Stanford

Thomas Jaramillo

Associate Professor of Chemical Engineering, of Photon Science and Senior Fellow at the Precourt Institute for Energy

Curriculum Vitae available Online

CONTACT INFORMATION

- **Alternate Contact**

  Olayinka Popoola - Administrative Assistant

  Email opopoola@stanford.edu

  Tel 650-736-6471

Bio

BIO

Recent years have seen unprecedented motivation for the emergence of new energy technologies. Global dependence on fossil fuels, however, will persist until alternate technologies can compete economically. We must develop means to produce energy (or energy carriers) from renewable sources and then convert them to work as efficiently and cleanly as possible. Catalysis is energy conversion, and the Jaramillo laboratory focuses on fundamental catalytic processes occurring on solid-state surfaces in both the production and consumption of energy. Chemical-to-electrical and electrical-to-chemical energy conversion are at the core of the research. Nanoparticles, metals, alloys, sulfides, nitrides, carbides, phosphides, oxides, and biomimetic organo-metallic complexes comprise the toolkit of materials that can help change the energy landscape. Tailoring catalyst surfaces to fit the chemistry is our primary challenge.

ACADEMIC APPOINTMENTS

- Associate Professor, Chemical Engineering
- Associate Professor, Photon Science Directorate
- Senior Fellow, Precourt Institute for Energy
- Affiliate, Precourt Institute for Energy

ADMINISTRATIVE APPOINTMENTS

- Deputy Director, SUNCAT Center for Interface Science and Catalysis, (2014- present)

PROFESSIONAL EDUCATION

- PhD, University of California, Santa Barbara (2004)
- MS, University of California, Santa Barbara , Chemical Engineering (2000)
- BS, Stanford , Chemical Engineering (1998)

LINKS

- http://jaramillogroup.stanford.edu: http://jaramillogroup.stanford.edu

Teaching

COURSES

2019-20

- Electrochemical Energy Conversion: CHEMENG 432 (Spr)
- Energy: Chemical Transformations for Production, Storage, and Use: CHEMENG 25E, ENGR 25E (Win)
- Graduate Practical Training: CHEMENG 299 (Sum)
- Special Topics in Energy and Catalysis: CHEMENG 516 (Aut, Win, Spr, Sum)

2018-19

- Energy: Chemical Transformations for Production, Storage, and Use: CHEMENG 25E, ENGR 25E (Win)
- Special Topics in Energy and Catalysis: CHEMENG 516 (Aut, Win, Spr, Sum)

2017-18

- Chemical Process Modeling, Dynamics, and Control: CHEMENG 100 (Aut)
- Energy: Chemical Transformations for Production, Storage, and Use: CHEMENG 25E, ENGR 25E (Win)
- Special Topics in Energy and Catalysis: CHEMENG 516 (Aut, Win, Spr, Sum)

2016-17

- Chemical Process Modeling, Dynamics, and Control: CHEMENG 100 (Aut)
- Electrochemical Energy Conversion: CHEMENG 432 (Spr)
- Energy: Chemical Transformations for Production, Storage, and Use: CHEMENG 25E, ENGR 25E (Win)
- Special Topics in Energy and Catalysis: CHEMENG 516 (Aut, Win, Spr, Sum)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Aisulu Aitbekova, Jon Baker, Dara Bobb-Semple, Raul Flores, Thomas Ludwig, Brian Rohr, Jack Ruth, Joel Sanchez, Michael Statt, Cody Wrasman

Postdoctoral Faculty Sponsor

Tej Choksi, Elias Diesen, Daniel Lee, Joshua McEnaney, Adam Nielander, Hongjie Peng, Michaela Stevens, Verena Streibel, David Wakerley, Lei Wang, Tao Wang, Kirsten Winther, Andrew Wong, Maimaiti Yasheng

Doctoral Dissertation Advisor (AC)

KB Abiose, Jaime Avilés Acosta, Micha Ben-Naim, Mike Boyd, Kristopher Brown, McKenzie Hubert, Melissa Kreider, Alan Landers, John Lin, Brandon Loong, Dave Palm, Joel Sanchez, Eduardo Valle

Doctoral Dissertation Co-Advisor (AC)

Joe Gauthier, Anjli Patel

Doctoral (Program)

Sarah Blair, Mike Boyd, Samuel Dull, Joe Gauthier, David Koshy, Brandon Loong

Postdoctoral Research Mentor

Daniel Lee, David Wakerley

Publications

PUBLICATIONS

- **Solar water splitting by photovoltaic-electrolysis with a solar-to-hydrogen efficiency over 30.** *Nature communications*
  Jia, J., Seitz, L. C., Benck, J. D., Huo, Y., Chen, Y., Ng, J. W., Bilir, T., Harris, J. S., Jaramillo, T. F.
  2016; 7: 13237-?

- **A highly active and stable IrOx/SrIrO3 catalyst for the oxygen evolution reaction** *SCIENCE*
  Seitz, L. C., Dickens, C. F., Nishio, K., Hikita, Y., Montoya, J., Doyle, A., Kirk, C., Vojvodic, A., Hwang, H. Y., Norskov, J. K., Jaramillo, T. F.
  2016; 353 (6303): 1011-1014

- **Elucidating the electronic structure of supported gold nanoparticles and its relevance to catalysis by means of hard X-ray photoelectron spectroscopy** *SURFACE SCIENCE*
  Reinecke, B. N., Kuhl, K. P., Ogasawara, H., Li, L., Voss, J., Abild-Pedersen, F., Nilsson, A., Jaramillo, T. F.
  2016; 650: 24-33

- **Molybdenum Disulfide as a Protection Layer and Catalyst for Gallium Indium Phosphide Solar Water Splitting Photocathodes** *JOURNAL OF PHYSICAL CHEMISTRY LETTERS*
  Britto, R. J., Benck, J. D., Young, J. L., Hahn, C., Deutsch, T. G., Jaramillo, T. F.
  2016; 7 (11): 2044-2049

- **Improving the Photoelectrochemical Performance of Hematite by Employing a High Surface Area Scaffold and Engineering Solid-Solid Interfaces** *ADVANCED MATERIALS INTERFACES*
  Chakthranont, P., Pinaud, B. A., Seitz, L. C., Forman, A. J., Jaramillo, T. F.
  2016; 3 (7)

- **Band Edge Engineering of Oxide Photoanodes for Photoelectrochemical Water Splitting: Integration of Subsurface Dipoles with Atomic-Scale Control** *ADVANCED ENERGY MATERIALS*
  Hikita, Y., Nishio, K., Seitz, L. C., Chakthranont, P., Tachikawa, T., Jaramillo, T. F., Hwang, H. Y.
  2016; 6 (7)

- **Tuning Composition and Activity of Cobalt Titanium Oxide Catalysts for the Oxygen Evolution Reaction** *ELECTROCHIMICA ACTA*
  Seitz, L. C., Nordlund, D., Gallo, A., Jaramillo, T. F.
  2016; 193: 240-245

- **Engineering Cobalt Phosphide (CoP) Thin Film Catalysts for Enhanced Hydrogen Evolution Activity on Silicon Photocathodes** *ADVANCED ENERGY MATERIALS*
  Hellstern, T. R., Benck, J. D., Kibsgaard, J., Hahn, C., Jaramillo, T. F.
  2016; 6 (4)

- **Chemical and Phase Evolution of Amorphous Molybdenum Sulfide Catalysts for Electrochemical Hydrogen Production.** *ACS nano*
  Lee, S. C., Benck, J. D., Tsai, C., Park, J., Koh, A. L., Abild-Pedersen, F., Jaramillo, T. F., Sinclair, R.
  2016; 10 (1): 624-632

- **Benchmarking nanoparticulate metal oxide electrocatalysts for the alkaline water oxidation reaction** *JOURNAL OF MATERIALS CHEMISTRY A*
  Jung, S., McCrory, C. C., Ferrer, I. M., Peters, J. C., Jaramillo, T. F.
  2016; 4 (8): 3068-3076

- **Electrooxidation of Alcohols with Electrode-Supported Transfer Hydrogenation Catalysts** *ACS CATALYSIS*
  Buonaiuto, M., De Crisci, A. G., Jaramillo, T. F., Waymouth, R. M.
  2015; 5 (12): 7343-7349

- **Enhancement Effect of Noble Metals on Manganese Oxide for the Oxygen Evolution Reaction** *JOURNAL OF PHYSICAL CHEMISTRY LETTERS*
  Seitz, L. C., Hersbach, T. J., Nordlund, D., Jaramillo, T. F.
  2015; 6 (20): 4178-4183

- **Mapping Photoelectrochemical Current Distribution at Nanoscale Dimensions on Morphologically Controlled BiVO4** *JOURNAL OF PHYSICAL CHEMISTRY LETTERS*
  Chakthranont, P., Seitz, L. C., Jaramillo, T. F.

2015; 6 (18): 3702-3707

- **Platinum and hybrid polyaniline-platinum surfaces for the electrocatalytic reduction of CO2** *MRS COMMUNICATIONS*
  Abram, D. N., Kuhl, K. P., Cave, E. R., Jaramillo, T. F.
  2015; 5 (2): 319-325

- **Benchmarking Hydrogen Evolving Reaction and Oxygen Evolving Reaction Electrocatalysts for Solar Water Splitting Devices** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  McCrory, C. C., Jung, S., Ferrer, I. M., Chatman, S. M., Peters, J. C., Jaramillo, T. F.
  2015; 137 (13): 4347-4357

- **Simultaneous detection of electronic structure changes from two elements of a bifunctional catalyst using wavelength-dispersive X-ray emission spectroscopy and in situ electrochemistry** *PHYSICAL CHEMISTRY CHEMICAL PHYSICS*
  Gul, S., Ng, J. W., Alonso-Mori, R., Kern, J., Sokaras, D., Anzenberg, E., Lassalle-Kaiser, B., Gorlin, Y., Weng, T., Zwart, P. H., Zhang, J. Z., Bergmann, U., Yachandra, et al
  2015; 17 (14): 8901-8912

- **Designing an improved transition metal phosphide catalyst for hydrogen evolution using experimental and theoretical trends** *ENERGY & ENVIRONMENTAL SCIENCE*
  Kibsgaard, J., Tsai, C., Chan, K., Benck, J. D., Norskov, J. K., Abild-Pedersen, F., Jaramillo, T. F.
  2015; 8 (10): 3022-3029

- **CoTiOx Catalysts for the Oxygen Evolution Reaction** *JOURNAL OF THE ELECTROCHEMICAL SOCIETY*
  Seitz, L. C., Pinaud, B. A., Nordlund, D., GORLIN, Y., Gallo, A., Jaramillo, T. F.
  2015; 162 (12): H841-H846

- **Synthesis of thin film AuPd alloys and their investigation for electrocatalytic CO2 reduction** *JOURNAL OF MATERIALS CHEMISTRY A*
  Hahn, C., Abram, D. N., Hansen, H. A., Hatsukade, T., Jackson, A., Johnson, N. C., Hellstern, T. R., Kuhl, K. P., Cave, E. R., Feaster, J. T., Jaramillo, T. F.
  2015; 3 (40): 20185-20194

- **Applications of ALD MnO to electrochemical water splitting** *PHYSICAL CHEMISTRY CHEMICAL PHYSICS*
  Pickrahn, K. L., Gorlin, Y., Seitz, L. C., Garg, A., Nordlund, D., Jaramillo, T. F., Bent, S. F.
  2015; 17 (21): 14003-14011

- **Designing Active and Stable Silicon Photocathodes for Solar Hydrogen Production Using Molybdenum Sulfide Nanomaterials** *ADVANCED ENERGY MATERIALS*
  Benck, J. D., Lee, S. C., Fong, K. D., Kibsgaard, J., Sinclair, R., Jaramillo, T. F.
  2014; 4 (18)

- **Molybdenum Phosphosulfide: An Active, Acid-Stable, Earth-Abundant Catalyst for the Hydrogen Evolution Reaction** *ANGEWANDTE CHEMIE-INTERNATIONAL EDITION*
  Kibsgaard, J., Jaramillo, T. F.
  2014; 53 (52): 14433-14437

- **Operando Characterization of an Amorphous Molybdenum Sulfide Nanoparticle Catalyst during the Hydrogen Evolution Reaction** *JOURNAL OF PHYSICAL CHEMISTRY C*
  Casalongue, H. G., Benck, J. D., Tsai, C., Karlsson, R. K., Kaya, S., Ng, M. L., Pettersson, L. G., Abild-Pedersen, F., Norskov, J. K., Ogasawara, H., Jaramillo, T. F., Nilsson, A.
  2014; 118 (50): 29252-29259

- **Catalyzing the Hydrogen Evolution Reaction (HER) with Molybdenum Sulfide Nanonnaterials** *ACS CATALYSIS*
  Benck, J. D., Hellstern, T. R., Kibsgaard, J., Chakthranont, P., Jaramillo, T. F.
  2014; 4 (11): 3957-3971

- **Substrate Selection for Fundamental Studies of Electrocatalysts and Photoelectrodes: Inert Potential Windows in Acidic, Neutral, and Basic Electrolyte** *PLOS ONE*
  Benck, J. D., Pinaud, B. A., Gorlin, Y., Jaramillo, T. F.
  2014; 9 (10)

- **Optoelectronic properties of Ta3N5: A joint theoretical and experimental study** *PHYSICAL REVIEW B*
  Morbec, J. M., Narkeviciute, I., Jaramillo, T. F., Galli, G.

2014; 90 (15)

- **Electrocatalytic Conversion of Carbon Dioxide to Methane and Methanol on Transition Metal Surfaces** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Kuhl, K. P., Hatsukade, T., Cave, E. R., Abram, D. N., Kibsgaard, J., Jaramillo, T. F.
  2014; 136 (40): 14107-14113
- **Electrocatalytic conversion of carbon dioxide to methane and methanol on transition metal surfaces.** *Journal of the American Chemical Society*
  Kuhl, K. P., Hatsukade, T., Cave, E. R., Abram, D. N., Kibsgaard, J., Jaramillo, T. F.
  2014; 136 (40): 14107-14113
- **Nickel-silver alloy electrocatalysts for hydrogen evolution and oxidation in an alkaline electrolyte.** *Physical chemistry chemical physics*
  Tang, M. H., Hahn, C., Klobuchar, A. J., Ng, J. W., Wellendorff, J., Bligaard, T., Jaramillo, T. F.
  2014; 16 (36): 19250-19257
- **Insights into the electrocatalytic reduction of CO2 on metallic silver surfaces.** *Physical chemistry chemical physics*
  Hatsukade, T., Kuhl, K. P., Cave, E. R., Abram, D. N., Jaramillo, T. F.
  2014; 16 (27): 13814-13819
- **A carbon-free, precious-metal-free, high-performance O-2 electrode for regenerative fuel cells and metal-air batteries** *ENERGY & ENVIRONMENTAL SCIENCE*
  Ng, J. W., Tang, M., Jaramillo, T. F.
  2014; 7 (6): 2017-2024
- **Modeling practical performance limits of photoelectrochemical water splitting based on the current state of materials research.** *ChemSusChem*
  Seitz, L. C., Chen, Z., Forman, A. J., Pinaud, B. A., Benck, J. D., Jaramillo, T. F.
  2014; 7 (5): 1372-1385
- **Understanding Interactions between Manganese Oxide and Gold That Lead to Enhanced Activity for Electrocatalytic Water Oxidation.** *Journal of the American Chemical Society*
  Gorlin, Y., Chung, C., Benck, J. D., Nordlund, D., Seitz, L., Weng, T., Sokaras, D., Clemens, B. M., Jaramillo, T. F.
  2014; 136 (13): 4920-4926
- **Building an appropriate active-site motif into a hydrogen-evolution catalyst with thiomolybdate [Mo3S13](2-) clusters.** *Nature chemistry*
  Kibsgaard, J., Jaramillo, T. F., Besenbacher, F.
  2014; 6 (3): 248-253
- **Nearly Total Solar Absorption in Ultrathin Nanostructured Iron Oxide for Efficient Photoelectrochemical Water Splitting** *ACS PHOTONICS*
  Wang, K. X., Wu, Z., Liu, V., Brongersma, M. L., Jaramillo, T. F., Fan, S.
  2014; 1 (3): 235-240
- **Controlling the Structural and Optical Properties of Ta3N5 Films through Nitridation Temperature and the Nature of the Ta Metal** *CHEMISTRY OF MATERIALS*
  Pinaud, B. A., Vailionis, A., Jaramillo, T. F.
  2014; 26 (4): 1576-1582
- **High Surface Area Transparent Conducting Oxide Electrodes with a Customizable Device Architecture** *CHEMISTRY OF MATERIALS*
  Forman, A. J., Chen, Z., Chakthranont, P., Jaramillo, T. F.
  2014; 26 (2): 958-964
- **Climbing the Activity Volcano: Core-Shell Ru@Pt Electrocatalysts for Oxygen Reduction** *CHEMELECTROCHEM*
  Jackson, A., Viswanathan, V., Forman, A. J., Larsen, A. H., Norskov, J. K., Jaramillo, T. F.
  2014; 1 (1): 67-71
- **Insights into the electrocatalytic reduction of CO2 on metallic silver surfaces** *PHYSICAL CHEMISTRY CHEMICAL PHYSICS*
  Hatsukade, T., Kuhl, K. P., Cave, E. R., Abram, D. N., Jaramillo, T. F.
  2014; 16 (27): 13814-13819
- **Nanostructured Manganese Oxide Supported onto Particulate Glassy Carbon as an Active and Stable Oxygen Reduction Catalyst in Alkaline-Based Fuel Cells** *JOURNAL OF THE ELECTROCHEMICAL SOCIETY*
  Ng, J. W., Gorlin, Y., Nordlund, D., Jaramillo, T. F.

2014; 161 (7): D3105-D3112

- **An X-ray Photoelectron Spectroscopy Study of Surface Changes on Brominated and Sulfur-Treated Activated Carbon Sorbents during Mercury Capture: Performance of Pellet versus Fiber Sorbents** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
  Saha, A., Abram, D. N., Kuhl, K. P., Paradis, J., Crawford, J. L., Sasmaz, E., Chang, R., Jaramillo, T. F., Wilcox, J.
  2013; 47 (23): 13695-13701

- **A Precious-Metal-Free Regenerative Fuel Cell for Storing Renewable Electricity** *ADVANCED ENERGY MATERIALS*
  Ng, J. W., Gorlin, Y., Hatsukade, T., Jaramillo, T. F.
  2013; 3 (12): 1545-1550

- **Benchmarking Heterogeneous Electrocatalysts for the Oxygen Evolution Reaction** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  McCrory, C. C., Jung, S., Peters, J. C., Jaramillo, T. F.
  2013; 135 (45): 16977-16987

- **Impedance-based study of capacitive porous carbon electrodes with hierarchical and bimodal porosity** *JOURNAL OF POWER SOURCES*
  Suss, M. E., Baumann, T. F., Worsley, M. A., Rose, K. A., Jaramillo, T. F., Stadermann, M., Santiago, J. G.
  2013; 241: 266-273

- **Technical and economic feasibility of centralized facilities for solar hydrogen production via photocatalysis and photoelectrochemistry** *ENERGY & ENVIRONMENTAL SCIENCE*
  Pinaud, B. A., Benck, J. D., Seitz, L. C., Forman, A. J., Chen, Z., Deutsch, T. G., James, B. D., Baum, K. N., Baum, G. N., Ardo, S., Wang, H., Miller, E., Jaramillo, et al
  2013; 6 (7): 1983-2002

- **In Situ X-ray Absorption Spectroscopy Investigation of a Bifunctional Manganese Oxide Catalyst with High Activity for Electrochemical Water Oxidation and Oxygen Reduction.** *Journal of the American Chemical Society*
  Gorlin, Y., Lassalle-Kaiser, B., Benck, J. D., Gul, S., Webb, S. M., Yachandra, V. K., Yano, J., Jaramillo, T. F.
  2013; 135 (23): 8525-8534

- **Bridging the Gap Between Bulk and Nanostructured Photoelectrodes: The Impact of Surface States on the Electrocatalytic and Photoelectrochemical Properties of MoS2** *JOURNAL OF PHYSICAL CHEMISTRY C*
  Chen, Z., Forman, A. J., Jaramillo, T. F.
  2013; 117 (19): 9713-9722

- **Growth of Pt Nanowires by Atomic Layer Deposition on Highly Ordered Pyrolytic Graphite** *NANO LETTERS*
  Lee, H., Baeck, S. H., Jaramillo, T. F., Bent, S. F.
  2013; 13 (2): 457-463

- **Catalyzing chemical transformations in renewable energy: Tailoring Electrocatalyst Materials for Activity, Selectivity, and Stability**
  Jaramillo, T., F.
  2013

- **Effect of Temperature Treatment on CoTiOx Catalyst for the Oxygen Evolution Reaction** *2nd International Symposium on Electrochemical Synthesis of Fuels (ESF)*
  Seitz, L. C., Pinaud, B. A., Nordlund, D., Jaramillo, T. F.
  ELECTROCHEMICAL SOC INC.2013: 285–91

- **Solar hydrogen production by photoelectrochemical (PEC) water-splitting: Advancing technology through the synergistic activities of the PEC working group (PEC WG)**
  Jaramillo, T., F.
  2013

- **Exploring Nano-architectures of MoS2: How Surface Structure and Electronic Structure Impact H2 Production by Electrocatalysis and Solar Photoelectrochemistry**
  Jaramillo, T., F.
  2013

- **Catalyzing Electrochemical Transformations in Renewable Energy**
  Jaramillo, T., F.
  2013

- **The Impact of Surface Structure on the Electrocatalytic and Photoelectrochemical (PEC) Properties of MoS2**
  Jaramillo, T., F.
  2013

- **Electrocatalytic Conversion of Carbon Dioxide to Fuels and Chemicals on Transition Metal Electrodes**
  Jaramillo, T., F., Kuhl, K., P., Cave, E., R., Abram, D., N., Hatsukade, T.
  2013

- **Catalyzing key chemical transformations for renewable, sustainable energy**
  Jaramillo, T., F.
  2013

- **Mn3O4 Supported on Glassy Carbon: An Active Non-Precious Metal Catalyst for the Oxygen Reduction Reaction** *ACS CATALYSIS*
  Gorlin, Y., Chung, C., Nordlund, D., Clemens, B. M., Jaramillo, T. F.
  2012; 2 (12): 2687-2694

- **Engineering the surface structure of MoS2 to preferentially expose active edge sites for electrocatalysis** *NATURE MATERIALS*
  Kibsgaard, J., Chen, Z., Reinecke, B. N., Jaramillo, T. F.
  2012; 11 (11): 963-969

- **New cubic perovskites for one- and two-photon water splitting using the computational materials repository** *ENERGY & ENVIRONMENTAL SCIENCE*
  Castelli, I. E., Landis, D. D., Thygesen, K. S., Dahl, S., Chorkendorff, I., Jaramillo, T. F., Jacobsen, K. W.
  2012; 5 (10): 9034-9043

- **Active MnOx Electrocatalysts Prepared by Atomic Layer Deposition for Oxygen Evolution and Oxygen Reduction Reactions** *ADVANCED ENERGY MATERIALS*
  Pickrahn, K. L., Park, S. W., Gorlin, Y., Lee, H., Jaramillo, T. F., Bent, S. F.
  2012; 2 (10): 1269-1277

- **Mercury chemistry on brominated activated carbon** *FUEL*
  Sasmaz, E., Kirchofer, A., Jew, A. D., Saha, A., Abram, D., Jaramillo, T. F., Wilcox, J.
  2012; 99: 188-196

- **Amorphous Molybdenum Sulfide Catalysts for Electrochemical Hydrogen Production: Insights into the Origin of their Catalytic Activity** *ACS CATALYSIS*
  Benck, J. D., Chen, Z., Kuritzky, L. Y., Forman, A. J., Jaramillo, T. F.
  2012; 2 (9): 1916-1923

- **Effect of Film Morphology and Thickness on Charge Transport in Ta3N5/Ta Photoanodes for Solar Water Splitting** *JOURNAL OF PHYSICAL CHEMISTRY C*
  Pinaud, B. A., Vesborg, P. C., Jaramillo, T. F.
  2012; 116 (30): 15918-15924

- **Meso-Structured Platinum Thin Films: Active and Stable Electrocatalysts for the Oxygen Reduction Reaction** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Kibsgaard, J., Gorlin, Y., Chen, Z., Jaramillo, T. F.
  2012; 134 (18): 7758-7765

- **New insights into the electrochemical reduction of carbon dioxide on metallic copper surfaces** *ENERGY & ENVIRONMENTAL SCIENCE*
  Kuhl, K. P., Cave, E. R., Abram, D. N., Jaramillo, T. F.
  2012; 5 (5): 7050-7059

- **Simulating Linear Sweep Voltammetry from First-Principles: Application to Electrochemical Oxidation of Water on Pt(111) and Pt3Ni(111)** *JOURNAL OF PHYSICAL CHEMISTRY C*
  Viswanathan, V., Hansen, H. A., Rossmeisl, J., Jaramillo, T. F., Pitsch, H., Norskov, J. K.
  2012; 116 (7): 4698-4704

- **Investigation of Surface Oxidation Processes on Manganese Oxide Electrocatalysts Using Electrochemical Methods and Ex Situ X-ray Photoelectron Spectroscopy** *JOURNAL OF THE ELECTROCHEMICAL SOCIETY*
  Gorlin, Y., Jaramillo, T. F.
  2012; 159 (10): H782-H786

- **Tailoring electrocatalyst materials to enhance activity, stability, and selectivity for key energy conversion reactions**
  Jaramillo, T., F.
  2012
- **Electrocatalysis 101**
  Jaramillo, T., F.
  2012
- **Developing Electrocatalysts for the Synthesis of Renewable Fuels**
  Jaramillo, T., F.
  2012
- **Catalyzing chemical transformations in renewable energy: Tailoring electrocatalyst materials for activity, selectivity, and stability**
  Jaramillo, T., F.
  2012
- **The electrocatalytic conversion of CO2 to fuels and chemicals**
  Jaramillo, T., F., Kuhl, Kendra, P., Cave, Etosha, R., Abram, David, N.
  2012
- **Tailoring electrocatalyst materials to enhance activity, stability, and selectivity for key energy conversion reactions**
  Jaramillo, T., F.
  2012
- **Tailoring electrocatalyst materials to enhance activity, stability, and selectivity for key energy conversion reactions**
  Jaramillo, T., F.
  2012
- **Engineering the Surface Structure of MoS2 Through Morphological Control At the Nano-Scale for Enhanced Electrocatalytic Hydrogen Production**
  Jaramillo, T., F., Chen, Z., Kibsgaard, J., Reinecke, B., N.
  2012
- **Bridging the gap between optical absorption and charge transport in metal oxide materials for the synthesis of solar fuels**
  Jaramillo, T., F., Forman, A., J., Chen, Z., Thomann, I., Pinaud, B., A., Cho, I., S.
  2012
- **Tailoring Electrocatalyst Materials at the Nano-Scale: Controlling Activity, Selectivity, and Stability for Energy Conversion Reactions**
  Jaramillo, T., F.
  2012
- **Tailoring Electrocatalyst Materials at the Nano-Scale: Controlling Activity, Selectivity, and Stability for Energy Conversion Reactions**
  Jaramillo, T., F.
  2012
- **Solar Fuels by Photocatalysis and Photoelectrochemistry**
  Jaramillo, T., F.
  2012
- **Insights into the electrochemical conversion of CO2 to fuels and chemicals on transition metal surfaces**
  Jaramillo, T., F., Kuhl, K., P., Cave, E., R., Abram, D., N., Hatsukade, T.
  2012
- **Directed Nano-scale and Macro-scale Architectures for Semiconductor Absorbers and Transparent Conducting Substrates for Photoelectrochemical Water Splitting**
  Jaramillo, T., F., Forman, A., Chen, Z., Pinaud, B., A., Seitz, L., Jackson, A.
  2012
- **Addressing charge transport limitations in thin film Ta3N5 & TaON photoanodes for solar fuel synthesis**
  Jaramillo, T., F., Pinaud, B., A.
  2012

- **Energy Storage by Means of Renewable Fuels**
  Jaramillo, T., F.
  2012

- **Electrocatalyst development for renewable energy: Engineering surface structure at the atomic-scale by controlling morphology at the nano-scale**
  Jaramillo, T., F.
  2012

- **Tailoring Electrocatalyst Materials at the Nano-Scale: Controlling Activity, Selectivity, and Stability for Energy Conversion Reactions**
  Jaramillo, T., F.
  2012

- **Electrocatalyst development for the synthesis of renewable fuels from water and CO2**
  Jaramillo, T., F.
  2012

- **A tutorial on electrocatalysis: Concepts, fundamentals, methods, and applications**
  Jaramillo, T., F.
  2012

- **Identifying active surface phases for metal oxide electrocatalysts: a study of manganese oxide bi-functional catalysts for oxygen reduction and water oxidation catalysis** *PHYSICAL CHEMISTRY CHEMICAL PHYSICS*
  Su, H., Gorlin, Y., Man, I. C., Calle-Vallejo, F., Norskov, J. K., Jaramillo, T. F., Rossmeisl, J.
  2012; 14 (40): 14010-14022

- **Addressing the terawatt challenge: scalability in the supply of chemical elements for renewable energy** *RSC ADVANCES*
  Vesborg, P. C., Jaramillo, T. F.
  2012; 2 (21): 7933-7947

- **Branched TiO2 Nanorods for Photoelectrochemical Hydrogen Production** *NANO LETTERS*
  Cho, I. S., Chen, Z., Forman, A. J., Kim, D. R., Rao, P. M., Jaramillo, T. F., Zheng, X.
  2011; 11 (11): 4978-4984

- **Core-shell MoO3-MoS2 Nanowires for Hydrogen Evolution: A Functional Design for Electrocatalytic Materials** *NANO LETTERS*
  Chen, Z., Cummins, D., Reinecke, B. N., Clark, E., Sunkara, M. K., Jaramillo, T. F.
  2011; 11 (10): 4168-4175

- **Plasmon Enhanced Solar-to-Fuel Energy Conversion** *NANO LETTERS*
  Thomann, I., Pinaud, B. A., Chen, Z., Clemens, B. M., Jaramillo, T. F., Brongersma, M. L.
  2011; 11 (8): 3440-3446

- **Universality in Oxygen Evolution Electrocatalysis on Oxide Surfaces** *CHEMCATCHEM*
  Man, I. C., Su, H., Calle-Vallejo, F., Hansen, H. A., Martinez, J. I., Inoglu, N. G., Kitchin, J., Jaramillo, T. F., Norskov, J. K., Rossmeisl, J.
  2011; 3 (7): 1159-1165

- **Thin Films of Sodium Birnessite-Type MnO2: Optical Properties, Electronic Band Structure, and Solar Photoelectrochemistry** *JOURNAL OF PHYSICAL CHEMISTRY C*
  Pinaud, B. A., Chen, Z., Abram, D. N., Jaramillo, T. F.
  2011; 115 (23): 11830-11838

- **Electrocatalysis on manganese oxide surfaces: Oxygen reduction and water oxidation** *241st National Meeting and Exposition of the American-Chemical-Society (ACS)*
  Jaramillo, T. F., Gorlin, Y., Baeck, S., Pinaud, B. A.
  AMER CHEMICAL SOC.2011

- **Ex-situ Spectroscopy Study of Manganese Oxide Catalytic Surfaces under Reaction Conditions Relevant to Oxygen Reduction and Oxygen Evolution** *11th Polymer Electrolyte Fuel Cell Symposium (PEFC) Under the Auspices of the 220th Meeting of the ECS*
  GORLIN, Y., Jaramillo, T. F.
  ELECTROCHEMICAL SOC INC.2011: 1701–7

- **Tailoring Electrocatalyst Materials at the Nano-Scale: Controlling Activity, Selectivity, and Stability for Energy Conversion Reactions**
  Jaramillo, T., F.
  2011
- **Nanostructured electrocatalysts for energy conversion reactions**
  Jaramillo, T., F.
  2011
- **Nanomaterials for efficient chemical transformations in energy conversion reactions**
  Jaramillo, T., F.
  2011
- **Catalyzing the production of clean fuels from renewable energy resources**
  Jaramillo, T., F.
  2011
- **Tailoring electrocatalyst materials at the nano-scale: Controlling activity, selectivity, and stability for energy conversion reactions**
  Jaramillo, T., F.
  2011
- **Tailoring Electrocatalyst Materials at the Nano-Scale: Controlling Activity, Selectivity, and Stability for Energy Conversion Reactions**
  Jaramillo, T., F.
  2011
- **Nano-architectures for 3rd generation PEC devices: A study of MoS2, fundamental investigations and applied research**
  Jaramillo, T., F.
  2011
- **Engineering catalysts at the nano-scale for energy conversion reactions**
  Jaramillo, T., F.
  2011
- **Tailoring electrocatalyst materials at the nano-scale: Controlling activity and selectivity for energy conversion reactions**
  Jaramillo, T., F.
  2011
- **Tailoring electrocatalyst materials at the nano-scale: Controlling activity and selectivity for energy conversion reactions**
  Jaramillo, T., F.
  2011
- **Semiconductors and catalysts for the production of solar fuels**
  Jaramillo, T., F.
  2011
- **Non-precious metal catalysts for electrochemical transformations between H2, O2, and H2O**
  Jaramillo, T., F.
  2011
- **Electrocatalytic conversion of CO2 to fuels on metal surfaces**
  Jaramillo, T., F.
  2011
- **Electrocatalytic Conversion of CO2 to Fuels on Metal Surfaces**
  Jaramillo, T., F., Kuhl, K., P., Cave, E., Abram, D., N.
  2011
- **Tailoring Electrocatalyst Materials at the Nano-Scale: Controlling Activity, Selectivity, and Stability for Energy Conversion Reactions**
  Jaramillo, T., F.
  2011

- **Tailoring electrocatalyst materials at the nano-scale: Controlling activity and selectivity for energy conversion reactions**
  Jaramillo, T., F.
  2011
- **Tailoring electrocatalyst materials at the nano-scale: Controlling activity and selectivity for energy conversion reactions**
  Jaramillo, T., F.
  2011
- **Nanostructured Catalysts for Chemical Transformations in Energy**
  Jaramillo, T., F.
  2011
- **Advanced electrode and photo-electrode structures for the synthesis of fuels from sunlight**
  Jaramillo, T., F., Forman, A., J., Chen, Z., Pinaud, B., A., Benck, J., D., Baeck, S., H.
  2011
- **Double Gyroid Nanostructured Platinum As Highly Durable Oxygen Reduction Reaction Electrocatalyst**
  Jaramillo, T., F., Kibsgaard, J., Gorlin, Y.
  2011
- **A Bifunctional Nonprecious Metal Catalyst for Oxygen Reduction and Water Oxidation** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Gorlin, Y., Jaramillo, T. F.
  2010; 132 (39): 13612-13614
- **Nanostructured MoS2 for solar hydrogen production**
  Chen, Z., Choi, S., Kibsgaard, J., Jaramillo, T. F.
  AMER CHEMICAL SOC.2010
- **Accelerating materials development for photoelectrochemical hydrogen production: Standards for methods, definitions, and reporting protocols** *JOURNAL OF MATERIALS RESEARCH*
  Chen, Z., Jaramillo, T. F., Deutsch, T. G., Kleiman-Shwarsctein, A., Forman, A. J., Gaillard, N., Garland, R., Takanabe, K., Heske, C., Sunkara, M., McFarland, E. W., Domen, K., Miller, et al
  2010; 25 (1): 3-16
- **Developing solid-state electrocatalysts based on design principles from nature: The oxidation of water and the reduction of CO2 to fuels**
  Jaramillo, T., F.
  2010
- **Nanostructured MoS2 and WS2 for the solar production of hydrogen**
  Jaramillo, T., F.
  2010
- **Nano-structured materials for the synthesis of fuels from sunlight**
  Jaramillo, T., F.
  2010
- **Surface electrocatalysis for fuel synthesis: Inspiration from nature**
  Jaramillo, T., F.
  2010
- **Nano-scaled materials for the synthesis of fuels from sunlight**
  Jaramillo, T., F.
  2010
- **Nano-scaled materials for the synthesis of fuels from sunlight**
  Jaramillo, T., F.
  2010
- **Nano-scaled materials for the synthesis of fuels from sunlight**
  Jaramillo, T., F.

2010

- **Nano-scaled materials for the synthesis of fuels from sunlight**
  Jaramillo, T., F.
  2010
- **In pursuit of a reversible oxygen electrode: Water oxidation and oxygen reduction on electro-catalytic oxide surfaces**
  Jaramillo, T., F.
  2010
- **Bi-functional electrocatalysis on manganese oxide surfaces: oxygen reduction and water oxidation**
  Jaramillo, T., F.
  2010
- **Nanostructuring MoS2 for Photoelectrochemical Water Splitting** *Conference on Solar Hydrogen and Nanotechnology V*
  Chen, Z., Kibsgaard, J., Jaramillo, T. F.
  SPIE-INT SOC OPTICAL ENGINEERING.2010
- **Monolithic III-V Nanowire PV for Photoelectrochemical Hydrogen Generation** *35th IEEE Photovoltaic Specialists Conference*
  Ba, X., Pinaud, B. A., Parker, J., Aloni, S., Jaramillo, T. F., Wong, H. P.
  IEEE.2010: 1793–1796
- **Alloys of platinum and early transition metals as oxygen reduction electrocatalysts** *NATURE CHEMISTRY*
  Greeley, J., Stephens, I. E., Bondarenko, A. S., Johansson, T. P., Hansen, H. A., Jaramillo, T. F., Rossmeisl, J., Chorkendorff, I., Norskov, J. K.
  2009; 1 (7): 552-556
- **Combined spectroscopy and microscopy of supported MoS2 nanoparticles** *SURFACE SCIENCE*
  Nielsen, J. H., Bech, L., Nielsen, K., Tison, Y., Jorgensen, K. P., Bonde, J. L., Horch, S., Jaramillo, T. F., Chorkendorff, I.
  2009; 603 (9): 1182-1189
- **Electrocatalytic Activity of Gold-Platinum Clusters for Low Temperature Fuel Cell Applications** *JOURNAL OF PHYSICAL CHEMISTRY C*
  Tang, W., Jayaraman, S., Jaramillo, T. F., Stucky, G. D., McFarland, E. W.
  2009; 113 (12): 5014-5024
- **Dynamics of Surface Exchange Reactions Between Au and Pt for HER and HOR** *JOURNAL OF THE ELECTROCHEMICAL SOCIETY*
  Abrams, B. L., Vesborg, P. C., Bonde, J. L., Jaramillo, T. F., Chorkendorff, I.
  2009; 156 (2): B273-B282
- **Photon absorbers and energy conversion catalysts: New approaches to solar fuels**
  Jaramillo, T., F.
  2009
- **Nanostructured MoS2 for the Photoelectrochemical Production of Hydrogen**
  Jaramillo, T., F.
  2009
- **Nanostructured MoS2 and WS2 for the solar production of hydrogen**
  Jaramillo, T., F.
  2009
- **Nanostructured MoS2 and WS2 for the solar production of hydrogen**
  Jaramillo, T., F.
  2009
- **Nanostructured MoS2 and WS2 for the solar production of hydrogen**
  Jaramillo, T., F.
  2009
- **Nano-scaled semiconductors and novel catalysts for the synthesis of fuels from sunlight**
  Jaramillo, T., F.

2009

- **Designing new electrocatalysts: A case study of the hydrogen evolution reaction (HER)**
  Jaramillo, T., F.
  2009
- **Electrocatalytic activity of gold-platinum clusters for low temperature fuel cell applications** *Journal of Physical Chemistry C*
  Tang, W., Jayaraman, S., Jaramillo, T., F., Stucky, G., D., McFarland, E., W.
  2009; 113 (12): 5014-5024
- **Combined spectroscopy and microscopy of supported MoS2 nanoparticles** *Surface Science*
  Nielsen, J., H., Jørgensen, K., P., Bonde, J., Nielsen, K., Bech, L., Tison, Y., Jaramillo, T. F.
  2009; 603 (9): 1182-1189
- **Alloys of platinum and early transition metals as oxygen reduction electrocatalysts** *Nature Chemistry*
  Greeley, J., Stephens, I., E.L., Bondarenko, A., S., Johansson, T., P., Hansen, H., A., Jaramillo, T., F.
  2009; 1 (7): 552-556
- **Designing new electrocatalysts for the hydrogen evolution reaction (HER): combining theory and experiment**
  Jaramillo, T., F., Jørgensen, K., P., Bonde, J., Greeley, J., Zhang, J., Ooi, B., L.
  2009
- **Solar Fuels by Photoelectrochemistry (PEC)**
  Jaramillo, T., F.
  2009
- **Nano-structured MoS2 and WS2 for the Solar Production of Hydrogen**
  Jaramillo, T., F.
  2009
- **Nano-scaled materials for the synthesis of fuels from sunlight**
  Jaramillo, T., F.
  2009
- **Designing nano-scaled, non-precious metal catalysts for hydrogen evolution**
  Jaramillo, T., F., Jørgensen, K., P., Bonde, J., Greeley, J., Zhang, J., Ooi, B., L.
  2009
- **Nano-scaled materials for the synthesis of fuels from sunlight**
  Jaramillo, T., F.
  2009
- **The Dynamics of Surface Exchange Reactions Between Au and Pt for the Hydrogen Evolution Reaction (HER) and the Hydrogen Oxidation Reaction (HOR)** *Journal of the Electrochemical Society*
  Abrams, B., L., Vesborg, P., C.K., Bonde, J., Jaramillo, T., F., Chorkendorff, I.
  2009; 156 (2): B273-B282
- **Hydrogen Evolution on Supported Incomplete Cubane-type [Mo3S4](4+) Electrocatalysts** *JOURNAL OF PHYSICAL CHEMISTRY C*
  Jaramillo, T. F., Bonde, J., Zhang, J., Ooi, B., Andersson, K., Ulstrup, J., Chorkendorff, I.
  2008; 112 (45): 17492-17498
- **Hydrogen evolution on nano-particulate transition metal sulfides** *Conference on Electrocatalysis Theory and Experiment at the Interface*
  Bonde, J., Moses, P. G., Jaramillo, T. F., Norskov, J. K., Chorkendorff, I.
  ROYAL SOC CHEMISTRY.2008: 219–231
- **Steady state oxygen reduction and cyclic voltammetry** *Conference on Electrocatalysis Theory and Experiment at the Interface*
  Rossmeisl, J., Karlberg, G. S., Jaramillo, T., Norskov, J. K.
  ROYAL SOC CHEMISTRY.2008: 337–346
- **Designing novel electrocatalytic materials: a case study of the hydrogen evolution reaction (HER).**
  Jaramillo, T., F., Jørgensen, K., P., Bonde, J., Nielsen, J., H., Chorkendorff, I., Horch, S.

2008

- **Designing electrocatalysts for the hydrogen evolution reaction.**
  Jaramillo, T., F.
  2008
- **Steady state oxygen reduction reaction and cyclic voltammetry**
  Rossmeisl, J., Karlberg, G., S., Jaramillo, T., F., Nørskov, J., K
  2008
- **Solar fuels by photoelectrochemistry: Prospects and challenges.**
  Jaramillo, T., F.
  2008
- **Precious-metal and non-precious metal based nano-scale electrocatalysts for electrocatalytic hydrogen evolution.**
  Jaramillo, T., F., Ulstrup, J., Nørskov, J., K., Chorkendorff, I.
  2008
- **New materials for electrocatalytic hydrogen production: from alloys to nanoparticles**
  Jaramillo, T., F., Jørgensen, K., P., Bonde, J., Horch, S., Nielsen, J., H., Chorkendorff, I.
  2008
- **Developing new hydrogen evolution electrocatalysts: metal surface alloys and nano-scale molybdenum sulfides.**
  Jaramillo, T., F., Jørgensen, K., P., Bonde, J., Nielsen, J., H., Horch, S., Nørskov, J., K.
  2008
- **Designing new electrocatalytic materials for the hydrogen evolution reaction (HER).**
  Jaramillo, T., F.
  2008
- **Electrocatalytic materials for the hydrogen evolution reaction.**
  Jaramillo, T., F.
  2008
- **Designing non-noble metal electrocatalysts: An investigation of the hydrogen evolution reaction.**
  Jaramillo, T., F.
  2008
- **Non-precious metal electrocatalysts for the hydrogen evolution reaction (HER): Inspiration for designing new PEC materials**
  Jaramillo, T., F.
  2008
- **In the pursuit of active, non-precious metal electrocatalysts: A study of the hydrogen evolution reaction (HER).**
  Jaramillo, T., F., Jørgensen, K., P., Bonde, J., Nielsen, J., H., Chorkendorff, I., Horch, S.
  2008
- **Cyclic voltammograms for H on Pt(111) and Pt(100) from first principles** *PHYSICAL REVIEW LETTERS*
  Karlberg, G. S., Jaramillo, T. F., Skulason, E., Rossmeisl, J., Bligaard, T., Norskov, J. K.
  2007; 99 (12)
- **Identification of active edge sites for electrochemical H-2 evolution from MoS2 nanocatalysts** *SCIENCE*
  Jaramillo, T. F., Jorgensen, K. P., Bonde, J., Nielsen, J. H., Horch, S., Chorkendorff, I.
  2007; 317 (5834): 100-102
- **From theory to experiment: New electrocatalysts for the hydrogen evolution reaction**
  Jaramillo, T., F., Jørgensen, K., P., Bonde, J., Greeley, J., Nielsen, J., H., Horch, S.
  2007
- **Nano-scale molybdenum sulfides for electrocatalytic hydrogen evolution**
  Jaramillo, T., F., Jørgensen, K., P., Bonde, J., Horch, S., Nielsen, J., H., Chorkendorff, I.

2007

- **From alloys to bio-mimetic materials: searching for new hydrogen evolution electrocatalysts**
  Jaramillo, T., F., Jørgensen, K., P., Bonde, J., Greeley, J., Saadi, S., Fernandez, E.
  2007
- **Identification of Active Edge Sites for Electrochemical H2 Evolution from MoS2 Nanocatalysts** *Science*
  Jaramillo, T., F., Jørgensen, K., P., Bonde, J., Nielsen, J., H., Horch, S., Chorkendorff, I.
  2007; 317 (5834): 100-102
- **Cyclic voltammograms for H on Pt(111) and Pt(100) from first principles** *Physical Review Letters*
  Karlberg, G., S., Jaramillo, T., F., Skúlason, E., Rossmeisl, J., Bligaard, T., Nørskov, J., K.
  2007; 99 (126101)
- **Computational high-throughput screening of electrocatalytic materials for hydrogen evolution** *NATURE MATERIALS*
  Greeley, J., Jaramillo, T. F., Bonde, J., Chorkendorff, I. B., Norskov, J. K.
  2006; 5 (11): 909-913
- **New electrode materials for hydrogen production: A focus on nanoparticulate molybdenum sulfides**
  Jaramillo, T., F., Jørgensen, K., P., Saadi, S., Bonde, J., Fernandez, E., Zhang, J.
  2006
- **Low-voltage electrodeposition of fullerol thin films from aqueous solutions** *JOURNAL OF THE ELECTROCHEMICAL SOCIETY*
  Kleiman-Shwarsctein, A., Jaramillo, T. F., Baeck, S., Sushchikh, M., McFarland, E. W.
  2006; 153 (7): C483-C487
- **New materials for hydrogen production: Nanoparticulate molybdenum sulfides**
  Jaramillo, T., F., Jørgensen, K., P., Saadi, S., Bonde, J., Fernandez, E., Zhang, J.
  2006
- **Electrocatalysis at nanometer and sub-nanometer scales: Hydrogen evolution on supported MoS2 and Mo3S4 clusters**
  Jaramillo, T., F., Jørgensen, K., P., Saadi, S., Bonde, J., Fernandez, E., Zhang, J.
  2006
- **Low-voltage electrodeposition of fullerol thin films from aqueous solutions** *Journal of the Electrochemical Society*
  Kleiman-Shwarsctein, A., Jaramillo, T., F., Baeck, S., H., Sushchikh, M., McFarland, E., W.
  2006; 153 (7): C483-C487
- **New materials for hydrogen evolution: From alloys to nanoparticles**
  Jaramillo, T., F., Jørgensen, K., P., Bonde, J., Greeley, J., Nielsen, J., H., Horch, S.
  2006
- **Nanoparticulate MoS2 electrocatalysts for hydrogen evolution**
  Jaramillo, T., F., Jørgensen, K., P., Bonde, J., Horch, S., Nielsen, J., H., Chorkendorff, I.
  2006
- **Biocatalysis and biomimetics for electrochemical hydrogen conversion. Electrocatalysis at the sub-nanometer scale: structure and function of supported Mo3S4 clusters**
  Jaramillo, T., F., Saadi, S., Bonde, J., Zhang, J., Kristensen, J., Ooi, B., L.
  2006
- **Computational high-throughput screening of electrocatalytic materials for hydrogen evolution** *Nature Materials*
  Greeley, J., Jaramillo, T., F., Bonde, J., Chorkendorff, I., Nørskov, J., K.
  2006; 5 (11): 909-913
- **Synthesis and characterization of Pt-WO3 as methanol oxidation catalysts for fuel cells** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Jayaraman, S., Jaramillo, T. F., Baeck, S. H., McFarland, E. W.
  2005; 109 (48): 22958-22966
- **Combinatorial electrochemical synthesis and screening of Pt-WO3 catalysts for electro-oxidation of methanol** *REVIEW OF SCIENTIFIC INSTRUMENTS*
  Jayaraman, S., Baeck, S. H., Jaramillo, T. F., Kleiman-Shwarsctein, A., McFarland, E. W.

2005; 76 (6)

- **Synthesis of Au nanoclusters supported upon a TiO2 nanotube array** *JOURNAL OF MATERIALS RESEARCH*
  Liu, X., Jaramillo, T. F., Kolmakov, A., Baeck, S. H., Moskovits, M., Stucky, G. D., McFarland, E. W.
  2005; 20 (5): 1093-1096

- **Automated electrochemical synthesis and photoelectrochemical characterization of Zn1-xCoxO thin films for solar hydrogen production** *JOURNAL OF COMBINATORIAL CHEMISTRY*
  Jaramillo, T. F., Baeck, S. H., Kleiman-Shwarsctein, A., Choi, K. S., Stucky, G. D., McFarland, E. W.
  2005; 7 (2): 264-271

- **Combinatorial electrochemical synthesis and screening of Pt-WO3 catalysts for electro-oxidation of methanol** *Review of Scientific Instruments*
  Jayaraman, S., Baeck, S., H., Jaramillo, T., F., Kleiman-Shwarsctein, A., McFarland, E., W.
  2005; 76 (6)

- **Automated electrochemical synthesis and characterization of TiO2 supported Au nanoparticle electrocatalysts** *MEASUREMENT SCIENCE & TECHNOLOGY*
  Baeck, S. H., Jaramillo, T. F., Kleiman-Shwarsctein, A., McFarland, E. W.
  2005; 16 (1): 54-59

- **High-throughput methods for the investigation of photoelectrochemical hydrogen production from Zn1-xCoxO thin films**
  Jaramillo, T., F., Baeck, S., H., Kleiman-Shwarsctein, A., McFarland, E., W.
  2005

- **Mixed-metal nanoparticles for fuel cell catalysis**
  Jaramillo, T., F., Jayaraman, S., McFarland, E., W.
  2005

- **Combinatorial Discovery: New Materials for Photoelectrochemical Hydrogen Production**
  Jaramillo, T., F., Baeck, S., H., Kleiman-Shwarsctein, A., McFarland, E., W.
  2005

- **Synthesis and characterization of Pt-WO3 films as methanol oxidation catalysts for low-temperature polymer electrolyte membrane fuel cells** *Journal of Physical Chemistry B*
  Jayaraman, S., Jaramillo, T., F., Baeck, S., H., McFarland, E., W.
  2005; 109 (48): 22958-22966

- **Optimized Materials for Photoelectrochemical Hydrogen Production**
  Jaramillo, T., F.
  2005

- **New materials for energy conversion reactions: photoelectrochemical hydrogen production and electrocatalytic methanol oxidation**
  Jaramillo, T., F., Jayaraman, S., Baeck, S.-H, Kleiman-Shwarsctein, A., McFarland, E., W.
  2005

- **Automated electrochemical synthesis and photoelectrochemical characterization of Zn1-xCoxO thin films for solar hydrogen production** *Journal of Combinatorial Chemistry*
  Jaramillo, T., F., Baeck, S., H., Kleiman-Shwarsctein, A., Choi, K., S., Stucky, G., D., McFarland, E., W.
  2005; 7 (2): 264-271

- **Automated electrochemical synthesis and characterization of TiO2 supported Au nanoparticle electrocatalysts** *Measurement Science & Technology*
  Baeck, S., H., Jaramillo, T., F., Kleiman-Shwarsctein, A., McFarland, E., W.
  2005; 16 (1): 54-59

- **Photoelectrochemical hydrogen production: a combinatorial investigation of ZnO-based materials**
  Jaramillo, T., F., Baeck, S.-H, Kleiman-Shwarsctein, A., McFarland, E., W.
  2005

- **New materials for photoelectrochemical hydrogen production: A high-throughput investigation**
  Jaramillo, T., F., Baeck, S.-H, Kleiman-Shwarsctein, A., McFarland, E., W.
  2005

- **High throughput investigation of new materials for the photoelectrochemical production of hydrogen**
  Jaramillo, T., F., Baeck, S., H., Kleiman-Shwarsctein, A., McFarland, E., W.
  2005
- **Doped semiconductors and mixed-metal nanoparticles: New materials for energy conversion reactions**
  Jaramillo, T., F., Jayaraman, S., Baeck, S., H., Kleiman-Shwarsctein, A., McFarland, E., W.
  2005
- **Synthesis of titania nanotubes with supported Au nanoclusters** *Journal of Materials Research*
  Liu, X., Jaramillo, T., F., Kolmokov, A., Baeck, S., H., Moskovits, M., Stucky, G.
  2005; 20 (5): 1093-1096
- **Gas-phase catalysis by micelle derived Au nanoparticles on oxide supports** *CATALYSIS LETTERS*
  Chou, J., Franklin, N. R., Baeck, S. H., Jaramillo, T. F., McFarland, E. W.
  2004; 95 (3-4): 107-111
- **Parallel synthesis and characterization of photoelectrochemically and electrochromically active tungsten-molybdenum oxides** *CHEMICAL COMMUNICATIONS*
  Baeck, S. H., Jaramillo, T. F., Jeong, D. H., McFarland, E. W.
  2004: 390-391
- **Combinatorial electrochemical synthesis and screening of mesoporous ZnO for photocatalysis** *Workshop on Combinatorial and High-Throughput Approaches in Polymer and Materials Science*
  Jaramillo, T. F., Baeck, S. H., Kleiman-Shwarsctein, A., McFarland, E. W.
  WILEY-V C H VERLAG GMBH.2004: 297–301
- **Combinatorial electrochemical synthesis and screening of mesoporous ZnO for photocatalysis** *Macromolecular Rapid Communications*
  Jaramillo, T., F., Baeck, S., H., Kleiman-Shwarsctein, A., McFarland, E., W.
  2004; 25 (1): 297-301
- **Structure, composition, and morphology of photoelectrochemically active TiO2-xNx thin films deposited by reactive DC magnetron sputtering** *Journal of Physical Chemistry B*
  Mwabora, J., M., Lindgren, T., Avendaño, E., Jaramillo, T, .F., Lu, J., Lindquist, S., E.
  2004; 108 (52): 20193-20198
- **Parallel synthesis and characterization of photoelectrochemically and electrochromically active tungsten molybdenum oxides** *Chemical Communications*
  Baeck, S., H., Jaramillo, T., F., Jeong, D., H., McFarland, E., W.
  2004; 4: 390-391
- **Size- and support-dependent electronic and catalytic properties of Au-0/Au3+ nanoparticles synthesized from block copolymer micelles** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Cuenya, B. R., Baeck, S. H., Jaramillo, T. F., McFarland, E. W.
  2003; 125 (42): 12928-12934
- **Synthesis of tungsten oxide on copper surfaces by electroless deposition** *CHEMISTRY OF MATERIALS*
  Baeck, S. H., Jaramillo, T. F., Stucky, G. D., McFarland, E. W.
  2003; 15 (18): 3411-3413
- **Enhancement of photocatalytic and electrochromic properties of electrochemically fabricated mesoporous WO3 thin films** *ADVANCED MATERIALS*
  Baeck, S. H., Choi, K. S., Jaramillo, T. F., Stucky, G. D., McFarland, E. W.
  2003; 15 (15): 1269-?
- **Catalytic activity of supported au nanoparticles deposited from block copolymer micelles** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Jaramillo, T. F., Baeck, S. H., Cuenya, B. R., McFarland, E. W.
  2003; 125 (24): 7148-7149
- **A CU2O/TiO2 heterojunction thin film cathode for photoelectrocatalysis** *SOLAR ENERGY MATERIALS AND SOLAR CELLS*
  Siripala, W., Ivanovskaya, A., Jaramillo, T. F., Baeck, S. H., McFarland, E. W.
  2003; 77 (3): 229-237

- **Enhancement of photocatalytic and electrochromic properties of electrochemically fabricated mesoporous WO3 thin films** *Advanced Materials*
  Baeck, S., H., Choi, K., S., Jaramillo, T., F., Stucky, G., D., McFarland, E., W.
  2003; 15 (15): 1269-1273
- **Photoelectrochemical Hydrogen Production Using New Combinatorial Chemistry Derived Materials**
  Jaramillo, T., F., Baeck, S.-H, Kleiman-Shwarsctein, A., McFarland, E., W.
  2003
- **Combinatorial Investigation of New Materials for Photoelectrochemical Hydrogen Production**
  Jaramillo, T., F., Baeck, S., H., Kleiman-Shwarsctein, A., Choi, K.-S, Stucky, G., D., McFarland, E., W.
  2003
- **Catalytic activity of supported Au nanoparticles deposited from block copolymer micelles** *Journal of the American Chemical Society*
  Jaramillo, T., F., Baeck, S., H., Roldan-Cuenya, B., McFarland, E., W.
  2003; 125 (24): 7148-7149
- **A Cu2O/TiO2 heterojunction thin film cathode for photoelectrocatalysis** *Solar Energy Materials and Solar Cells*
  Siripala, W., Ivanovskaya, A., Jaramillo, T., F., Baeck, S., H., McFarland, E., W.
  2003; 77 (3): 229-237
- **Size and support dependent electronic and catalytic properties of Au0/Au3+ nanoparticles synthesized from block co-polymer micelles** *Journal of the American Chemical Society*
  Roldan-Cuenya, B., Baeck, S., H., Jaramillo, T., F., McFarland, E., W.
  2003; 125 (42): 12928-12934
- **Combinatorial Electrochemical Synthesis and Screening of Transition-Metal Doped Zinc Oxides as Water-Splitting Photocatalysts for H2 Production**
  Jaramillo, T., F., Choi, K.-S, Baeck, S., H., McFarland, E., W.
  2003
- **Synthesis of tungsten oxide on copper surfaces by electroless deposition** *Chemistry of Materials*
  Baeck, S., H., Jaramillo, T., F., Stucky, G., D., McFarland, E., W.
  2003; 15 (18): 3411-3413
- **Combinatorial electrochemical synthesis and characterization of tungsten-based mixed-metal oxides** *JOURNAL OF COMBINATORIAL CHEMISTRY*
  Baeck, S. H., Jaramillo, T. F., Brandli, C., McFarland, E. W.
  2002; 4 (6): 563-568
- **Controlled electrodeposition of nanoparticulate tungsten oxide** *NANO LETTERS*
  Baeck, S. H., Jaramillo, T., Stucky, G. D., McFarland, E. W.
  2002; 2 (8): 831-834
- **Influence of composition and morphology on photo and electrocatalytic activity of electrodeposited Pt/WO3**
  Baeck, S., H, Jaramillo, T., F., McFarland, E., W.
  2002
- **High-throughput screening system for catalytic hydrogen-producing materials** *JOURNAL OF COMBINATORIAL CHEMISTRY*
  Jaramillo, T. F., Ivanovskaya, A., McFarland, E. W.
  2002; 4 (1): 17-22
- **Controlled electrodeposition of nanoparticulate tungsten oxide** *Nano Letters*
  Baeck, S., H., Jaramillo, T., F., Stucky, G., D., McFarland, E.
  2002; 2 (8): 831-834
- **Combinatorial electrochemical synthesis and characterization of tungsten-based mixed metal oxides** *Journal of Combinatorial Chemistry*
  Baeck, S., H., Jaramillo, T., F., Brändli, C., McFarland, E.
  2002; 4 (6): 563-568
- **High-throughput screening system for catalytic hydrogen-producing materials** *Journal of Combinatorial Chemistry*
  Jaramillo, T., F., Ivanovskaya, A., McFarland, E., W.
  2002; 4 (1): 17-22

- **Automated synthesis and characterization of diverse libraries of macroporous alumina** *ELECTROCHIMICA ACTA*
  Brandli, C., Jaramillo, T. F., Ivanovskaya, A., McFarland, E. W.
  2001; 47 (4): 553-557
- **Automated synthesis and characterization of diverse libraries of macroporous alumina** *Electrochimica Acta*
  Brandli, C., Jaramillo, T., F., Ivanovskaya, A., McFarland, E., W.
  2001; 47 (4): 553-557
- **The Investigation of Photoelectrochemical Hydrogen Production Using Combinatorial Chemistry**
  Jaramillo, T., F., Ivanovskaya, A., Brändli, C., McFarland, E., W.
  2000