

## VIKTOR J. CYBULSKIS, P.E.

Syracuse University Biomedical and Chemical Engineering

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### EDUCATION

|       |   |        |
|-------|---|--------|
| Ph.D. | <b>Purdue University</b> , Chemical Engineering, West Lafayette, IN | 5/2016 |
| B.S.  | <b>Purdue University</b> , Chemical Engineering, West Lafayette, IN | 5/2005 |

### PROFESSIONAL EXPERIENCE

|                             |   |                  |
|-----------------------------|---|------------------|
| Assistant Professor         | <b>Syracuse University</b> , Biomedical and Chemical Engineering, Syracuse, NY  | 8/2018 – Current |
| Postdoctoral Scholar        | <b>California Institute of Technology</b> , Chemical Engineering, Pasadena, CA (Advisor: Mark E. Davis)               | 6/2016 – 7/2018  |
| Graduate Research Assistant | <b>Purdue University</b> , Chemical Engineering, West Lafayette, IN (Advisors: Fabio H. Ribeiro, W. Nicholas Delgass) | 3/2011 – 6/2016  |
| Production Engineer         | <b>TPC Group, Inc.</b> , Baytown, TX  | 7/2009 – 3/2011  |
| Research Engineer           | <b>LyondellBasell Industries</b> , Alvin, TX  | 4/2007 – 7/2009  |
| Production Engineer         | <b>Lyondell Chemical Company</b> , Corpus Christi, TX   | 7/2005 – 4/2007  |

### AWARDS AND RECOGNITION

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|--|------|
| Organic Reactions Catalysis Society Travel Award ( <i>North American Catalysis Society</i> )           | 2018 |
| Chair of Inaugural Gordon Research Seminar in Catalysis ( <i>Gordon Research Conferences</i> )         | 2018 |
| 37 <sup>th</sup> Annual Spring Symposium Oral Presentation Award ( <i>Michigan Catalysis Society</i> ) | 2016 |
| Graduate Student Symposium First Place Oral Presentation Award ( <i>Purdue ChE</i> )                   | 2015 |
| School of Chemical Engineering Excellence in Safety Award ( <i>Purdue ChE</i> )                        | 2015 |
| Purdue Presidential Safety Award ( <i>Purdue ChE</i> )   | 2015 |
| National School on Neutron and X-Ray Scattering Oral Presentation Award ( <i>ANL-ORNL</i> )            | 2014 |
| Spring Symposium Best Student Poster Award ( <i>Catalysis Club of Chicago</i> )                        | 2013 |
| Eastman Chemical Company Travel Award ( <i>Purdue ChE</i> )  | 2013 |
| Eagle Scout ( <i>Boy Scouts of America</i> )   | 2000 |

### PUBLICATIONS

- Cybulskis, V.J.; Gounder, R.; Mojarad, S.; Davis, M.E. "Initiating a Research-Focused Academic Career in Chemical Engineering: Perspectives from Faculty at Different Career Stages." *AIChE Journal*. **2020**, *66*(4), 1-9.
- Cybulskis, V.J.; "An Alternate Route: Working Before Graduate School." *Chemical Engineering Progress*. **2019**, *115*, 26-27.
- Guo, Q.; Ren, L.; Kumar, P.; Cybulskis, V.J.; Mkhoyan, A.K.; Davis, M.E.; Tsapatsis, M.; "A Chromium Hydroxide/MIL-101(Cr) Composite Catalyst and its use for Selective Glucose Isomerization to Fructose." *Angewandte Chemie International Edition*. **2018**, *130*, 5020-5024.

7. Cui, Y.; Li, Z.; Zhao, Z.; Cybulskis, V.J.; Sabnis, K.D.; Han, C.W.; Ortalan, V.; Schneider, W.F.; Greeley, J.; Delgass, W.N.; Ribeiro, F.H.; “Participation of Interfacial Hydroxyl Groups in the Water-Gas Shift Reaction Over Au/MgO Catalysts.” *Catalysis Science and Technology*. **2017**, *7*, 5257-5266. (2017 HOT article).
6. Cybulskis, V.J.; Bukowski, B.C.; Tseng, H.-T.; Gallagher, J.R.; Wu, Z.; Wegener, E.; Kropf, A.J.; Ravel, B.; Ribeiro, F.H.; Greeley, J.; Miller, J.T. “Zinc Promotion of Platinum for Catalytic Light Alkane Dehydrogenation: Insights into Geometric and Electronic Effects.” *ACS Catalysis*. **2017**, *7*(6), 4173-4181.
5. Cybulskis, V.J.; Pradhan, S.U.; Lovón-Quintana, J.J.; Hock, A.S.; Hu, B.; Zhang, G.; Delgass, W.N.; Ribeiro, F.H.; Miller, J.T. “The Nature of the Isolated Gallium Active Center for Propane Dehydrogenation on Ga/SiO<sub>2</sub>.” *Catalysis Letters*. **2017**, *147*, 1252-1262.
4. Cybulskis, V.J.; Harris, J.; Zvinevich, Y.; Ribeiro, F.H.; Gounder, R. “A Transmission Infrared Cell Design for Temperature-Controlled Adsorption and Reactivity Studies on Heterogeneous Catalysts.” *Review of Scientific Instruments*. **2016**, *87*(10), 1031011-1031018.
3. Cybulskis, V.J.; Smeltz, A.D.; Zvinevich, Y.; Gounder, R.; Delgass, W.N.; Ribeiro, F.H. “Learning the Fundamentals of Kinetics and Reaction Engineering with the Catalytic Oxidation of Methane.” *Chemical Engineering Education*. **2016**, *50*(3), 202-210.
2. Cybulskis, V.J.; Ribeiro, F.H.; Gounder, R. “Using a Hands-On Hydrogen Peroxide Decomposition Activity to Teach Catalysis Concepts to K-12 Students.” *Journal of Chemical Education*. **2016**, *93*(8), 1406-1410.
1. Cybulskis, V.J.; Wang, J.; Pazmiño, J.H.; Ribeiro, F.H.; Delgass, W.N. “Isotopic Transient Studies of Sodium Promotion of Pt/Al<sub>2</sub>O<sub>3</sub> for the Water-Gas Shift Reaction.” *Journal of Catalysis*. **2016**, *339*, 163-172. (Featured Article, July 2016).

### **SUBMITTED MANUSCRIPTS**

2. Cybulskis, V.J.; Gawecki, P.; Zvinevich, Y.; Gounder, R.; Ribeiro, F.H. “Demonstrating Concepts in Catalysis, Renewable Energy, and Chemical Safety with the Catalytic Oxidation of Hydrogen.” *Journal of Chemical Education*. In revision.
1. Zhu, R.; Liu, B.; Wang, S.; Huang, X.; Schuarca, R.; He, W.; Cybulskis, V.J.; Bond, J. “A Universal Mechanism for the Oxidative Scission of Ketones on Metal Oxides.” *ACS Catalysis*. In revision.

### **INVITED PRESENTATIONS**

7. American Chemical Society, *Spring 2021 National Meeting*, Surface Chemistry and Solvation Effects for Catalysis in Confined Environments Symposium, Virtual (4/2021).
6. Catalysis Society of Metropolitan New York, *2019 Annual Symposium*, Princeton, NY (3/2019).
5. Syracuse University, Biomedical and Chemical Engineering, Syracuse, NY (2/2018).
4. Chevron Energy Technology Company, Richmond, CA (11/2016).
3. Shell Technology Center, Houston, TX (10/2015).
2. ExxonMobil Chemical Company, Baytown, TX (10/2015).
1. Purdue Energy Camp, West Lafayette, IN (6/2012).

### **CONTRIBUTED PRESENTATIONS**

\*Presenting author.

25. Cybulskis, V.J.\*; “Synthetic Routes to Chemical Building Blocks from Formaldehyde over Lewis Acidic Molecular Sieves.” *2019 American Institute of Chemical Engineers Annual Meeting*, Orlando, FL (11/2019).
24. Cybulskis, V.J.\*; “A Synthetic Route to Platform Chemicals through a Formose-Inspired Approach with Lewis Acidic Zeotypes.” *Nanoporous Materials and Their Applications – Gordon Research Conference*, Andover, NH (8/2019) – Poster.
23. Cybulskis, V.J.\*; “Enabling New Reaction Pathways through Creation of Tailored Molecular Sieve Catalysts.” *Catalysis Gordon Research Conference*, New London, NH (6/2018) – Poster.
22. Brand, S.K.; Cybulskis, V.J.\*; Davis, M.E.; “Enantioselective Catalysis of Light Oxygenates with Chiral STW Molecular Sieves.” *27<sup>th</sup> Organic Reaction Catalysis Society Conference*, San Diego, CA (4/2018).
21. Cybulskis, V.J.; Bukowski, B.C.; Tseng, H.-T.\*; Gallagher, J.R.; Wu, Z.; Wegener, E.; Kropf, A.J.; Ravel, B.; Ribeiro, F.H.; Greeley, J.; Miller, J.T.; “Geometric and Electronic Effects of Zn Promotion on Pt for Ethane Dehydrogenation.” *2017 American Institute of Chemical Engineers Annual Meeting*, Minneapolis, MN (11/2017).
20. Cybulskis, V.J.\*; Zones, S.I.; Davis, T.M.; Chen, C.-Y.; Deem, M.W.; Davis, M.E.; “Structure-Property Relationships for Unidimensional, Large and Extra-Large Pore Zeolites Using Alkane Hydrocracking and Hydroisomerization as Probe Reactions.” *2017 American Institute of Chemical Engineers Annual Meeting*, Minneapolis, MN (10/2017).
19. Cybulskis, V.J.\*; “Enabling New Reaction Pathways through Creation of Tailored Molecular Sieve Catalysts.” *2017 American Institute of Chemical Engineers Annual Meeting*, Minneapolis, MN (10/2017) – Faculty Candidate Poster.
18. Cybulskis, V.J.\*; Zones, S.I.; Davis, T.M.; Chen, C.-Y.; Deem, M.W.; Davis, M.E.; “Structure-Property Relationships for Unidimensional, Large and Extra-Large Pore Zeolites Using Alkane Hydrocracking and Hydroisomerization as Probe Reactions.” *Nanoporous Materials and Their Applications – Gordon Research Conference*, Andover, NH (8/2017) – Poster.
17. Cybulskis, V.J.\*; Zones, S.I.; Davis, T.M.; Chen, C.-Y.; Deem, M.W.; Davis, M.E.; “Structure-Property Relationships for Unidimensional, Large and Extra-Large Pore Zeolites Using Alkane Hydrocracking and Hydroisomerization as Probe Reactions.” *Nanoporous Materials and Their Applications – Gordon Research Seminar*, Andover, NH (8/2017).
16. Cybulskis, V.J.\*; Zones, S.I.; Chen, C.-Y.; Davis, M.E.; “High-Silica, Large-Pore Zeolites for Alkane Hydrocracking and Hydroisomerization.” *25<sup>th</sup> North American Meeting of the Catalysis Society*, Denver, CO (6/2017).
15. Cybulskis, V.J.; Bukowski, B.C.; Tseng, H.-T.\*; Gallagher, J.R.; Wu, Z.; Wegener, E.; Kropf, A.J.; Ravel, B.; Ribeiro, F.H.; Greeley, J.; Miller, J.T.; “Toward Predictive Design of Supported Metal Catalysts for Light Alkane Upgrading.” *25<sup>th</sup> North American Meeting of the Catalysis Society*, Denver, CO (6/2017).
14. Cybulskis, V.J.\*; Davis, M.E.; “Synthesis of Formaldehyde-Derived Intermediates by Lewis Acidic Molecular Sieves.” *Catalysis Center for Energy Innovation Spring Symposium*, Newark, DE (5/2017) – Poster.
13. Cybulskis, V.J.; Gallagher, J.R.; Tseng, H.-T.; Bukowski, B.C.; Wu, Z.; Wegener, E.; Kropf, A.J.; Ravel, B.; Greeley, J.; Ribeiro, F.H.; Miller, J.T.\*; “Tuning Nanoparticle Alloys to Enhance C-H Bond Activation for the Catalytic Dehydrogenation of Ethane.” *253<sup>rd</sup> American Chemical Society Meeting*, San Francisco, CA (3/2017) – Priestley Medalist Symposium.
12. Cybulskis, V.J.\*; Gallagher, J.R.; Tseng, H.-T.; Bukowski, B.C.; Wu, Z.; Wegener, E.; Kropf, A.J.; Ravel, B.; Greeley, J.; Ribeiro, F.H.; Miller, J.T.; “Tuning Nanoparticle Alloys to Enhance C-H Bond Activation for the Catalytic Dehydrogenation of Ethane.” *2016 American Institute of Chemical Engineers Annual Meeting*, San Francisco, CA (11/2016).

11. Cybulskis, V.J.\*; Cui, Y.; Shekhar, M.; Lovón-Quintana, J.J.; Delgass, W.N.; Ribeiro, F.H.; “The Role of the Support for Pt Catalysts during the Water-Gas Shift Reaction.” *2016 American Institute of Chemical Engineers Annual Meeting*, San Francisco, CA (11/2016).
10. Cybulskis, V.J.\*; Cui, Y.; Shekhar, M.; Lovón-Quintana, J.J.; Delgass, W.N.; Ribeiro, F.H.; “The Role of the Support for Pt Catalysts during the Water-Gas Shift Reaction.” *37<sup>th</sup> Annual Michigan Catalysis Society Spring Symposium*, Midland, MI (5/2016).
9. Cybulskis, V.J.; Bukowski, B.C.; Tseng, H.-T.; Gallagher, J.R.; Wu, Z.; Wegener, E.; Kropf, A.J.; Ravel, B.; Ribeiro, F.H.\*; Greeley, J.; Miller, J.T.; “Selective C-H Bond Activation by Supported Pt<sub>1</sub>Zn<sub>1</sub> Nanoparticle Alloys during the Catalytic Dehydrogenation of Ethane.” *11<sup>th</sup> Natural Gas Conversion Symposium*, Tromsø, Norway (6/2016) – Keynote Presentation.
8. Cybulskis, V.J.; Cui, Y.; Shekhar, M.; Lovón-Quintana, J.J.; Delgass, W.N.; Ribeiro, F.H.\*; “Water Activation by the Supports for Pt Catalysts during the Water-Gas Shift Reaction.” *251<sup>st</sup> American Chemical Society Meeting*, San Diego, CA (3/2016) – Ipatieff Award Symposium.
7. Cui, Y.\*; Li, Z.; Sabnis, K.D.; Cybulskis, V.J.; Zhao, Z.-J.; Han, C.W.; Ortalan, V.; Greeley, J.P.; Delgass, W.N.; Ribeiro, F.H.; “Au/MgO Catalyst for the Water Gas Shift Reaction.” *2015 American Institute of Chemical Engineers Annual Meeting*, Salt Lake City, UT (11/2015).
6. Cybulskis, V.J.\*; Pradhan, S.U.; Lovón-Quintana, J.J.; Hock, A.S.; Hu, B.; Zhang, G.; Miller, J.T.; Delgass, W.N.; Ribeiro, F.H.; “*Operando* X-ray absorption and kinetic study of single-site gallium catalysts for propane dehydrogenation.” *24<sup>th</sup> North American Meeting of the Catalysis Society*, Pittsburgh, PA (6/2015).
5. Cybulskis, V.J.\*; Lovón-Quintana, J.J.; Cui, Y.; Delgass, W.N.; Ribeiro, F.H.; “Isotopic transient studies of water activation on supported Pt catalysts during the water-gas shift reaction.” *Catalysis Club of Chicago Spring Symposium*, Naperville, IL (5/2015) – Poster.
4. Cui, Y.\*; Sabnis, K.D.; Cybulskis, V.J.; Li, Z.; Akatay, M.C.; Delgass, W.N.; Ribeiro, F.H.; “Fe-Promoted Au/Rutile for the Water-Gas Shift Reaction.” *2014 American Institute of Chemical Engineers Annual Meeting*, Atlanta, GA (11/2014).
3. Wang, J.; Pazmiño, J.H.; Cybulskis, V.J.\*; Delgass, W.N.; Ribeiro, F.H.; “An investigation of sodium promotion of Pt/Al<sub>2</sub>O<sub>3</sub> for the water-gas shift reaction by isotopic transient techniques.” *23<sup>rd</sup> North American Meeting of the Catalysis Society*, Louisville, KY (6/2013).
2. Wang, J.; Pazmiño, J.H.; Cybulskis, V.J.\*; Delgass, W.N.; Ribeiro, F.H.; “The use of isotopic transient techniques to study sodium promotion of Pt/Al<sub>2</sub>O<sub>3</sub> for the water-gas shift reaction.” *Catalysis Club of Chicago Spring Symposium*, Naperville, IL (5/2013) – Poster.
1. Wang, J.\*; Pazmiño, J.H.; Cybulskis, V.J.; Shekhar, M.; Williams, W.D.; Miller, J.T.; Delgass, W.N.; Ribeiro, F.H.; “The Use of Isotopic Transient Techniques to Investigate the Nature of Alkali Promotion for the Water-Gas Shift Reaction on Pt Catalysts.” *2012 American Institute of Chemical Engineers Annual Meeting*, Pittsburgh, PA (10/2012).

## **PATENTS**

1. Cybulskis, V.J.; Webber, K.M.; “Steam Cracking Process.” U.S. Patent Application US-20110073524-A1 (2011), filed on September 25 (2009).

## **PROFESSIONAL SERVICE AND ACTIVITIES**

**Licensure:** Professional Engineer - Indiana PE11400325 (2014-Current), New York 102007 (2019-Current)

**Leadership and Advisory:** AIChE Licensing and Professional Development Committee (2019-Current, Secretary: 2020-Current), AIChE Professional Engineer (PE) Taskforce (2016-2018), AIChE Academia Young Professionals Liaison (2015-2017)

**Conference Organization:** Gordon Research Seminar in Catalysis (2018)

**Sessions Chaired and Organized:** North American Meeting of the Catalysis Society (2019), AIChE Annual Meeting (2017-2020)

**Manuscript Reviewer:** ACS Catalysis, Chemical Engineering Science, Chemistry of Materials, Journal of Catalysis, Journal of Chemical Education, Journal of Physical Chemistry C, Science Advances

**Proposal Reviewer:** National Science Foundation (CBET-Catalysis), CenterState NY Corporation for Economic Opportunity (Grants for Growth), U.S. Department of Energy (Office of Science)

**Conference Abstract Peer Reviewer:** North American Meeting of the Catalysis Society (2013, 2019)

**Outreach Activities (K-12):** Innovation-to-Reality (I2R) through Purdue Women In Engineering program (10/2015), Engineering FYI: For Your Imagination through Purdue Women In Engineering program (7/2015), Duke Energy Academy at Purdue (6/2015), Innovation-to-Reality (I2R) through Purdue Women In Engineering program (4/2015), and Purdue Energy Camp (6/2012)

**Department and University Service:** Syracuse BMCE Graduate Seminar Series (2021), Syracuse University Chemical Receiving & Tracking Group (2019-2021), Syracuse BMCE Ph.D. Admissions Committee (2019-2021), Syracuse BMCE Faculty Search Committee (2018-2020), Purdue ChE Head Search Committee (2015-2016), Purdue ChE Safety Committee (2014-2015), Purdue ChE Laboratory Safety Officer (2013-2014)

**Member:** American Chemical Society (ACS), American Institute of Chemical Engineers (AIChE), Catalysis Society of Metropolitan New York, International Zeolite Association (IZA), National Society of Professional Engineers (NSPE), North American Catalysis Society (NACS), Omega Chi Epsilon ( $\Omega$ XE)

## **TEACHING EXPERIENCE**

**Methods in Materials Characterization (CEN 400/600), Selected Topics Course:** Spring 2021 (16 students), Spring 2020 (16 students)

**Chemical Engineering Laboratory II (CEN 412), Undergraduate Core Course:** Fall 2020 (22 students), Fall 2019 (25 students), Fall 2018 (28 students)

**Teaching Development:** Gateway Course Redesign Workshop at Syracuse University (2019)

## **CURRENT RESEARCH GROUP**

### **Ph.D. Students (4)**

- Weixin Li (8/2020-Current). ChE, Syracuse University.
- Wenlin He (1/2020-Current). ChE, Syracuse University. Syracuse University Graduate Fellow.
- Jingzhi Liu (8/2019-Current). ChE, Syracuse University.
- Hansheng Li (1/2019-Current). ChE, Syracuse University. BMCE Research Excellence Doctoral Fellow.

## **RESEARCH GROUP ALUMNI**

\*Undergraduate student enrolled in graduate school.

### **Undergraduate Students (6)**

- Jacob Shellhamer (1/2020-12/2020). *B.S. Student, ChE, Syracuse University.*
- Brent Gosselin (1/2020-5/2020). *B.S. Student, ChE, Syracuse University.*

- Reem AlQasayar\* (1/2019-7/2020). *Ph.D. Student, ChE, University of Pennsylvania.*
- Dakota Story (6/2019-8/2019). *B.S. Student, ChE, Syracuse University.*
- Wenlin He\* (1/2019-5/2019). *Ph.D. Student, ChE, Syracuse University.*
- Jingzhi Liu\* (1/2019-5/2019). *Ph.D. Student, ChE, Syracuse University.*