

### Selected Recent Publications (2015-2018)

- W. Wan, S.C. Ammal, Z. Lin, K.-E. You, A. Heyden\* and J.G. Chen\*, “Controlling reaction pathways of selective C-O bond cleavage of glycerol”, *Nature Communications*, (2018) accepted.
- X. Yang, J. Nash, J. Anibal, M. Dunwell, S. Kattel, E. Stavitski, K. Attenkofer, J.G. Chen\*, Y. Yan\*, and B. Xu\*, “Mechanistic Insights into Electrochemical Nitrogen Reduction Reaction on Vanadium Nitride Nanoparticles”, *Journal of the American Chemical Society*, (2018) accepted.
- J.H. Lee, S. Kattel, Z. Xie, B.M. Tackett, J. Wang, C.-J. Liu, and J.G. Chen\*, “Understanding the Role of Functional Groups in Polymeric Binder for Electrochemical Carbon Dioxide Reduction on Gold Nanoparticles”, *Advanced Functional Materials*, 28 (2018) 1804762.
- B. Yan, S. Yao, S. Kattel, Q. Wu, Z. Xie, E. Gomez, P. Liu, D. Su and J.G. Chen\*, “Active sites for tandem reactions of CO<sub>2</sub> reduction and ethane dehydrogenation”, *Proceedings of the National Academy of Sciences of United States*, 115 (2018) 8278-8283.
- J.G. Chen\*, R.M. Crooks\*, L.C. Seefeldt\*, K.L. Bren, R.M. Bullock, M.Y. Darensbourg, P.L. Holland, B. Hoffman, M.J. Janik, A.K. Jones, M.G. Kanatzidis, P. King, K.M. Lancaster, S.V. Lymar, P. Pfromm, W.F. Schneider, R.R. Schrock, “Beyond Fossil-Fuel-Driven Nitrogen Transformations”, *Science*, 360 (2018) 873.
- E. Gomez, S. Kattel, B. Yan, S. Yao, P. Liu and J.G. Chen\*, “Combining CO<sub>2</sub> Reduction with Propane Oxidative Dehydrogenation over Bimetallic Catalysts”, *Nature Communications*, 9 (2018) 1398.
- Z. Lin, R. Chen, Z. Qu\* and J.G. Chen\*, “Hydrodeoxygenation of biomass-derived oxygenates over metal carbides: From model surfaces to powder catalysts”, (*Critical Review*), *Green Chemistry*, 20 (2018) 2679-2696.
- S. Kattel\*, P. Liu\* and J.G. Chen\*, “Tuning Selectivity of CO<sub>2</sub> Hydrogenation Reactions at the Metal/Oxide Interface”, *Journal of the American Chemical Society*, 139 (2017) 9739-9754.
- S. Kattel, P.J. Ramírez, J.G. Chen\*, J.A. Rodriguez\* and P. Liu\*, “Active Sites for CO<sub>2</sub> Hydrogenation to Methanol on Cu/ZnO Catalysts”, *Science*, 355 (2017) 1296-1299.
- W. Sheng\*, S. Kattel, S. Yao, B. Yan, C.J. Hawxhurst, Q. Wu and J.G. Chen\*, “Electrochemical Reduction of CO<sub>2</sub> to Synthesis Gas with Controlled CO/H<sub>2</sub> Ratios”, *Energy & Environmental Science*, 10 (2017) 1180-1185.
- B.M. Tackett, W. Sheng\* and J.G. Chen\*, “Opportunities and Challenges in Utilizing Metal-modified Transition Metal Carbides as Low-cost Electrocatalysts”, *Joule*, 1 (2017) 253-263.

M. Dunwell, Q. Lu, J.M. Heyes, J. Rosen, J.G. Chen, Y. Yan, F. Jiao, and B. Xu, "The Central Role of Bicarbonate in the Electrochemical Reduction of CO<sub>2</sub> on Gold", *Journal of the American Chemical Society*, 139 (2017) 3774-3783.

J.C. Matsubu, S. Zhang, L. DeRita, N.S. Marinkovic, J.G. Chen, G.W. Graham, X. Pan and P. Christopher, "Adsorbate-Mediated Strong Metal-Support Interactions in Oxide-Supported Rh Catalysts", *Nature Chemistry*, 9 (2017) 120-127.

W. Wan, B.M. Tackett and J.G. Chen\*, "Reactions of water and C1 molecules on carbide and metal-modified carbide surfaces", *Chemical Society Reviews*, 46 (2017) 1807-1823

S. Kattel, W. Yu, X. Yang, B. Yan, Y. Huang, W. Wan, P. Liu\* and J.G. Chen\*, "CO<sub>2</sub> Hydrogenation on Oxide-supported PtCo Catalysts: Fine-tuning Selectivity using Oxide Supports", *Angewandte Chemie International Edition*, 55 (2016) 7968-7973.

S. Kattel, B. Yan, Y. Yang, J.G. Chen\* and P. Liu\*, "Optimizing Binding Energies of Key Intermediates for CO<sub>2</sub> Hydrogenation to Methanol over Oxide-Supported Copper", *Journal of the American Chemical Society*, 138 (2016) 12440.

M.D. Porosoff, B. Yan and J.G. Chen\*, "Catalytic reduction of CO<sub>2</sub> by H<sub>2</sub> for synthesis of CO, methanol and hydrocarbons: Challenges and opportunities", *Energy & Environmental Science*, 9 (2016) 62.

M.D. Porosoff, M. Myint, S. Kattel, Z. Xie, E. Gomez, P. Liu and J.G. Chen\*, "Identifying different types of catalysts for CO<sub>2</sub> reduction by ethane through dry reforming and oxidative dehydrogenation", *Angewandte Chemie International Edition*, 54 (2015) 15501.

X. Yang, S. Kattel, S.D. Senanayake, J.A. Boscoboinik, X. Nie, J. Graciani, J.A. Rodriguez, P. Liu, D.J. Stacchiola\* and J.G. Chen\*, "Low pressure CO<sub>2</sub> hydrogenation to methanol over gold nanoparticles activated on a CeO<sub>x</sub>/TiO<sub>2</sub> interface", *Journal of the American Chemical Society*, 137 (2015) 10104.

X. Yang, S. Kattel, X. Ke, K. Mudiyansele, S.A. Rykov, S.D. Senanayake, J.A. Rodriguez, P. Liu, D.J. Stacchiola and J.G. Chen\*, "Direct Epoxidation of Propylene over Stabilized Cu<sup>+</sup> Surface Sites on Ti Modified Cu<sub>2</sub>O", *Angewandte Chemie International Edition*, 54 (2015) 11946.

W. Sheng, Z. Zhuang, M. Gao, J. Zheng, J.G. Chen\* and Y. Yan\*, "Correlating hydrogen oxidation/evolution reaction activity on platinum at different pH with measured hydrogen binding energy", *Nature Communications*, 6 (2015) 5848.

Y. Zhou, Q. Lu, Z. Zhuang, G.S. Hutchings, S. Kattel, Y. Yan, J.G. Chen\*, J.Q. Xiao\* and F. Jiao\*, "Oxygen Reduction at Very Low Overpotential on Nanoporous Ag Catalysts", *Advanced Energy Materials*, 5 (2015) 1500149.

M.R. Stonor, T.E. Ferguson, J.G. Chen\* and A.-H. Park\*, “Biomass Conversion to H<sub>2</sub> with Substantially Suppressed CO<sub>2</sub> Formation in the Presence of Group I & Group II Hydroxides and a Ni/ZrO<sub>2</sub> Catalyst”, *Energy & Environmental Science*, 8 (2015) 1702.

Q. Lu, G.S. Hutchings, W. Yu, Y. Zhou, R.V. Forest, R. Tao, J. Rosen, B.T. Yonemoto<sup>1</sup>, Z. Cao, H. Zheng, J.Q. Xiao, F. Jiao\* and J.G. Chen\*, “Highly Porous Non-precious Bimetallic Electrocatalysts for Efficient Hydrogen Evolution”, *Nature Communications*, 6 (2015) 6567.