THE UNIVERSITY OF MAINE

Prof. Thomas J. Schwartz
Chemical and Biomedical Engineering

Publications

Refereed Journal Articles

17. Schwartz, Thomas J.; Bond, Jesse Q. A Thermodynamic and Kinetic Analysis of Solvent-enhanced Selectivity in Monophasic and Biphasic Reactor Systems. *Chemical Communications* **2017**, *53*, 8148-8151.

    Invited paper for the 2017 Emerging Investigators issue

16. Perras, Frédéric A.; Padmos, Daniel; Johnson, Robert L.; Wang, Lin-Lin; Schwartz, Thomas J.; Kobayashi, Takeshi; Horton, J. Hugh; Dumesic, James A.; Shanks, Brent H.; Johnson, Duane D.; Pruski, Marek. Characterizing Substrate-Surface Interactions on Alumina-Supported Metal Catalysts by DNP-Enhanced Double-Resonance NMR Spectroscopy. *Journal of the American Chemical Society* **2017**, *139*, 2702-2709.

15. Schwartz, Thomas J.; Lyman, Spencer; Motagamwala, Ali H.; Mellmer, Max A.; Dumesic, James A. Selective Hydrogenation of Unsaturated Carbon−Carbon Bonds in Aromatic-Containing Platform Molecules. *ACS Catalysis* **2016**, 6, 2047-2054.

14. Schwartz, Thomas J.; Shanks, Brent H.; Dumesic, James A. Coupling chemical and biological catalysis: A flexible paradigm for producing biorenewable chemicals. *Current Opinion in Biotechnology* **2016**, 38, 54-62.

    Featured on the journal cover. Invited paper for the 2016 "Energy Biotechnology" issue

13. Johnson, Robert L.; Perras, Frédéric A.; Kobayashi, Takeshi; Schwartz, Thomas J.; Dumesic, James A.; Shanks, Brent; Pruski, Marek. Identifying Low-Coverage Species on Noble Metal Nanoparticles by DNP-NMR. *Chemical Communications* **2016**, 52, 1859-1862.

12. Schwartz, Thomas J.; Wesley, Thejas S.; Dumesic, James A. Modifying the Surface Properties of Heterogeneous Catalysts using Polymer-Derived Microenvironments. *Topics in Catalysis* **2016**, 59, 19-28.

    Invited paper for the "Catalytic Conversion of Biomass to Fuels and Chemicals" issue

11. Johnson, Robert L.; Schwartz, Thomas J.; Dumesic, James A.; Schmidt-Rohr, Klaus. Solid State NMR Investigation of Methionine Poisoned Pd/γ-Al_2O_3 Catalysts. **2015**, 72, 64-72.

10. Pham, Hien N.; Anderson, Amanda E.; Johnson, Robert L.; O'Neill, Brandon J.; Schwartz, Thomas J.; Schmidt-Rohr, Klaus; Dumesic, James A.; Datye, Abhaya, K. Carbon Overcoating of Supported Metal Catalysts for Improved Hydrothermal Stability. *ACS Catalysis* **2015**, 5, 4546-4555.

9. Cao, Fei; Schwartz, Thomas J.; Dumesic, James A.; Huber, George W. Dehydration of Cellulose to Levoglucosenone using Polar Aprotic Solvents. *Energy & Environmental Science* **2015**, 8, 1808-1815.

8. Xiong, Haifeng; Schwartz, Thomas J.; Anderson, Nalin I.; Dumesic, James A.; Datye, Abhaya, K. Graphitic-Carbon Layers on Oxides: Hydrothermally Stable Heterogeneous Catalysts in Biomass Conversion Reactions. *Angewandte Chemie International Edition* **2015**, 54, 7939-7943.

7. Schwartz, Thomas J.; Brentzel, Zachary J.; Dumesic, James A. Inhibition of Metal Hydrogenation Catalysts by Biogenic Impurities. *Catalysis Letters* **2015**, 145, 15-22.

   Invited paper for the Silver Anniversary Issue of *Catalysis Letters*.

6. Schwartz, Thomas J.; Johnson, Robert L.; Cardenas, Javier; Okerlund, Adam; Da Silva, Nancy A.; Schmidt-Rohr, Klaus; Dumesic, James A. Engineering Catalyst Microenvironments for Metal-Catalyzed Hydrogenation of Biologically-Derived Platform Chemicals. *Angewandte Chemie International Edition* **2014**, 53, 12718-12722.

   Highlighted as a Hot Paper; Featured on the frontispiece of the *Angewandte Chemie International Edition* Communications Section.

5. Schwartz, Thomas J.; O'Neill, Brandon J.; Shanks, Brent H.; Dumesic, James A. Bridging the chemical and biological catalysis gap: Challenges and outlooks for producing sustainable chemicals. *ACS Catalysis* **2014**, 4, 2060-2069.

4. Schwartz, Thomas J.; Goodman, Samuel M.; Osmundsen, Christian M.; Taarning, Esben; Mozuch, Michael D.; Gaskell, Jill; Cullen, Daniel; Kersten, Philip J.; Dumesic, James A. Integration of Chemical and Biological Catalysis: Production of Furylglycolic Acid from Glucose via Cortalcerone. *ACS Catalysis* **2013**, 3, 2689-2693.

   Highlighted in: *ACS Catalysis*, Virtual Special Issue on Cascade Catalysis

3. Chia, Mei; Schwartz, Thomas J.; Shanks, Brent H.; Dumesic, James A. Triacetic Acid Lactone as Potential Biorenewable Platform Chemical. *Green Chemistry* **2012**, 14, 1850-1853.

   Highlighted in: Teaming up for Biobased Chemicals, *Chemical & Engineering News*, **2012**, 90 (32), 37-38.

2. Schwartz, Thomas J.; van Heiningen, Adriaan R.P.; Wheeler, M. Clayton. Energy Densification of Levulinic Acid by Thermal Deoxygenation. *Green Chemistry* **2010**, 12, 1353-1356.

1. Schwartz, Thomas J.; Lawoko, Martin. Removal of Acid-Soluble Lignin from Biomass Extracts using Amberlite XAD-4 Resin. *Bioresources* **2010**, 5(4), 2337-2347.

Book Chapters

2. Schwartz, Thomas J.; Hakim, Sikander. Furanic Resins and Polymers. In *Furfural: An Entry Point of Lignocellulose in Biorefineries to Produce Renewable Chemicals, Polymers, and Biofuels*, Eds: Lopez Grandos, Manuel; Alonso, David Martin. World Scientific Publishing Co, **2018**.

1. Abdulrazzaq, Hussein; Schwartz, Thomas J. Catalytic Conversion of Ethanol to Commodity and Specialty Chemicals. In *Ethanol: Science and Engineering*, Eds: Basile, Angelo; Iulianelli, Adolfo; Veziroglu, Nejat T. Elsevier, **2018**.

Patents

2. Huber, G. W.; Cao, F.; Schwartz, T. J.; Dumesic, J. A. Method for Preparing Levoglucosenone (LGO) and Other Anhydrosugars from Biomass in Polar Aprotic Solvents. US Patent 9,376,451, **2016**.

1. Wheeler, M. C.; Schwartz, T. J.; van Heiningen A.R.P; van Walsum, G.P. Energy Densification of Biomass-Derived Organic Acids. US Patent 8,362,306, **2013**.