**Selected Recent Publications (2017-2020)**

Z. Xie, Y. Xu, M. Xie, X. Chen, J.H. Lee, E. Stavitski, S. Kattel\* and J.G. Chen\*, “Reactions of CO2 and Ethane Enable CO Bond Insertion for Production of C3 Oxygenates”, *Nature Communications*, (2020) accepted.

X. Jiang, X. Nie\*, X. Guo\*, C. Song\* and J.G. Chen\*, “Recent Advances in Carbon Dioxide Hydrogenation to Methanol via Heterogeneous Catalysis”, *Chemical Reviews*, (2020) accepted.

Q. Chang, P. Zhang,A.H.B. Mostaghimi, X. Zhao, S.R. Denny, J.H. Lee, H. Gao, Y. Zhang, H. Xin\*, S. Siahrostami\*, J.G. Chen\* and Z. Chen\*, “Promoting H2O2 Production via 2-Electron Oxygen Reduction by Coordinating Partially Oxidized Pd with Defect Carbon”, *Nature Communications*, (2020) accepted.

Y. Wang, Y. Zheng, K. Li\*, W. Gao, W. Na, J.G. Chen\*, H. Wang\*, “Strong evidence of the role of H2O for enhancing methanol selectivity from CO2 hydrogenation over Cu-ZnO-ZrO2”, *Chem*, 6 (2020) 419.

Q. He, D. Liu, J.H. Lee, Y. Liu, Z. Xie, S. Hwang, S. Kattel\*, L. Song\*, and J.G. Chen\*, “Electrochemical Conversion of CO2 to Syngas with Controllable CO/H2 Ratios over Co and Ni Single-Atom Catalysts”, *Angewandte Chemie International Edition*, 59 (2020) 3033.

E. Gomez, X. Nie\*, J.H. Lee, Z. Xie and J.G. Chen\*, “Tandem reactions of CO2 reduction and ethane aromatization”, *Journal of the American Chemical Society*, 141 (2019) 17771.

E. Gomez, B. Yan, S. Kattel and J.G. Chen\*, “Carbon dioxide reduction in tandem with light alkane dehydrogenation”, *Nature Reviews Chemistry*, 3 (2019) 638.

X. Yang, S. Kattel, J. Nash, X Chang, J.H. Lee, Y. Yan\*, J.G. Chen\* and B. Xu\*, “Quantification of Active Sites and Elucidation of Reaction Mechanism of Electrochemical Nitrogen Reduction Reaction on Vanadium Nitride”, *Angewandte Chemie International Edition*, 58 (2019) 13768.

J.H. Lee, S. Kattel,Z. Jiang,Z. Xie, S. Yao, B.M. Tackett, W. Xu, N.S. Marinkovic, and J.G. Chen\* “Tuning the Activity and Selectivity of Electroreduction of CO2 to Synthesis Gas using Bimetallic Catalysts”, *Nature Communications*, 10 (2019) 3724.

H.B. Tao, J. Zhang, J. Chen, L. Zhang, Y. Xu, J.G. Chen\*, and B. Liu\*, “Revealing Energetics of Surface Oxygen Redox from Kinetic Fingerprint in Oxygen Electrocatalysis”, *Journal of the American Chemical Society*, 141 (2019) 13803.

B.M. Tackett, E. Gomez and J.G. Chen\*, “Net reduction of CO2 via its thermocatalytic and electrocatalytic transformation reactions in standard and hybrid processes”, *Nature Catalysis*, 2 (2019) 381.

W. Luc, B.H. Ko, S. Kattel, S. Li, D. Su, J.G. Chen\*, and F. Jiao\*, “SO2-induced Selectivity Change in CO2 Electroreduction”, *Journal of the American Chemical Society*, 141 (2019) 9902.

J. Wang, S. Kattel, C.J. Hawxhurst, J.H. Lee, B.M. Tackett, K. Chang, N. Rui, C.-J. Liu\* and J.G. Chen\*, “Enhancing Activity and Reducing Cost for Electrochemical Reduction of CO2 by Supporting Palladium on Metal Carbides”, *Angewandte Chemie International Edition*, 58 (2019) 6271.

Y. Wang, S. Kattel, W. Gao, K. Li\*, P. Liu, J.G. Chen\* and H. Wang\*, “Exploring the ternary interactions in Cu-ZnO-ZrO2 catalysts for efficient CO2 hydrogenation to methanol”, *Nature Communications*, 10 (2019) 1166.

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*, 9 (2018) 4612.

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*, 140 (2018) 13387.

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 CO2 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 CO2 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 CO2 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 CO2 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 CO2 to Synthesis Gas with Controlled CO/H2 Ratios”, *Energy & Environmental Science*, 10 (2017) 1180-1185.

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 CO2 on Gold”, *Journal of the American Chemical Society*, 139 (2017) 3774-3783.

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.

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