Plant Flue Gas,” \$800,000, 4/2007 – 3/2009 (I participated in this project, which lead to the second and third phases of the technology development with a total funding of \$20,000,000 from DOE)
3. DOE SBIR Phase I, “Energy-Efficient Process to Utilize Dilute Methane Emissions,” \$100,000, 9/2006 – 3/2007
2. EPA SBIR Phase I, “A Membrane Pre-concentrator for Portable Trace VOC Detector,” \$70,000, 2/2006 – 8/2006
1. DOE SBIR Phase II, “Stable Membranes for Separating Hydrogen Containing Petrochemical and Refinery Stream,” \$750,000, 7/2005 – 7/2007

PUBLICATIONS

- Google Scholar Citation of 8010 in total; H-index: 39; i10-index: 82 (Jan. 10, 2022)
- Link: <https://scholar.google.com/citations?user=7cxhEhwAAAAJ&hl=en>
- ORCID: <https://orcid.org/0000-0001-8042-154X>
- **Top journals** (Impact factor ≥ 10) to a broad readership of materials and chemistry are highlighted.

Refereed Journal Articles (* denotes graduate students and postdocs advised by Prof. Lin, + denotes undergraduate student, § denotes the corresponding author)

In Review

1. Guo, W., Tran, T., Mondal, H., Schaefer, S., Huang, L., and Lin, H.[§], Enhancing CO₂/N₂ separation performance in poly(1,3 dioxolane) by doping with polyethylene glycol demonstrated via integrated experiment and modeling, Submitted to *Journal of Membrane Science*
2. Hu, L., Bui, V.T., Pal, S., Guo, W., Subramanian, A., Kisslinger, K., Fan, S., Nam, C., Ding, Y., and Lin, H., In situ synergistic growth of crystalline and polymer-incorporated amorphous ZIF-8 in polybenzimidazole achieving hierarchical nanostructures for H₂/CO₂ separation, Submitted
3. Hu, L., Bui, V.T., Fan, S., Guo, W., Pal, S., Ding, Y., and Lin, H., Supramolecular Assemblies of Polybenzimidazole and Aromatic Polycarboxylic Acids with Superior Mechanical and H₂/CO₂ Separation Properties, submitted

Published or In Press

2022

- 108 Zhang, G., Tran, T., Huang, L., Deng, E., Guo, W., and Lin, H.[§], Thin-film Composite Membranes Based on Hyperbranched Poly(ethylene oxide) for CO₂/N₂ Separation, *Journal of Membrane Science*, 644, 120184 (2022)
- 107 L. Hu, V. T. Bui, W. Guo, S. Pal, X. Chen, G. Zhang, R. P. Singh, M. Lupion, H. Lin[§], Tailoring Sub-3.3 Å Ultramicropores in Advanced Carbon Molecular Sieve Membranes for Blue Hydrogen Production, *Science Advances*, accepted
- 106 Huang, L., Guo, W., Mondal, H., Schaefer, S., Tran, T., and Lin, H.[§], Effect of the Branch Length on CO₂/Gas Separation Properties of Hyperbranched Poly(1,3-dioxolane), *Macromolecules*, in press (2022)
- 105 Hu, L., Clark, K., Alebrahim, T., and Lin, H.[§], Mixed Matrix Membranes for Post-combustion Carbon Capture: From Materials Design to Membrane Engineering, *Journal of Membrane Science*, 644, 120140 (2022)
104. Alebrahim, T., Chakraborty, A., Hu, L., Cheng, S., and Lin, H.[§], Gas Transport Characteristics of Supramolecular Networks of Metal-Coordinated Highly Branched Poly(ethylene oxide), *Journal of Membrane Science*, 120063 (2022)
103. Chen, X., Deng, E., Lin, X., Tandel, A.M., Rub, D., Zhu, L., Huang, L., and Lin, H.[§], Engineering hierarchical nanochannels in graphene oxide membranes by etching and polydopamine intercalation for highly efficient dye recovery, *Chemical Engineering Journal*, 133593 (2022)

2021

102. Sandhya Susarla, Govind Chilkoor, Jawahar R. Kalimuthu, M.A.S.R. Saadi, Yufei Cui, Taib Arif, Thierry Tsafack, Anand Puthirath, Pawan Sigdel, Bharat Jasthi, Parambath M. Sudeep, Leiqing Hu, Aly Hassan, Samuel Castro-Pardo, Morgan Barnes, Soumyabrata Roy, Rafael Verduzco, Md. Golam Kibria, Tobin Filleter, Haiqing Lin, Santiago D. Solares, Nikhil Koratkar, Venkataramana Gadhamshetty, Muhammad M. Rahman, Pulickel M. Ajayan, Corrosion Resistance of Sulfur-Selenium Alloy Coatings, *Advanced Materials*, 2104467 (2021)
101. L. Zhu, L. Huang*, S.R. Venna, A. Blevins, Y. Ding, D.P. Hopkinson, M.T. Swihart, H. Lin[§], Scalable polymeric few-nanometer organosilica membranes for pre-combustion CO₂ capture, *ACS Nano*, 15 (7), 12119-12128 (2021)

100. A. M. Tandel, W. Guo, K. Bye, L. Huang, M. Galizia, and H. Lin^s, Designing organic solvent separation membranes: Polymers, porous structures, 2D materials, and their combinations, *Materials Advances*, 2, 4574-4603 (2021)
99. A. Kumar, L. Huang, D. Yin, L. Hu, H. Lin^s, M.T. Swihart, Facile One-Pot Synthesis of PdM (M=Ag, Ni, Cu, Y) Nanowires for use in Mixed Matrix Membranes for Efficient Hydrogen Separation, *J. Mater. Chem. A* 9, 12755-12762 (2021)
98. M.M. Mohammadi, C. Shah, S.K. Dhandapani, J. Chen, S. Abraham, W. Sullivan, R.D. Buchner, E.A. Kyriakidou, H. Lin, C.R.F. Lund, and M.T. Swihart, Single-step flame synthesis of active and stable nanocatalysts for the dry reforming of methane, *ACS Appl. Mater. Interfaces*, 13 (15) 17618-17628 (2021)
97. L. Hu, Bui, V. T.*, L. Huang, R. Singh, H. Lin^s, Crosslinking of polybenzimidazole using polyprotic carboxylic acids for H₂/CO₂ separation, *ACS Appl. Mater. Interface*, 13 (10) 12521-12530 (2021)
96. M. Rezakazemi, A. Shamsabadi, H. Lin, P. Luis, S. Ramakrishna, T. Aminabhavi, Sustainable MXenes-based Membranes for Highly Energy-Efficient Separations, *Renew. Sustain. Energy Rev.*, 143, 110878 (2021)
95. N. Mehrabi, H. Lin, and N. Aich, Deep eutectic solvent functionalized graphene oxide nanofiltration membranes with enhanced water permeance for dye desalination, *Chem. Eng. J.*, 412, 128577 (2021)
94. M. Ghafari, B. Xiong, L. Su, T. Mohona, H. Lin, D. Plata, N. Dai, Compatibility of Aromatic Polyamide Membrane with Peracetic Acid for Wastewater Reuse, *Environ. Sci.: Water Res. Techn.*, 7, 306-320 (2021)
93. A. Blevins, L. Cox, L. Hu, J. Drisko, H. Lin, C. Bowman, J. Killgore, and Y. Ding, Spatially Controlled Permeability and Stiffness in Photopatterned Two Stage Reactive Polymer Films for Enhanced CO₂ Barrier and Mechanical Toughness, *Macromolecules*, 54 (1), 44-52 (2021)

2020

92. Y. Okamoto, H. Chiang, M. Fang, M. Galizia, T. Merkel, M. Yavari, H. Nguyen*, H. Lin, Perfluoropolymers for gas separation membrane applications, *Membranes*, 10 (12), 394 (2020)
91. T. Lee, T. Choi, J. Oh, J. Jang, F. Moghadam, J. Roh, S. Yoo, Y. Kim, H. Lin, H. Kim, and H. Park, Elucidating the role of embedded metal-organic frameworks in water and ion transport properties through polymer nanocomposite membranes, *Chem. Mater.*, 32, 23, 10165-10175 (2020)
90. T. Tran*, S. Pan, X. Chen*, X. Lin*, A. Blevins, Y. Ding, H. Lin^s, Zwitterionic Hydrogel-Impregnated Membranes with Polyamide Skin Achieving Superior Water/Salt Separation Properties, *ACS Applied Materials & Interfaces*, 12 (43), 49192-48199 (2020)
89. X. Chen*, E. Deng*, D. Park, B.A. Pfeifer, N. Dai, H. Lin^s, Grafting activated graphene oxide nanosheets onto ultrafiltration membranes using polydopamine to enhance antifouling properties, *ACS Applied Materials & Interfaces*, 12 (42), 48179-48187 (2020)
88. H. Lin and Y. Ding, Polymeric membranes: chemistry, physics, and applications, *Journal of Polymer Science*, 58 (18), 2423-2424 (2020) (Note: Editorial)
87. L. Huang*, W. Jia*, and H. Lin^s, Etching and acidifying graphene oxide membranes to increase gas permeance while retaining molecular sieving ability, *AIChE J.*, 66(12), e17022 (2020).

86. J. Xu, T. Tran*, H. Lin, N. Dai, Modeling the transport of neutral disinfection byproducts in forward osmosis: roles of reverse salt flux, *Water Research*, 185, 116255 (2020)
85. H. Nguyen*, M. Hsiao, K. Nagai, and H. Lin^s, Suppressed crystallization and enhanced gas permeability in thin films of cellulose acetate blends, *Polymer*, 205, 122790 (2020)
84. D. Tian, T. Alebrahim*, G. K. Kline, L. Chen, H. Lin^s, C. Bae^s, Structure and gas transport characteristics of triethylene oxide-grafted polystyrene-*b*-poly(ethylene-co-butylene)-*b*-polystyrene (SEBS), *Journal of Polymer Science*, 58, 2654-2663 (2020)
83. L. Hu*, S. Pal*, H. Nguyen*, V. Bui⁺, and H. Lin^s, Molecularly engineering polymeric membranes for H₂/CO₂ separation at 100 °C - 300 °C, *Journal of Polymer Science*, 58, 2467-2481 (2020)
82. L. Huang*, J. Liu*, and H. Lin^s, Thermally stable, homogeneous blends of cross-linked poly(ethylene oxide) and crown ethers with enhanced CO₂ permeability, *Journal of Membrane Science*, 610, 118253 (2020)
81. T. Tran*, X. Chen*, S. Doshi*, C. M. Stafford, and H. Lin^s, Grafting polysiloxane onto ultrafiltration membranes to optimize surface energy and mitigate fouling, *Soft Matter*, 16, 5044-5053 (2020)
80. J. Liu*, C. R. P. Fulong, L. Hu*, L. Huang*, G. Zhang*, T.R. Cook, and H. Lin^s, Interpenetrating Networks of Mixed Matrix Materials Comprising Metal-Organic Polyhedra for Membrane CO₂ Capture, *Journal of Membrane Science*, 606, 118122 (2020)
79. N. Shahkaramipour*, A. Jafari, T. Tran*, C.M. Stafford, C. Cheng, and H. Lin^s, Maximizing the grafting of zwitterions onto the surface of ultrafiltration membranes to improve antifouling properties, *Journal of Membrane Science*, 601, 117909 (2020)
78. T. Tran*, Y. Tu*, S. Hall-Laureano⁺, C. Lin⁺, M. Kawy⁺, and H. Lin^s, “Non-stick” Membranes Prepared by Facile Surface Fluorination for Water Purification, *Industrial & Engineering Chemistry Research*, 59 (12), 5307-5317 (2020)
77. Y. Li, M. Yavari*, A. Baldanza, E. Di Maio, G. Mensitieri, Y. Okamoto, H. Lin, and M. Galizia, Volumetric and sorption behavior of fluorinated polymers with dioxolane pendant rings for membrane applications, *Industrial & Engineering Chemistry Research*, 59 (12), 5276-5286 (2020).
76. X. Chen*, Z. Feng⁺, J. Gohil⁺, C.M. Stafford, N. Dai, L. Huang*^s, and H. Lin^s, Reduced Holey Graphene Oxide Membranes for Desalination with Improved Water Permeance, *ACS Applied Materials & Interfaces*, 12 (1), 1387-1394 (2020).

2019

75. M. Omidvar*, H. Nguyen*, L. Huang*, C.M. Doherty, A.J. Hill, C.M. Stafford, X. Feng, M.T. Swihart, and H. Lin^s, Unexpectedly Strong Size-Sieving Ability in Carbonized Polybenzimidazole for Membrane H₂/CO₂ Separation, *ACS Applied Materials & Interfaces*, 11 (50), 47365-47372 (2019)
74. W. Jia*, J. Jeon, L. Zhu*, C. Bae, and H. Lin^s, Fluorinated Polystyrene-*b*-polybutadiene-*b*-polystyrene (F-SBS) for Membrane Gas Separation, *Journal of Membrane Science*, 591, 117296 (2019).
73. J. Liu*, S. Zhang, D. Jiang, C. M. Doherty, A. J. Hill, C. Cheng, H. Park, and H. Lin^s, Highly Polar but Amorphous Polymers with Superior Membrane CO₂/N₂ Separation Properties, *Joule*, 3(8), 1881-1894 (2019).
72. L. Zhu*, D. Yin, Y. Qin, S. Konda, S. Zhang, A. Zhu, S. Liu, T. Xu, M. T. Swihart, H. Lin^s, Sorption-Enhanced Mixed Matrix Membranes with Facilitated Hydrogen

Transport for Hydrogen Purification and CO₂ Capture, *Advanced Functional Materials*, 1904357 (2019).

71. M. Yavari*, M. Omidvar*, H. Lin[§], Effect of Pendant Dioxolane Rings in Polymers on Gas Transport Characteristics. *ACS Appl. Polym. Mater.*, 1, 1641-1647 (2019).
70. H. Nguyen*, M. Wang, M. Hsiao, K. Nagai, Y. Ding, and H. Lin[§], Suppression of crystallization in thin films of cellulose diacetate and its effect on CO₂/CH₄ separation properties, *Journal of Membrane Science*, 586, 7-14 (2019).
69. J. Liu*; G. Zhang*; K. Clark*; H. Lin[§]. Maximizing ether oxygen content in polymers for membrane CO₂ removal from natural gas. *ACS Applied Materials & Interfaces*. 11 (11) 10933-10940 (2019).
68. M. Omidvar*, C. Stafford, and H. Lin[§], Thermally Stable Cross-linked P84 with Superior Membrane H₂/CO₂ Separation Properties at 100 °C, *Journal of Membrane Science*, 575, 118-125 (2019)
67. T. Tran*, C. Lin⁺, S. Chaurasia*, and H. Lin[§], Elucidating the relationship between states of water and ion transport properties in hydrated polymers, *Journal of Membrane Science*, 574, 299-308 (2019)

2018

66. L. Huang*, S. Huang⁺, S.R. Venna, and H. Lin[§], Rightsizing Nanochannels in Reduced-Graphene Oxide Membranes by Solvating for Dye Desalination, *Environmental Science and Technology*, 52 (21), 12649-12655 (2018)
65. L. Huang*, and H. Lin[§], Engineering Sub-nanometer Channels in Two-Dimensional Materials for Membrane Gas Separation, *Membranes*, 8(4), 100 (2018)
64. S. Konda, M. M. Mohammadi, R. D. Buchner, H. Lin, and M. T. Swihart, Flame-based Synthesis and *in situ* Functionalization of Palladium Alloy Nanoparticles, *AIChE Journal*, 64 (11), 3826-3834 (2018)
63. S. Luo, Q. Zhang, L. Zhu*, H. Lin, B. A. Kazanowska, C. M. Doherty, A. J. Hill, P. Gao, and R. Guo, Ultra-selective and ultra-permeable thermally rearranged polymer membranes for hydrogen purification and CO₂ removal from natural gas, *Chemistry of Materials*, 30, 15, 5322 – 5332 (2018)
62. J. Xu, T. Tran*, H. Lin, and N. Dai, Removal of Disinfection Byproducts in Forward Osmosis for Wastewater Recycling, *Journal of Membrane Science*, 564, 352-360 (2018)
61. L. Zhu*, D. Tian, D. Shin, W. Jia*, C. Bae[§], and H. Lin[§], Effects of tertiary amines and quaternary ammonium halides in polysulfone on membrane gas separation properties, *Journal of Polymer Science Part B: Polymer Physics*, 56, 1239-1250 (2018)
60. A. Ghadimi, S. Norouzbahari, H. Lin, H. Rabiee, and B. Sadatnia, Geometric Restriction of Microporous Supports on Gas Permeance Efficiency of Thin Film Composite Membranes, *Journal of Membrane Science*, 563, 643-654 (2018)
59. L. Hu*, J. Liu*, L. Zhu*, X. Hou*, L. Huang*, H. Lin[§], and J. Cheng[§], Highly permeable mixed matrix materials comprising crosslinked poly(ethylene oxide) and ZIF-8 nanoparticles for CO₂ capture, *Separation and Purification Technology*, 205, 58-65 (2018)
58. S. N. Ramanan*, N. Shahkaramipour*, T. Tran*, L. Zhu*, S. R. Venna, C. Lim, A. Singh, P. N. Prasad and H. Lin[§], Self-cleaning membranes for water purification by co-deposition of photo-mobile 4,4'-azodianiline and bio-adhesive polydopamine, *Journal of Membrane Science*, 554, 164-174 (2018)
57. M. Yavari*, M. Fang, H. Nguyen*, T. C. Merkel, H. Lin[§], and Y. Okamoto[§], Dioxolane-based Perfluoropolymers with Superior Membrane Gas Separation Properties, *Macromolecules*, 51 (7), 2489-2497 (2018)

56. C. P. Fulong, J. Liu*, V. J. Pastore, H. Lin^s, and T. R. Cook^s, Mixed-matrix materials using metal-organic polyhedra with enhanced compatibility for membrane gas separation, *Dalton Transactions*, 47 (24) 7905-7915 (2018)
55. M. Omidvar*, H. Nguyen*, J. Liu*, and H. Lin^s, Sorption-Enhanced Membrane Materials for Gas Separation: A Road Less Traveled, *Current Opinion in Chemical Engineering*, 20, 50-9 (2018)
54. N. Shahkaramipour*, C. K. Lai, S. R. Venna, C. Cheng, and H. Lin^s, Co-deposition of thiol-containing zwitterionic polymers and polydopamine to enhance surface antifouling properties of ultrafiltration membranes, *Industrial & Engineering Chemistry Research*, 57 (6), 2336-2345 (2018)
53. L. Zhu*, M. Swihart and H. Lin^s, Unprecedented size-sieving ability in polybenzimidazole doped with polyprotic acids for membrane H₂/CO₂ separation, *Energy & Environmental Science*, 11, 94-100 (2018)
52. M. Yavari*, Y. Okamoto, and H. Lin^s, The Role of Halogens in Polychlorotrifluoroethylene (PCTFE) in Membrane Gas Separations, *Journal of Membrane Science*, 548, 380-9 (2018)

2017

51. L. Zhu*, M. Swihart and H. Lin^s, Tightening nanostructure of PBI for membrane H₂/CO₂ separation, *Journal of Materials Chemistry A*, 5, 19914-19923 (2017)
50. M. Wang, J. M. Gorham, J. P. Killgore, M. Omidvar*, H. Lin, F. W. DelRio, L. M. Cox, Z. Zhang, and Y. Ding, Formation of a crack-free, hybrid skin layer with tunable surface topography and improved gas permeation selectivity on elastomers using gel-liquid infiltration polymerization, *ACS Applied Materials & Interfaces*, 9 (33) 28100-28106 (2017)
49. N. Shahkaramipour*, S. N. Ramanan*, D. Fister, E. Park, S. R. Venna, H. Sun, C. Cheng, and H. Lin^s, Facile grafting of zwitterions onto membrane surface to enhance antifouling properties for wastewater reuse, *Industrial & Engineering Chemistry Research*, 56 (32), 9202-9212 (2017).
48. N. Shahkaramipour*, T. N. Tran*, S. Ramanan*, and H. Lin^s, Membranes with surface-enhanced antifouling properties for water purification, *Membranes*, 7 (1), 13 (2017)
47. T. Tran*; S. Ramanan*; and H. Lin^s, Synthesis of hydrogels with antifouling properties as membranes for water purification, *Journal of Visualized Experiments*, 122, doi: 10.3791/55426 (2017).
46. H. Fan, R. Wang, L. Shan, H. Yan, J. Li, S. Ji, H. Lin, G Zhang, One-step assembly of molecular separation membranes by direct atomizing oligomer, *ACS Applied Materials & Interfaces*, 9(4), 4074-4083 (2017).
45. N. Paranjape*, P. Chandra, G. Wu^s and H. Lin^s, Highly-branched cross-linked poly(ethylene oxide) with enhanced ionic conductivity, *Polymer*, 111, 1-8 (2017)
44. L. Zhu*, M. Yavari*, W. Jia⁺, E.P. Furlani and H. Lin^s, Geometric restriction of gas permeance in ultrathin film composite membranes evaluated using an integrated experimental and modeling approach, *Industrial & Engineering Chemistry Research*, 56 (1), 351-358 (2017)
43. D. Havas⁺ and H. Lin^s, Optimal membranes for biogas upgrade by removing CO₂: High permeance or high selectivity? *Separation Science and Technology*, 52 (2), 186-196 (2017)
42. M. Yavari*, S. Maruf, Y. Ding, H. Lin^s, Physical aging of glassy perfluoropolymers in thin film composite membranes. Part II. Glass transition temperature and the free volume model, *Journal of Membrane Science*, 525, 399-408 (2017)

41. M. Yavari*, T. Le⁺, H. Lin^s, Physical aging of glassy perfluoropolymers in thin film composite membranes. Part I. Gas transport properties, *Journal of Membrane Science*, 525, 387-398 (2017)

2016

40. S. Luo, J. Liu*, H. Lin, B. A. Kazanowska, M. D. Hunckler, R. K. Roeder, R. Guo, "Preparation and gas transport properties of triptycene-containing polybenzoxazole (PBO)-based polymers derived from thermal rearrangement (TR) and thermal cyclodehydration (TC) processes", *Journal of Materials Chemistry A* 4, 17050-17062 (2016).
39. J. Liu*, X. Hou*, H. B. Park, H. Lin^s, "High-performance polymers for membrane CO₂/N₂ separation", *Chemistry - A European Journal*, 22 (45), 15980-15990 (2016).
38. H. J. Yen, H. Tsai, M. Zhou, A. Chen, E. F. Holby, S. Choudhury, H. Zhang, L. Zhu*, H. Lin, L. Dai, L. Adamska, S. Tretiak, G. Wu, H. L. Wang, "Structurally defined nanographene assemblies via bottom-up chemical synthesis for highly efficient lithium storage", *Advanced Materials*, 28 (46), 10250-10256 (2016).
37. S. Shah*, J. Liu*, S. Ng⁺, S. Luo, R. Guo, C. Cheng, H. Lin^s, Transport properties of small molecules in zwitterionic polymers, *Journal of Polymer Science Part B: Polymer Physics*, 54, 1924-1934 (2016)
36. B. Lam*, M. Wei⁺, L. Zhu*, S. Luo, R. Guo, A. Morisato, P. Alexandridis, H. Lin^s, Cellulose triacetate doped with ionic liquids for membrane gas separation, *Polymer*, 89, 1-11 (2016).
35. L. Zhu*, W. Jia⁺, M. Kattula, K. Ponnuru, E.P. Furlani, and H. Lin^s, Effect of porous supports on the permeance of thin film composite membranes: Part I. Track-etched polycarbonate supports, *Journal of Membrane Science*, 514, 684-695 (2016).

2015

34. S. Zhao*, K. Huang⁺, and H. Lin^s, Impregnated membranes for water purification using forward osmosis, *Industrial & Engineering Chemistry Research*, 54 (49), 12354-12366 (2015).
33. M. Kattula, K. Ponnuru, L. Zhu*, W. Jia⁺, H. Lin^s and E. P. Furlani^s, Design ultrathin film composite membranes: the impact of a gutter layer, *Scientific Report*, 5, DOI: 10.1038/srep15016 (2015).
32. H. Lin^s and M. Yavari*, "Upper bound of polymeric membranes for mixed-gas CO₂/CH₄ separations", *Journal of Membrane Science*, 475, 101-109 (2015).
31. C. H. Jones, M. F. Chen, A. Gollakota, A. Ravikrishnan, G. J. Zhang, S. Lin, M. Tan, C. Cheng, H. Lin, B. A. Pfeifer, "Structure Function Assessment of Mannosylated Poly(beta-amino esters) upon Targeted Antigen Presenting Cell Gene Delivery", *Biomacromolecules* 16, 1534-1541 (2015)
30. H. Lin^s; Z. He, Z. Sun.; J. Kniep; A. Ng; R. W. Baker; and T. C. Merkel, "CO₂-selective membranes for hydrogen production and CO₂ capture. Part II: Techno-economic analysis," *Journal of Membrane Science*, 493, 794-806 (2015).
29. R. R. Tiwari, Z. Smith, H. Lin, B. D. Freeman, and D. R. Paul, "Gas permeation in thin films of "high free-volume" glassy perfluoropolymers: Part II CO₂ plasticization and sorption", *Polymer* 61, 1-14 (2015)

2014

28. H. Lin^s, "Integrated membrane material and process development for gas separation", *Current Opinions in Chemical Engineering*, 4, 54-61 (2014).

27. R. R. Tiwari, Z. Smith, H. Lin, B. D. Freeman, and D. R. Paul, "Gas permeation in thin films of "high free-volume" glassy perfluoropolymers: Part I physical aging," *Polymer* 55 (22), 5788-5800 (2014).
26. H. Lin^s, R. Daniels, S. M. Thompson, K. D. Amo, Z. He, T. C. Merkel, J. G. Wijmans, "Membrane selective exchange process for dilute methane recovery," *Journal of Membrane Science*, 469, 11-18 (2014).
25. H. Lin^s, Z. J. He, Z. Sun, J. M. Vu, A. Ng, M. Mohammed, J. Kniep, T. C. Merkel, T. Wu, R. C. Lambrecht, "CO₂-selective membranes for hydrogen production and CO₂ capture - Part I: Membrane development", *Journal of Membrane Science*, 457, 149-161 (2014).

2013

24. H. Lin^s, M. Zhou, J. Ly, J. Vu, J.G. Wijmans, T.C. Merkel, J. Jin, A. Haldeman, E. H. Wagener and D. Rue, "Membrane-based oxygen-enriched combustion," *Industrial Engineering & Chemistry Research*, 52, 10820-10834 (2013).
23. H. Lin^s, S.M. Thompson, A. Serbanescu-Martin, J.G. Wijmans, K.D. Amo, K.A. Lokhandwala, B. Low, and T.C. Merkel, "Dehydration of natural gas using membranes. Part II: countercurrent design and field test," *Journal of Membrane Science*, 432, 106-114 (2013).

Prior to UB

22. H. Lin^s, S.M. Thompson, A. Serbanescu-Martin, J.G. Wijmans, K.D. Amo, K.A. Lokhandwala, and T.C. Merkel, "Dehydration of natural gas using membranes. Part I: composite membranes," *Journal of Membrane Science*, 413-414, 70-81 (2012).
21. T.C. Merkel, H. Lin, X. Wei, and R.W. Baker, "Power plant post-combustion carbon dioxide capture: an opportunity for membranes," *Journal of Membrane Science*, 359 (1-2), 126-139 (2010).
20. H. Lin^s, B.D. Freeman, S. Kalakunnath, and D.S. Kalika, "Effect of copolymer composition, temperature and carbon dioxide fugacity on pure- and mixed-gas permeability in poly(ethylene glycol)-based materials: free volume interpretation," *Journal of Membrane Science*, 291(1-2), 131-139 (2007).
19. S. Kelman, H. Lin, E.S. Sanders and B.D. Freeman, "CO₂/C₂H₆ separation using solubility selective membrane," *Journal of Membrane Science*, 305(1-2), 57-68 (2007).
18. S. Kalakkunnath, D.S. Kalika, H. Lin, R.D. Raharjo, and B.D. Freeman, "Molecular dynamics of poly(ethylene glycol) and poly(propylene glycol) copolymer networks by broadband dielectric spectroscopy," *Macromolecules*, 40(8), 2773-2781 (2007).
17. S. Kalakkunnath, D.S. Kalika, H. Lin, and B.D. Freeman, "Molecular relaxation in cross-Linked poly(ethylene glycol) and poly(propylene glycol) diacrylate networks by dielectric spectroscopy," *Polymer*, 48, 579-589 (2007).
16. D.P. Dworak, H. Lin, B.D. Freeman, and M.D. Soucek, "Gas permeability analysis of photo-cured cyclohexyl-substituted polysiloxane films," *Journal of Applied Polymer Science*, 102(3), 2343-2351 (2006).
15. R.D. Raharjo, H. Lin, B.D. Freeman S. Kalakunnath, and D.S. Kalika, "Gas sorption and transport study in crosslinked poly(propylene glycol diacrylate)," *Journal of Membrane Science*, 283(1+2), 253-265 (2006).
14. S. Kalakkunnath, D.S. Kalika, H. Lin, and B.D. Freeman, "Viscoelastic characteristics of U.V. polymerized poly(ethylene glycol) diacrylate networks with varying extents of crosslinking," *Journal of Polymer Science, Part B: Polymer Physics*, 44(15), 2058-2070 (2006).

13. H. Lin, E. Van Wagner, B.D. Freeman, L.G. Toy, and R.P. Gupta, "Plasticization-Enhanced H₂ Purification Using Polymeric Membranes," *Science*, 311(5761), 639-642 (2006).
12. H. Lin, E. Van Wagner, J.S. Swinnea, B.D. Freeman, S.J. Pas, A.J. Hill, S. Kalakkunnath, and D.S. Kalika, "Transport and structural characteristic of crosslinked poly(ethylene oxide) rubbers," *Journal of Membrane Science*, 276 (1-2), 145-161 (2006).
11. H. Lin and B.D. Freeman, "Gas permeation and diffusion in crosslinked poly(ethylene glycol diacrylate)," *Macromolecules*, 39 (10), 3568-3580 (2006).
10. H. Lin, E. Van Wagner, R. Raharjo, B.D. Freeman, and I. Roman, "High performance polymer membranes for natural gas sweetening," *Advanced Materials*, 18, 39-44 (2006).
9. S. Kalakkunnath, D.S. Kalika, H. Lin, and B.D. Freeman, "Segmental relaxation characteristics of crosslinked poly(ethylene oxide) copolymer networks," *Macromolecules*, 38, 9679-9687 (2005).
8. H. Lin, T. Kai, B.D. Freeman, S. Kalakkunnath, and D.S. Kalika, "The effect of cross-linking on gas permeability in crosslinked poly(ethylene glycol diacrylate)," *Macromolecules*, 38, 8381-8393 (2005).
7. H. Lin and B.D. Freeman, "Gas and vapor solubility in cross-linked poly(ethylene glycol diacrylate)," *Macromolecules*, 38, 8394-8407 (2005).
6. H. Lin and B.D. Freeman, "Materials selection guidelines for membranes that remove CO₂ from gas mixtures," *Journal of Molecular Structure*, 739, 57-74 (2005).
5. R.S. Prabhakar, R. Raharjo, L.G. Toy, H. Lin, and B.D. Freeman, "Self-consistent model of concentration and temperature dependence of permeability in rubbery polymers," *Industrial Engineering & Chemistry Research*, 44, 1547-1556 (2005).
4. Lin, H., and B.D. Freeman, "Gas solubility, diffusivity, and permeability in poly(ethylene oxide)," *Journal of Membrane Science*, 239, 105-117 (2004).
3. S. Li and H. Lin, "Study of extraction of hydrochloric acid and sulfuric acid by trialkylamine with orthogonal experiment," *Journal of Xiamen University (Natural Science)*, 38(3), 408-412 (1999).
2. S. Li, C. Shi and H. Lin, "Preparation of poly(vinylpyrrolidone)," *Chemical World*, 40(4), 201-204 (1999).
1. S. Li, J. Zhang, H. Lin and C. Shi, "Extraction process for potassium sulfate production," *Journal of Xiamen University (Natural Science)*, 37(2), 239-242 (1998).

Patents and Applications

10. L. Zhu, L. Huang, M.T. Swihart, and H. Lin, "Organosilica membrane compositions, devices comprising such membranes, and methods for making and using" Patent Application, No. 62/962,809 (January 17, 2021)
9. J. Rzayev, J. Mapas, and H. Lin, "Ultrahigh Molecular Weight Block Copolymers and Polymers, Methods of Making Same, and Uses of Same", US Patent Application 20200062882A1 (May 4, 2018), and WO Patent Application PCT/US2018/031215 (May 4, 2018)
8. N.P. Wynn, H. Lin, A. M. Zhou, J. Ly, and T. C. Merkel, "Low-energy process to produce oxygen-enriched air using membrane technology," US Patent Application 13/439,716 (April 1, 2012), Publication US20130263734A1.
7. N.P. Wynn, H. Lin, M. Zhou, J. Ly, A. Serbanescu-Martin, "Membrane-Based Gas Separation Process Using Ejector-Driven Gas Recycle," US Patent Number 9,017,451 B2 (April 28, 2015).

6. N.P. Wynn, S. Thomas-Doz, M. Zhou, J. He, and H. Lin, "Process for the Production of Methanol Including Two Membrane Separation Steps," US Patent Number 8,623,926 B2 (January 7, 2014).
5. N.P. Wynn, D.E. Gottschlich, and H. Lin, "Gas separation process for production of hydrogen by autothermal reforming of natural gas, with carbon dioxide recovery," US Patent 8,771,637 B2 (July 8, 2014).
4. J.G. Wijmans, T.C. Merkel, H. Lin, S. Thompson, and R. Daniels, "Efficient gas separation process to upgrade dilute methane stream for use as fuel," US Patent 8,128,733 B2 (March 6, 2012).
3. R.W. Baker, J.G. Wijmans, T.C. Merkel, H. Lin, R. Daniels, and S. Thompson, "Combustion systems, power plants, and flue gas treatment systems incorporating sweep-based membrane separation units to remove carbon dioxide from combustion gases," US Patent 8,016,923 B2 (September 13, 2011).
2. R.W. Baker, J.G. Wijmans, T.C. Merkel, H. Lin, R. Daniels, and S. Thompson, "Gas separation processes using membranes with permeate sweep to remove CO₂ from combustion gases," US Patent 7,964,020 B2 (June 21, 2011).
1. B.D. Freeman, S. Matteucci, and H. Lin, "Metal oxide nanoparticle filled polymers," U.S. Patent 7,510,595 B2 (March 31, 2009), International Publication Number WO 2007/084169 A2.

Book Chapters

7. X. Chen, F. Shi, D. Hopkinson, H. Lin, and S. Yi, Membrane Technologies and Applications to Produced Water Treatment, *Application of Solid-Liquid Separation Technologies for Produced Water*, CRC Press Taylor & Francis Group, LLC., in press (2021)
6. X. Hou, J. Liu, H. Nguyen, and H. Lin, "Doping Polymers with Ionic Liquids to Manipulate Morphology and Membrane Gas Separation Properties," in *Polymerized Ionic Liquids*, Edited by A. Eftekhari, Royal Society of Chemistry, 262-279 (2018)
5. L. Zhu, M. Omid, and H. Lin, "Manipulating Polyimide Nanostructures via Cross-linking for Membrane Gas Separation," in *Membranes for Gas Separation*, Edited by M. A. Carreon, World Scientific, Volume 1, 243-270 (2017).
4. H. Lin, "Permeability," "Photopolymerization," and "Crosslinked poly(ethylene oxide)," in *Encyclopedia of Membrane*, edited by E. Drioli and L. Giomo, Springer Berlin (2016).
3. H. Lin, L.S. White, K.A. Lokhandwala and R.W. Baker, "Natural gas purification," in *Encyclopedia of Membrane Science and Technology*, edited by E. M.V. Hoek and V.V. Tarabara, Wiley, New Jersey, pp1644-1667 (2013).
2. V.A. Kusuma, H. Lin, B.D. Freeman, M. Yose-Yacaman, S. Kalakkunnath, and D.S. Kalika, "Structure/property characteristics of polar rubbery polymeric membranes for carbon dioxide removal from mixtures with light gas," in *Membranes: Manufacturing Utilizing Six Sigma and Applications*, edited by N.N. Li, A.G. Fane, W.S.W. Ho, and T. Matsuura, Wiley, New York, pp. 929-953 (2008).
1. H. Lin and B.D. Freeman, "Permeation and diffusion," in *Springer-Handbook of Materials Measurement Methods*, edited by H. Czichos, L.E. Smith, and T. Saito, Springer, pp. 371-387 (2006).

INVITED TECHNICAL PRESENTATIONS

- 58.H. Lin, "Advanced Membranes for Carbon Capture and Water Purification." Department Seminar, West Virginia University, WV, 2022

- 57.H. Lin, "Molecularly Engineered Sorption-enhanced Membrane Materials for CO₂ Capture," Gordon Research Seminar of Membranes: Materials and Processes, New London, NH, 2022
- 56.H. Lin, "Polybenzimidazole-based Membranes for Gas Separation," Pentair, October 27, 2021
- 55.H. Lin, "Molecularly Engineering Polymeric Membranes for Carbon Capture," SPT International Lecturership, October 20, 2021
- 54.H. Lin, "Scalable Polymeric Membranes for Carbon Capture," Pentair, October 18, 2021
- 53.H. Lin, "Membrane Solutions to Clean Air and Clean Water," Pall Corporation, March 25, 2021
- 52.H. Lin, "Molecularly Engineered Sorption-enhanced Membrane Materials for CO₂ Capture," Department Seminar, University of Toledo, 2020 (canceled)
- 51.H. Lin, "Highly Branched Polymers with High Ether Oxygen Content for Membrane CO₂/N₂ Separation," ICOM Meeting, December 9, 2020
- 50.H. Lin, "Molecularly engineering polymeric membranes for pre-combustion CO₂ capture at 150 °C and above," AIChE Meeting, November 2020
- 49.H. Lin, "Few-nanometer thick organosilica membranes for high-temperature H₂/CO₂ separation" Materials Science & Technology 2020 Technical Meeting, October 2020
- 48.H. Lin, "Molecularly Engineered Sorption-enhanced Membrane Materials for CO₂ Capture," Department Seminar, Michigan State University, September 25, 2019
- 47.H. Lin, "Refining Polybenzimidazole (PBI) for Membrane H₂/CO₂ Separation," Air Liquide, America, September 16, 2019
- 46.H. Lin, "Molecularly Engineered Sorption-enhanced Membrane Materials for CO₂ Capture," Hanyang University, South Korea, August 2, 2019
- 45.H. Lin, "Molecularly Engineered Sorption-enhanced Membrane Materials for CO₂ Capture," Department Seminar, Beijing University of Technology, China, July 18, 2019
- 44.H. Lin, "Molecularly Engineered Sorption-enhanced Membrane Materials for CO₂ Capture," Research Institute of Innovative Technology for the Earth (RITE), Japan, July 12, 2019
- 43.H. Lin, "Molecularly Engineered Sorption-enhanced Membrane Materials for CO₂ Capture," Department Seminar, Kobe University, Japan, July 11, 2019
- 42.H. Lin, "Molecularly Engineered Sorption-enhanced Membrane Materials for CO₂ Capture," Department Seminar, Meiji University, Japan, July 9, 2019
- 41.H. Lin, "Designing Sorption-Enhanced Mixed Matrix Membranes for H₂/CO₂ Separation Using an Integrated Experimental and Modeling Approach," AIChE Conference, Pittsburgh, PA, October 29, 2018
- 40.H. Lin, "Molecularly Engineering Membranes for Sorption-enhanced Gas Separation," Department Seminar, Beijing University of Chemical Technology, October 18, 2018
- 39.H. Lin, "Advanced Membranes for Water Reuse and Algae Dewatering," Department Seminar, Beijing Union University, October 17, 2018
- 38.H. Lin, "Molecularly Engineering Membranes for Sorption-enhanced Gas Separation," Department Seminar, North China Electric Power University, China, October 16, 2018
- 37.H. Lin, "Sorption-enhanced mixed matrix membranes for pre-combustion CO₂ capture," Clearwater Clean Energy Conference, Clearwater, FL, June 4, 2018
- 36.H. Lin, "Effect of membrane surface chemistry on water permeance and antifouling properties," ACS Spring meeting, New Orleans, LA, March 19, 2018

- 35.H. Lin, "Molecularly Engineering of Membrane Materials for Separations through Enhanced Interactions: A Road Less Traveled," Department Seminar, Department of Chemical Engineering, University of Cincinnati, March 2, 2018
- 34.H. Lin, "Molecularly Engineering of Membrane Materials for Separations through Enhanced Interactions: A Road Less Traveled," Department Seminar, Department of Chemical Engineering, University of Waterloo, January 18, 2018
- 33.H. Lin, "Molecularly Engineering of Membrane Materials for Separations through Enhanced Interactions: A Road Less Traveled," Department Seminar, Department of Chemical Engineering, Zhejiang University, December 2017
- 32.H. Lin, "Molecularly Engineering of Membrane Materials for Separations through Enhanced Interactions: A Road Less Traveled," Department Seminar, Department of Chemical Engineering, Tianjin University, December 2017
- 31.H. Lin, "Molecularly Engineering of Membrane Materials for Separations through Enhanced Interactions: A Road Less Traveled," Department Seminar, Department of Chemical Engineering, Tianjin Polytechnic University, December 2017
- 30.H. Lin, "Molecularly Engineering of Membrane Materials for Separations through Enhanced Interactions: A Road Less Traveled," Department Seminar, Department of Chemical and Materials Engineering, University of Kentucky, March 1, 2017
- 29.H. Lin, "Facile Grafting of Zwitterions onto Membrane Surface to Improve Antifouling Properties for Wastewater Reuse," ACS Spring, San Francisco, CA, April 6, 2017
- 28.H. Lin, "Molecularly Engineering Polymeric Materials with Enhanced Gas Sorption for Membrane CO₂ Capture," Department Seminar, Department of Chemical Engineering, University of Rochester, October 5, 2016
- 27.H. Lin, L. Zhu, J. Liu and B. Lam, "Polymeric Membranes for CO₂ Separation," American Chemical Society PacificChem, Honolulu, HI, December 17, 2015
- 26.H. Lin, "Impregnated Membranes for Water Purification by Forward Osmosis," The 8th Sino-US Chemical Engineering Conference, Shanghai, China, October 2015
- 25.H. Lin, "Designing functional molecules for CO₂ Sorption," Praxair Inc., Buffalo, NY, September 29, 2015
- 24.H. Lin, "Development of Membranes for H₂ Purification and CO₂ Capture: From Material Molecular Engineering to Technology Commercialization," Invited presentation at the Fourth EITA Young Investigator Conference, Boston, MA, August 27, 2015
- 23.H. Lin, M. Yavari and L. Zhu, "Integrated Membrane Materials and Process Development for Gas Separation," Conference of American Institute of Chemical Engineering (AIChE), Atlanta, GA, November 17, 2014
- 22.H. Lin, "Advances in Membrane Technology for Water Treatment," Department Seminar, Department of Civil, Structure and Environmental Engineering, University at Buffalo, December 4, 2014
- 21.H. Lin, "Development of Membranes for H₂ Purification and CO₂ Capture: From Material Molecular Engineering to Technology Commercialization," Department Seminar, Department of Chemical and Biomolecular Engineering, Ohio State University, September 25, 2014
- 20.H. Lin, "Membrane Processes and Economics for Industrial Gas Separation," Praxair Inc., Buffalo, NY, March 19, 2014
- 19.H. Lin, R. Daniels, T. Merkel and J. Wijmans, "Dilute Methane Utilization Using A Membrane Gas Exchanger," AIChE Conference, San Francisco, CA, November 4, 2013

18. H. Lin, "Understanding the Practical Upper Bound for CO₂/CH₄ Separation Using Polymeric Membranes," The 7th Sino-US Chemical Engineering Conference, Beijing, China, October 15, 2013
17. H. Lin, "Understanding the Practical Upper bound for CO₂/CH₄ Separation," *The 7th Sino-US Joint Chemical Engineering Conference*, Beijing, China, October 15, 2013.
16. H. Lin, "Development of Membranes for H₂ Purification and CO₂ Capture: From Material Molecular Engineering to Technology Commercialization," Department Seminar, Department of Chemical and Biomolecular Engineering, Xiamen University, July 31, 2014
15. H. Lin, "Membrane Development for Precombustion CO₂ Capture: From Molecular Engineering to Product Demonstration," Department Seminar, North China Electric Power University, China, October 17, 2013
14. H. Lin, "Development of Membranes for H₂ Purification and CO₂ Capture: From Material Molecular Engineering to Technology Commercialization," Department Seminar, Tianjin University, China, October 14, 2013
13. H. Lin, "Molecular Engineering of Polymeric Membrane Materials for H₂ Purification and CO₂ Capture," Auburn University, April 1, 2013 (*Interview*)
12. H. Lin, "Molecular Engineering of Polymeric Membrane Materials for H₂ Purification and CO₂ Capture," University of Houston, March 1, 2013 (*Interview*)
11. H. Lin, "Molecular Engineering of Polymeric Membrane Materials for H₂ Purification and CO₂ Capture," Clemson University, February 19, 2013 (*Interview*)
10. H. Lin, "Molecular Engineering of Polymeric Membrane Materials for H₂ Purification and CO₂ Capture," University at Buffalo, SUNY, February 14, 2013 (*Interview*)
9. H. Lin, "Molecular Engineering of Polymeric Membrane Materials for H₂ Purification and CO₂ Capture," North Carolina State University, February 12, 2013 (*Interview*)
8. H. Lin, "Molecular Engineering of Polymeric Membrane Materials for H₂ Purification and CO₂ Capture," Pennsylvania State University, February 5, 2013 (*Interview*)
7. H. Lin, "Molecular Engineering of Polymeric Membrane Materials for H₂ Purification and CO₂ Capture," Texas Tech University, January 28, 2013 (*Interview*)
6. H. Lin, "Molecular Engineering of Polymeric Membrane Materials for H₂ Purification and CO₂ Capture," Drexel University, January 24, 2013 (*Interview*)
5. H. Lin, "Molecular Engineering of Polymeric Membrane Materials for H₂ Purification and CO₂ Capture," University of Texas at Austin, January 17, 2013
4. H. Lin, A. Serbanescu-Martin, M. Zhou, and T.C. Merkel, "Oxygen Enrichment Using Membranes," *The 244th ACS National Conference*, Philadelphia, August 19, 2012.
3. H. Lin, T.C. Merkel, J. He, J. Kaschemekat, A. Ng, S. Pande, A. Serbanescu-Martin, S. Thomas-Droz, J. Vu, L.S. White, and M. Zhou, "Field Demonstration of CO₂ Capture from Coal-Derived Syngas," *The DOE Project Review Meeting at National Carbon Capture Center*, Wilsonville, AL, December 7, 2011.
2. H. Lin, A. Serbanescu-Martin, M. Zhou, and T.C. Merkel, "Understanding the Practical Upper bound for CO₂/CH₄ Separation," *The 240th ACS National Conference*, Boston, August 25, 2010.
1. H. Lin, "Hydrogen Purification and CO₂ Sequestration Using Polymeric Membranes," *Golden Gate Polymer Forum Dinner Meeting*, Mountain View, CA, May 18, 2009.