

Zhaowang Zong

zzong@mymail.mines.edu

EDUCATION

- 8/2011-present PhD candidate in Colorado School of Mines, Golden, CO, US
5/2013 M.S. in Chemical Engineering, Colorado School of Mines, Golden, CO, US
9/2007-3/2010 M.E. in Applied Chemistry, Tongji University, Shanghai, China
9/2003-7/2007 B.E. in Chemical Engineering, Tongji University, Shanghai, China

RESEARCH EXPERIENCE

- 9/2013-present **Research Assistant, Synthesis of Small Pore Zeolite Membranes for N₂/CH₄ Separation**
- Membrane separation of N₂ from CH₄ is a process to compete with commercialized cryogenic distillation, but with challenges to reduce cost and further improve separation performance.
 - Improved SAPO-34 membranes synthesis with lower membranes synthesis cost by 30% using diluted membrane gels, while increased N₂/CH₄ separation selectivity to 7.2 and N₂ permeance to 1,200 GPUs.
 - Further improved N₂/CH₄ selectivity to 7.4 and unprecedented N₂ permeance to 2,600 GPUs and N₂/CH₄ selectivity to 8.6 with N₂ permeance to 2,100 GPUs by introducing stainless steel autoclaves for membrane synthesis.
 - The synthesized SAPO-34 membranes obtained superior separation performance to state-of-the-art membranes with the lowest operation cost \$0.60/MSCF, which can compete with cryogenic process, if scaled up.
- 1/2012-9/2013 **Research Assistant, Development of a Novel Thin Film Transistor (TFT)**
- Developed a novel-concept TFT device employing electrochromism mechanism.
 - Fabricated a novel TFT device that can change color and electrical resistance simultaneously with external electrical field.
 - Studied mechanism of the low-performance device due to the electrical leakage.
 - Demonstrated the device with a turn on/off ratio ~5000.
- 8/2008-3/2010 **Research Assistant, Technological Study of Hydrocracking of Phenanthrene**
- Conducted the start-up of this sub-project of State High-tech R&D program.
 - Developed a process of cracking industrial waste phenanthrene into profitable benzene, toluene and xylene (BTX).
 - Proposed basic reaction pathways through thermodynamic and kinetic calculations, and provided database for the further development.
- 11/2006-6/2007 **Research Assistant, Retrofit of Ammonia Removal Distillation Units**
- Involved the energy saving project of Shanghai Baosteel Corporation.
 - Optimized separation distillation units to remove ammonia from wastewater for further biological treatment.
 - Optimized the energy economy for a 100 tons/h wastewater plant resulting in over \$600,000 per year saving through reducing steam consumption.

WORK EXPERIENCE

6/2010-7/2011 **Process Engineer, Shanghai Huali Microelectronics Corporation**, Shanghai, China

- Coordinated in the start-up of wet etching and cleaning process for an advanced 12-inch IC foundry.
- Involved in commissioning wet etching and clean tools and tuning up running recipes.
- Conducted the operation of cleaning and recycling tools for monitor and used silicon wafers.

9/2012-9/2013 **President, Chinese Student & Scholar Association (CSSA), Colorado School of Mines**, Golden, CO, US

- Worked as the president of the largest Chinese community in Golden.
- Organized Chinese New Year's Gala and Mid-Autumn Day Celebration, of which >300 attendants involved.
- Raised funding from Zhang & Associates, P.C. and Chinese American Post to support the operation of CSSA.

PUBLICATIONS

- Z. Zong and M.A. Carreon, SAPO-34 membranes synthesized in stainless steel autoclaves for N₂/CH₄ separation, *Journal of Membrane Science*, under review.
- Z. Zong, X. Feng, Y. Huang, Z. Song, R. Zhou, S.J. Zhou, M.A. Carreon, M. Yu, S. Li, Highly permeable N₂/CH₄ separation SAPO-34 membranes synthesized by diluted gels and increased crystallization temperature, *Microporous and Mesoporous Materials*, 224 (2016) 36-42.
- S. Li, Z. Zong, S.J. Zhou, Y. Huang, Z. Song, X. Feng, R. Zhou, H.S. Meyer, M. Yu, M.A. Carreon, SAPO-34 membranes for N₂/CH₄ separation: Preparation, characterization, separation performance and economic evaluation, *Journal of Membrane Science*, 487 (2015) 141-151.
- S.M Bruce, Z. Zong, A. Chatzidimitriou; L. E. Avci; J.Q. Bond, M.A. Carreon, S.G. Wettstein. Small pore zeolite catalysts for furfural synthesis from xylose and switchgrass in a γ -valerolactone/water solvent, *Journal of Molecular Catalysis A: Chemical*, in press (2016).

AWARDS

2007.5	Shanghai Excellent Graduate
2006.12	1 st Class Scholarship of Tongji University (top 5%)
2005.5	Excellent Students Awards of Tongji University (top 5%)