

## Brian M. Tackett

Robert & Sally Weist Assistant Professor of Chemical Engineering  
Charles D. Davidson School of Chemical Engineering, Purdue University  
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### Professional Experience

Robert & Sally Weist Assistant Professor, Chemical Engineering, Purdue University **2023 – present**  
Assistant Professor, Chemical Engineering, Purdue University **2021 – 2023**

### Education & Training

NRC Postdoctoral Fellowship      NIST, Materials Science and Engineering Div.      **2019 – 2021**  
*Advisor: Thomas Moffat*

M.S., Ph.D.      **Columbia University**, Chemical Engineering      **2014 – 2019**  
*Advisor: Jingguang Chen*

B.S. (Summa Cum Laude)      **University of Pittsburgh**, Chemical Engineering      **2009 – 2013**

### Honors & Awards

- University of Pittsburgh: University Scholar Award (top 2% of class) **2011, '12, & '13**
- II-VI Foundation Scholarship **2011 & 2012**
- University of Pittsburgh: Stuart Memorial Scholarship **2012**
- University of Pittsburgh: Omega Chi Epsilon poster contest winner **2012**
- University of Pittsburgh: Lubrizol Foundation Scholarship **2013**
- Keynote Speaker at University of Pittsburgh School of Engineering Graduation **2013**
- NSF Graduate Research Fellowship Honorable Mention **2014**
- Columbia University: Presidential Fellowship **2014**
- Columbia University: Carl Gryte Fellowship **2016**
- North American Catalysis Society: NAM25 Conference Kokes Award **2017**
- DOE Office of Science Graduate Student Research Program Award **2017**
- Columbia Center for Teaching and Learning: Lead Teaching Fellow **2018**
- National Research Council Postdoctoral Fellowship **2019 – 2021**
- ACS PRF Doctoral New Investigator Award **2022**
- Purdue University: Rising Star Chair Assistant Professor **2023**
- Purdue University: Outstanding Engineering Teachers (Fall semester) **2023**

### Teaching Activities

Instructor	Course #	# Students	Semester
<u>Purdue University</u>			
Chemical Reaction Engineering	CHE 34800	29	Fall 2021
Chemical Reaction Engineering	CHE 34800	38	Fall 2022
Electrochemistry & Electrochemical Engineering	CHE 59700	24	Spring 2023
Chemical Reaction Engineering	CHE 34800	37	Fall 2023
Electrochemistry & Electrochemical Engineering	CHE 59700	30	Spring 2024

## Selected Publications

1. K. Roy, A. Rana, J. N. Heil, **B. M. Tackett\***, J. E. Dick\*. "For Zinc Metal Batteries, How Many Electrons Go to Hydrogen Evolution? An Electrochemical Mass Spectrometry Study." *Angew. Chem. Int. Ed.* 2024, e202319010.
2. **B. M. Tackett**, D. Raciti, N. W. Brady, N. L. Ritzert, T. P. Moffat. "Potentiometric Rotating Ring Disk Electrode Study of Interfacial pH during CO<sub>2</sub> Reduction and H<sub>2</sub> Generation in Neutral and Weakly Acidic Media." *J. Phys. Chem. C*, 2022, 126, 17, 7456–7467.
3. **B. M. Tackett**, D. Raciti, A. R. Hight Walker, T. P. Moffat. "Surface Hydride Formation on Cu(111) and Its Decomposition to Form H<sub>2</sub> in Acid Electrolytes." *J. Phys. Chem. Lett.*, 2021, 12, 44, 10936–10941.
4. **B. M. Tackett**, J. H. Lee, J. G. Chen, "Electrochemical Conversion of CO<sub>2</sub> to Syngas with Palladium-Based Electrocatalysts." *Acc. Chem. Res.*, 2020, 53, 1535–1544.
5. **B. M. Tackett**, E. Gomez, J. G. Chen. "Net Reduction of CO<sub>2</sub> via Its Thermocatalytic and Electrocatalytic Transformation Reactions in Standard and Hybrid Processes." *Nat. Catal.* 2019, 2, 466.
6. J. H. Lee, S. Kattel, Z. Jiang, Z. Xie, S. Yao, **B. M. Tackett**, W. Xu, N. S. Marinkovic, J. G. Chen. "Tuning the activity and selectivity of electroreduction of CO<sub>2</sub> to synthesis gas using bimetallic catalysts." *Nat. Commun.* 2019, 10, article no. 3724.
7. J. Wang, S. Kattel, C. J. Hawxhurst, J. H. Lee, **B. M. Tackett**, K. Chang, N. Rui, C.-J. Liu, J. G. Chen. "Enhancing Activity and Reducing Cost for Electrochemical Reduction of CO<sub>2</sub> by Supporting Palladium on Metal Carbides." *Angew. Chemie Int. Ed.* 2019, 58, 6271–6275.
8. **B. M. Tackett**, W. Sheng, S. Kattel, S. Yao, B. Yan, K. Kuttiyiel, Q. Wu, J. G. Chen. "Reducing Iridium Loading in Oxygen Evolution Reaction Electrocatalysts Using Core-shell Particles with Nitride Cores." *ACS Catal.*, 2018, 8, 2615-2621.
9. **B. M. Tackett**, W. Sheng, J. G. Chen. "Opportunities and Challenges in Utilizing Metal-modified Transition Metal Carbides as Low-cost Electrocatalysts." *Joule*, 2017, 1, 253-263.
10. W. Wan, **B. M. Tackett**, J. G. Chen, "Reactions of C1 molecules on carbide and metal modified carbide surfaces." *Chem. Soc. Rev.*, 2017, 139, 9739-9754.

## Selected Presentations (\* = invited)

- \* "Interfacial Electrode pH Measurement and Modeling Provides Insights on Kinetic Impacts of Cation Identity", Session: The role of fundamental interfacial processes in electrocatalysis. *ACS Spring 2024, New Orleans, LA*
- \* "Thermal Heterogeneous versus Aqueous Electrocatalytic Activation of light Alkanes: Opportunities and Challenges", Session: Crossroads of thermo-, electro- and photochemical catalysis. *ACS Spring 2024, New Orleans, LA*.
- \* "Quantifying catalytic information on electrodes by using surface-sensitive measurement techniques." Session: Honoring Prof. Fabio H. Ribeiro: 2023 CATL Exceptional Achievement Award. *ACS Fall 2023, San Francisco, CA*
- \* "Modeling Reaction, Convection, and Diffusion for the Electrocatalytic CO<sub>2</sub> Reduction Reaction in Fundamental and Applied Systems." *Purdue ECS Chapter 2022 Seminar Series, West Lafayette, IN, 2022*.
- \* "Surface Sensitive Measurement Techniques for Enhanced Understanding of Electrocatalytic Processes." Session: In Honor of the 2020 R.H. Wilhelm Award Winner. *AIChE National Meeting, Phoenix, AZ, 2022*.
- Poster: "Surface Sensitive Measurement Techniques for Quantifying Electrocatalytic Phenomena." *Gordon Research Conference: Catalysis, New London, NH, 2022*.
- "Surface Sensitive Measurement Techniques Reveal Copper Hydride Phase Formation during Electrocatalysis." *North American Catalysis Society Meeting NAM27, New York, NY, 2022*.