



## Xiaolin Zheng

Professor of Mechanical Engineering, Senior Fellow at the Precourt Institute for Energy and Professor, by courtesy, of Materials Science and Engineering

 Curriculum Vitae available Online

### CONTACT INFORMATION

#### • Administrative Contact

Mary Hanrahan - Thermosciences Group Administrator

**Email** Mary.Hanrahan@Stanford.edu

**Tel** (650) 725-2012

### Bio

---

#### BIO

Professor Zheng received her Ph.D. in Mechanical & Aerospace Engineering from Princeton University (2006), B.S. in Thermal Engineering from Tsinghua University (2000). Prior to joining Stanford in 2007, Professor Zheng did her postdoctoral work in the Department of Chemistry and Chemical Biology at Harvard University.

Professor Zheng is a member of MRS, ACS and combustion institute. Professor Zheng received the TR35 Award from the MIT Technology Review (2013), one of the 100 Leading Global Thinkers by the Foreign Policy Magazine (2013), 3M Nontenured Faculty Grant Award (2013), the Presidential Early Career Award (PECASE) from the white house (2009), Young Investigator Awards from the ONR (2008), DARPA (2008), Terman Fellowship from Stanford (2007), and Bernard Lewis Fellowship from the Combustion Institute (2004).

#### ACADEMIC APPOINTMENTS

- Professor, Mechanical Engineering
- Senior Fellow, Precourt Institute for Energy
- Professor (By courtesy), Materials Science and Engineering
- Member, Bio-X
- Affiliate, Precourt Institute for Energy
- Member, Wu Tsai Neurosciences Institute

#### ADMINISTRATIVE APPOINTMENTS

- Professor, Mechanical Engineering, (2020- present)
- Associate Professor, Mechanical Engineering, (2014-2020)
- Assistant Professor, Mechanical Engineering, (2007-2014)

#### HONORS AND AWARDS

- Presidential Early Career Award for Scientists and Engineers, Presidential Early Career Awards (2009)
- Young Investigator Program, ONR (2008)
- Young Faculty Award, DARPA (2008)

- Terman Faculty Award, Stanford University (2007)
- Bernard Lewis Fellowship, The Combustion Institute (2004)
- Amelia Earhart Fellowship, Zonta International Foundation (2003)
- One of the Pioneers on the TR35 Global list, MIT Technology Review (2013)
- 3M Nontenured Faculty Grant Award, 3M (2013)

## PROFESSIONAL EDUCATION

- BS, Tsinghua University , Thermal Engineering (2000)
- PhD, Princeton , Mechanical and Aerospace Engineering (2006)

## LINKS

- Research group website: <https://web.stanford.edu/group/zheng/>

## Teaching

---

### COURSES

#### 2021-22

- Energy Systems I: Thermodynamics: ME 370A (Aut)
- Engineering Thermodynamics: ME 30 (Win)
- Hydrogen Economy: ENERGY 205 (Win)

#### 2020-21

- Energy Systems I: Thermodynamics: ME 370A (Aut)
- Hydrogen Economy: ENERGY 205 (Win)

#### 2019-20

- Energy Systems I: Thermodynamics: ME 370A (Aut)
- Engineering Thermodynamics: ME 30 (Aut)
- Hydrogen Economy: ENERGY 205 (Win)
- Nanomaterials Synthesis and Applications for Mechanical Engineers: ME 373 (Win)

#### 2018-19

- Energy Systems I: Thermodynamics: ME 370A (Aut)
- Engineering Thermodynamics: ME 30 (Spr)
- Nanomaterials Synthesis and Applications for Mechanical Engineers: ME 373 (Win)

## STANFORD ADVISEES

### Doctoral Dissertation Reader (AC)

Jacob Alvarez, Lauren Vallez

### Postdoctoral Faculty Sponsor

Yue Jiang, Juyoung Leem

### Doctoral Dissertation Advisor (AC)

Jihyun Baek, Dongjae Kong, Rui Ning, Lauren Vallez

### Master's Program Advisor

Natalie Ciaccia, Andy Huynh, Mabel Jiang, Kunlin Ma, Sam Rodriguez

#### Doctoral (Program)

Jillian Anderson, Jessica Sniatowsky

#### Postdoctoral Research Mentor

Sangwook Park

## Publications

---

### PUBLICATIONS

- **Effect of Fluoroalkylsilane Surface Functionalization on Boron Combustion.** *ACS applied materials & interfaces*  
Baek, J., Jiang, Y., Demko, A. R., Jimenez-Thomas, A. R., Vallez, L., Ka, D., Xia, Y., Zheng, X.  
2022
- **Local Structure of Sulfur Vacancies on the Basal Plane of Monolayer MoS<sub>2</sub>.** *ACS nano*  
Garcia-Esparza, A. T., Park, S., Abroshan, H., Paredes Mellone, O. A., Vinson, J., Abraham, B., Kim, T. R., Nordlund, D., Gallo, A., Alonso-Mori, R., Zheng, X., Sokaras, D.  
2022
- **Ultrahigh-Quality Infrared Polaritonic Resonators Based on Bottom-Up-Synthesized van der Waals Nanoribbons.** *ACS nano*  
Yu, S., Jiang, Y., Roberts, J. A., Huber, M. A., Yao, H., Shi, X., Bechtel, H. A., Gilbert Corder, S. N., Heinz, T. F., Zheng, X., Fan, J. A.  
1800
- **Enhancing Electrochemical Water Oxidation toward H<sub>2</sub>O<sub>2</sub> via Carbonaceous Electrolyte Engineering** *ACS APPLIED ENERGY MATERIALS*  
Gill, T., Vallez, L., Zheng, X.  
2021; 4 (11): 12429-12435
- **Probing boron thermite energy release at rapid heating rates** *COMBUSTION AND FLAME*  
Gottfried, J. L., Wainwright, E. R., Huang, S., Jiang, Y., Zheng, X.  
2021; 231
- **The Role of Bicarbonate-Based Electrolytes in H<sub>2</sub>O<sub>2</sub> Production through Two-Electron Water Oxidation** *ACS ENERGY LETTERS*  
Gill, T., Vallez, L., Zheng, X.  
2021; 6 (8): 2854-2862
- **High thermoelectric figure of merit of porous Si nanowires from 300 to 700K.** *Nature communications*  
Yang, L., Huh, D., Ning, R., Rapp, V., Zeng, Y., Liu, Y., Ju, S., Tao, Y., Jiang, Y., Beak, J., Leem, J., Kaur, S., Lee, et al  
2021; 12 (1): 3926
- **Enhancing Mechanical and Combustion Performance of Boron/Polymer Composites via Boron Particle Functionalization.** *ACS applied materials & interfaces*  
Jiang, Y., Dincer Yilmaz, N. E., Barker, K. P., Baek, J., Xia, Y., Zheng, X.  
2021
- **Operando Study of Thermal Oxidation of Monolayer MoS<sub>2</sub>.** *Advanced science (Weinheim, Baden-Wurtemberg, Germany)*  
Park, S., Garcia-Esparza, A. T., Abroshan, H., Abraham, B., Vinson, J., Gallo, A., Nordlund, D., Park, J., Kim, T. R., Vallez, L., Alonso-Mori, R., Sokaras, D., Zheng, et al  
2021; 8 (9): 2002768
- **Operando Study of Thermal Oxidation of Monolayer MoS<sub>2</sub>** *ADVANCED SCIENCE*  
Park, S., Garcia-Esparza, A. T., Abroshan, H., Abraham, B., Vinson, J., Gallo, A., Nordlund, D., Park, J., Kim, T., Vallez, L., Alonso-Mori, R., Sokaras, D., Zheng, et al  
2021
- **Electrochemical Synthesis of H<sub>2</sub>O<sub>2</sub> by Two-Electron Water Oxidation Reaction** *CHEM*  
Shi, X., Back, S., Gill, T., Siahrostami, S., Zheng, X.  
2021; 7 (1): 38-63

- **Ultrahigh Doping of Graphene Using Flame-Deposited MoO<sub>3</sub>** *IEEE ELECTRON DEVICE LETTERS*  
Vaziri, S., Chen, V., Cai, L., Jiang, Y., Chen, M. E., Grady, R. W., Zheng, X., Pop, E.  
2020; 41 (10): 1592–95
- **Enhancing combustion performance of nano-Al/PVDF composites with beta-PVDF** *COMBUSTION AND FLAME*  
Huang, S., Hong, S., Su, Y., Jiang, Y., Fukushima, S., Gill, T., Yilmaz, N., Tiwari, S., Nomura, K., Kalia, R. K., Nakano, A., Shimojo, F., Vashishta, et al  
2020; 219: 467–77
- **Comparing Methods for Quantifying Electrochemically Accumulated H<sub>2</sub>O<sub>2</sub>** *CHEMISTRY OF MATERIALS*  
Gill, T., Zheng, X.  
2020; 32 (15): 6285–94
- **Effect of Adventitious Carbon on Pit Formation of Monolayer MoS<sub>2</sub>**. *Advanced materials (Deerfield Beach, Fla.)*  
Park, S., Siahrostami, S., Park, J., Mostaghimi, A. H., Kim, T. R., Vallez, L., Gill, T. M., Park, W., Goodson, K. E., Sinclair, R., Zheng, X.  
2020: e2003020
- **On-demand production of hydrogen by reacting porous silicon nanowires with water** *NANO RESEARCH*  
Ning, R., Jiang, Y., Zeng, Y., Gong, H., Zhao, J., Weisse, J., Shi, X., Gill, T. M., Zheng, X.  
2020
- **Synergistically Chemical and Thermal Coupling between Graphene Oxide and Graphene Fluoride for Enhancing Aluminum Combustion.** *ACS applied materials & interfaces*  
Jiang, Y. n., Deng, S. n., Hong, S. n., Tiwari, S. n., Chen, H. n., Nomura, K. I., Kalia, R. K., Nakano, A. n., Vashishta, P. n., Zachariah, M. R., Zheng, X. n.  
2020
- **Experimental effective metal oxides to enhance boron combustion** *COMBUSTION AND FLAME*  
Huang, S., Deng, S., Jiang, Y., Zheng, X.  
2019; 205: 278–85
- **Modified Micro-Emulsion Synthesis of Highly Dispersed Al/PVDF Composites with Enhanced Combustion Properties** *ADVANCED ENGINEERING MATERIALS*  
Huang, S., Pan, M., Deng, S., Jiang, Y., Zhao, J., Levy-Wendt, B., Tang, S. Y., Zheng, X.  
2019; 21 (5)
- **ZnO As an Active and Selective Catalyst for Electrochemical Water Oxidation to Hydrogen Peroxide** *ACS CATALYSIS*  
Kelly, S. R., Shi, X., Back, S., Vallez, L., Park, S., Siahrostami, S., Zheng, X., Nørskov, J. K.  
2019; 9 (5): 4593–99
- **Enhancing Electrocatalytic Water Splitting by Strain Engineering** *ADVANCED MATERIALS*  
You, B., Tang, M. T., Tsai, C., Abild-Pedersen, F., Zheng, X., Li, H.  
2019; 31 (17)
- **A Zn: BiVO<sub>4</sub>/ Mo: BiVO<sub>4</sub> homojunction as an efficient photoanode for photoelectrochemical water splitting** *JOURNAL OF MATERIALS CHEMISTRY A*  
Lee, J., Baek, J., Gill, T., Shi, X., Lee, S., Cho, I., Jung, H., Zheng, X.  
2019; 7 (15): 9019–24
- **Boosting the solar water oxidation performance of a BiVO<sub>4</sub> photoanode by crystallographic orientation control (vol 11, pg 1299, 2018)** *ENERGY & ENVIRONMENTAL SCIENCE*  
Han, H., Shin, S., Kim, D., Park, I., Kim, J., Huang, P., Lee, J., Cho, I., Zheng, X.  
2019; 12 (4): 1427
- **Rapid Flame-Annealed CuFe<sub>2</sub>O<sub>4</sub> as Efficient Photocathode for Photoelectrochemical Hydrogen Production** *ACS SUSTAINABLE CHEMISTRY & ENGINEERING*  
Park, S., Baek, J., Zhang, L., Lee, J., Stone, K. H., Cho, I., Guo, J., Jung, H., Zheng, X.  
2019; 7 (6): 5867–74
- **Epitaxial growth of WO<sub>3</sub> nanoneedles achieved using a facile flame surface treatment process engineering of hole transport and water oxidation reactivity (vol 6, pg 19542, 2018)** *JOURNAL OF MATERIALS CHEMISTRY A*  
Shi, X., Cai, L., Choi, I., Ma, M., Zhang, K., Zhao, J., Kim, J., Kim, J., Zheng, X., Park, J.  
2019; 7 (10): 5832

- **Selective and Efficient Gd-Doped BiVO<sub>4</sub> Photoanode for Two-Electron Water Oxidation to H<sub>2</sub>O<sub>2</sub>** *ACS ENERGY LETTERS*  
Baek, J., Gill, T., Abroshan, H., Park, S., Shi, X., Norskov, J., Jung, H., Siahrostami, S., Zheng, X.  
2019; 4 (3): 720–28
- **Enhancing Electrocatalytic Water Splitting by Strain Engineering.** *Advanced materials (Deerfield Beach, Fla.)*  
You, B., Tang, M. T., Tsai, C., Abild-Pedersen, F., Zheng, X., Li, H.  
2019: e1807001
- **CaSnO<sub>3</sub>: An Electrocatalyst for Two-Electron Water Oxidation Reaction to Form H<sub>2</sub>O<sub>2</sub>** *ACS ENERGY LETTERS*  
Park, S., Abroshan, H., Shi, X., Jung, H., Siahrostami, S., Zheng, X.  
2019; 4 (1): 352–57
- **Enhancing Catalytic Activity of MoS<sub>2</sub> Basal Plane S-Vacancy by Co Cluster Addition** *ACS ENERGY LETTERS*  
Park, S., Park, J., Abroshan, H., Zhang, L., Kim, J., Zhang, J., Guo, J., Siahrostami, S., Zheng, X.  
2018; 3 (11): 2685–93
- **Epitaxial growth of WO<sub>3</sub> nanoneedles achieved using a facile flame surface treatment process engineering of hole transport and water oxidation reactivity** *JOURNAL OF MATERIALS CHEMISTRY A*  
Shi, X., Cai, L., Choi, I., Ma, M., Zhang, K., Zhao, J., Kim, J., Kim, J., Zheng, X., Park, J.  
2018; 6 (40): 19542–46
- **Resolving Hysteresis in Perovskite Solar Cells with Rapid Flame-Processed Cobalt-Doped TiO<sub>2</sub>** *ADVANCED ENERGY MATERIALS*  
Kim, J., Chai, S., Ji, Y., Levy-Wendt, B., Kim, S., Yi, Y., Heinz, T. F., Norskov, J. K., Park, J., Zheng, X.  
2018; 8 (29)
- **Tuning the morphological, ignition and combustion properties of micron-Al/CuO thermites through different synthesis approaches** *COMBUSTION AND FLAME*  
Deng, S., Jiang, Y., Huang, S., Shi, X., Zhao, J., Zheng, X.  
2018; 195: 303–10
- **Activating basal plane of MoS<sub>2</sub> for hydrogen evolution reaction through sulfur vacancy, doping and strain**  
Zheng, X.  
AMER CHEMICAL SOC.2018
- **Light-Driven BiVO<sub>4</sub>-C Fuel Cell with Simultaneous Production of H<sub>2</sub>O<sub>2</sub>** *ADVANCED ENERGY MATERIALS*  
Shi, X., Zhang, Y., Siahrostami, S., Zheng, X.  
2018; 8 (23)
- **Rapid flame doping of Co to WS<sub>2</sub> for efficient hydrogen evolution** *ENERGY & ENVIRONMENTAL SCIENCE*  
Shi, X., Fields, M., Park, J., McEnaney, J. M., Yan, H., Zhang, Y., Tsai, C., Jaramillo, T. F., Sinclair, R., Norskov, J. K., Zheng, X.  
2018; 11 (8): 2270–77
- **Wafer-recyclable, environment-friendly transfer printing for large-scale thin-film nanoelectronics** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Wie, D., Zhang, Y., Kim, M., Kim, B., Park, S., Kim, Y., Irazoqui, P. P., Zheng, X., Xu, B., Lee, C.  
2018; 115 (31): E7236–E7244
- **Flame-Engraved Nickel-Iron Layered Double Hydroxide Nanosheets for Boosting Oxygen Evolution Reactivity** *SMALL METHODS*  
Zhou, D., Xiong, X., Cai, Z., Han, N., Jia, Y., Xie, Q., Duan, X., Xie, T., Zheng, X., Sun, X., Duan, X.  
2018; 2 (7)
- **Enabling silicon photoanodes for efficient solar water splitting by electroless-deposited nickel** *NANO RESEARCH*  
Zhao, J., Gill, T., Zheng, X.  
2018; 11 (6): 3499–3508
- **Boosting the solar water oxidation performance of a BiVO<sub>4</sub> photoanode by crystallographic orientation control** *ENERGY & ENVIRONMENTAL SCIENCE*  
Han, H., Shin, S., Kim, D., Park, I., Kim, J., Huang, P., Lee, J., Cho, I., Zheng, X.  
2018; 11 (5): 1299–1306
- **Rapid Formation of a Disordered Layer on Monoclinic BiVO<sub>4</sub>: Co-Catalyst-Free Photoelectrochemical Solar Water Splitting** *CHEMSUSCHEM*

- 
- Kim, J., Cho, Y., Jeong, M., Levy-Wendt, B., Shin, D., Yi, Y., Wang, D., Zheng, X., Park, J.  
2018; 11 (5): 933–40
- **Thermoplasmonic Ignition of Metal Nanoparticles** *NANO LETTERS*  
Mutlu, M., Kang, J., Raza, S., Schoen, D., Zheng, X., Kik, P. G., Brongersma, M. L.  
2018; 18 (3): 1699–1706
  - **Enhancing Mo:BiVO<sub>4</sub> Solar Water Splitting with Patterned Au Nanospheres by Plasmon-Induced Energy Transfer** *ADVANCED ENERGY MATERIALS*  
Kim, J., Shi, X., Jeong, M., Park, J., Han, H., Kim, S., Guo, Y., Heinz, T. F., Fan, S., Lee, C., Park, J., Zheng, X.  
2018; 8 (5)
  - **Conformal Electroless Nickel Plating on Silicon Wafers, Convex & Concave Pyramids, and Ultralong Nanowires.** *ACS applied materials & interfaces*  
Gill, T. n., Zhao, J. n., Berenschot, E. J., Tas, N. n., Zheng, X. n.  
2018
  - **Energetic Performance of Optically Activated Aluminum/Graphene Oxide Composites.** *ACS nano*  
Jiang, Y. n., Deng, S. n., Hong, S. n., Zhao, J. n., Huang, S. n., Wu, C. C., Gottfried, J. L., Nomura, K. I., Li, Y. n., Tiwari, S. n., Kalia, R. K., Vashishta, P. n., Nakano, et al  
2018
  - **Sub-Thermionic Steep Switching in Hole-Doped WSe<sub>2</sub> Transistors**  
McClellan, C. J., Yalon, E., Cai, L., Suryavanshi, S., Zheng, X., Pop, E., IEEE  
IEEE.2018
  - **Ultrafast Flame Annealing of TiO<sub>2</sub> Paste for Fabricating Dye-Sensitized and Perovskite Solar Cells with Enhanced Efficiency** *SMALL*  
Kim, J., Chai, S., Cho, Y., Cai, L., Kim, S., Park, S., Park, J., Zheng, X.  
2017; 13 (42)
  - **Ultrafast Flame Annealing of TiO<sub>2</sub> Paste for Fabricating Dye-Sensitized and Perovskite Solar Cells with Enhanced Efficiency.** *Small (Weinheim an der Bergstrasse, Germany)*  
Kim, J. K., Chai, S. U., Cho, Y., Cai, L., Kim, S. J., Park, S., Park, J. H., Zheng, X.  
2017; 13 (42)
  - **Understanding activity trends in electrochemical water oxidation to form hydrogen peroxide** *NATURE COMMUNICATIONS*  
Shi, X., Siahrostami, S., Li, G., Zhang, Y., Chakhranont, P., Studt, F., Jaramillo, T. F., Zheng, X., Norskov, J. K.  
2017; 8: 701
  - **Electroless Deposition and Ignition Properties of Si/Fe<sub>2</sub>O<sub>3</sub> Core/Shell Nanothermites.** *ACS omega*  
Huang, S., Deng, S., Jiang, Y., Zhao, J., Zheng, X.  
2017; 2 (7): 3596-3600
  - **Three-Dimensional Hetero-Integration of Faceted GaN on Si Pillars for Efficient Light Energy Conversion Devices.** *ACS nano*  
Kim, D. R., Lee, C. H., Cho, I. S., Jang, H., Jeon, M. S., Zheng, X.  
2017
  - **Methanol Photo-Oxidation on Rutile TiO<sub>2</sub> Nanowires: Probing Reaction Pathways on Complex Materials** *JOURNAL OF PHYSICAL CHEMISTRY C*  
Crampton, A. S., Cai, L., Janvelyan, N., Zheng, X., Friend, C. M.  
2017; 121 (18): 9910-9919
  - **Electrochemical generation of sulfur vacancies in the basal plane of MoS<sub>2</sub> for hydrogen evolution** *NATURE COMMUNICATIONS*  
Tsai, C., Li, H., Park, S., Park, J., Han, H. S., Norskov, J. K., Zheng, X., Abild-Pedersen, F.  
2017; 8
  - **Enhancing ignition and combustion of micron-sized aluminum by adding porous silicon** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*  
Parimi, V. S., Huang, S., Zheng, X.  
2017; 36 (2): 2317-2324
  - **Facile Thermal and Optical Ignition of Silicon Nanoparticles and Micron Particles.** *Nano letters*  
Huang, S. n., Parimi, V. S., Deng, S. n., Lingamneni, S. n., Zheng, X. n.  
2017; 17 (10): 5925–30
-

- **Tuning properties of MoS<sub>2</sub> by mechanical strain**  
Li, H., Park, S., Zheng, X., IEEE  
IEEE.2017
- **Sulfur-Modulated Tin Sites Enable Highly Selective Electrochemical Reduction of CO<sub>2</sub> to Formate** *Joule*  
Zheng, X., De luna, P., de Arquer, F., Zhang, B., Becknell, N., Cui, Y., Du, X., Yang, P., Sargent, E.  
2017
- **Molybdenum disulfide catalyzed tungsten oxide for on-chip acetone sensing** *APPLIED PHYSICS LETTERS*  
Li, H., Ahn, S. H., Park, S., Cai, L., Zhao, J., He, J., Zhou, M., Park, J., Zheng, X.  
2016; 109 (13)
- **One-Step Hydrothermal Deposition of Ni:FeOOH onto Photoanodes for Enhanced Water Oxidation** *ACS ENERGY LETTERS*  
Cai, L., Zhao, J., Li, H., Park, J., Cho, I. S., Han, H. S., Zheng, X.  
2016; 1 (3): 624-632
- **High-Performance Ultrathin BiVO<sub>4</sub> Photoanode on Textured Polydimethylsiloxane Substrates for Solar Water Splitting** *ACS ENERGY LETTERS*  
Zhao, J., Guo, Y., Cai, L., Li, H., Wang, K. X., Cho, I. S., Lee, C. H., Fan, S., Zheng, X.  
2016; 1 (1): 68-75
- **Kinetic Study of Hydrogen Evolution Reaction over Strained MoS<sub>2</sub> with Sulfur Vacancies Using Scanning Electrochemical Microscopy** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*  
Li, H., Du, M., Mleczko, M. J., Koh, A. L., Nishi, Y., Pop, E., Bard, A. J., Zheng, X.  
2016; 138 (15): 5123-5129
- **Quasi-ballistic Electronic Thermal Conduction in Metal Inverse Opals.** *Nano letters*  
Barako, M. T., Sood, A., Zhang, C., Wang, J., Kodama, T., Asheghi, M., Zheng, X., Braun, P. V., Goodson, K. E.  
2016; 16 (4): 2754-2761
- **Enhancing Low-Bias Performance of Hematite Photoanodes for Solar Water Splitting by Simultaneous Reduction of Bulk, Interface, and Surface Recombination Pathways** *ADVANCED ENERGY MATERIALS*  
Cho, I. S., Han, H. S., Logar, M., Park, J., Zheng, X.  
2016; 6 (4)
- **Activating and optimizing MoS<sub>2</sub> basal planes for hydrogen evolution through the formation of strained sulphur vacancies** *NATURE MATERIALS*  
Li, H., Tsai, C., Koh, A. L., Cai, L., Contryman, A. W., Fragapane, A. H., Zhao, J., Han, H. S., Manoharan, H. C., Abild-Pedersen, F., Nørskov, J. K., Zheng, X.  
2016; 15 (1): 48-?
- **General Characterization Methods for Photoelectrochemical Cells for Solar Water Splitting** *CHEMUSUSCHEM*  
Shi, X., Cai, L., Ma, M., Zheng, X., Park, J. H.  
2015; 8 (19): 3192-3203
- **Highly Efficient Solar Water Splitting from Transferred TiO<sub>2</sub> Nanotube Arrays.** *Nano letters*  
Cho, I. S., Choi, J., Zhang, K., Kim, S. J., Jeong, M. J., Cai, L., Park, T., Zheng, X., Park, J. H.  
2015; 15 (9): 5709-5715
- **Bridging combustion and nanotechnology**  
Zheng, X.  
AMER CHEMICAL SOC.2015
- **Enhancing Catalytic CO Oxidation over Co<sub>3</sub>O<sub>4</sub> Nanowires by Substituting Co<sup>2+</sup> with Cu<sup>2+</sup>** *ACS CATALYSIS*  
Zhou, M., Cai, L., Bajdich, M., Garcia-Melchor, M., Li, H., He, J., Wilcox, J., Wu, W., Vojvodic, A., Zheng, X.  
2015; 5 (8): 4485-4491
- **Optoelectronic crystal of artificial atoms in strain-textured molybdenum disulfide** *NATURE COMMUNICATIONS*  
Li, H., Contryman, A. W., Qian, X., Ardakani, S. M., Gong, Y., Wang, X., Weisse, J. M., Lee, C. H., Zhao, J., Ajayan, P. M., Li, J., Manoharan, H. C., Zheng, et al  
2015; 6
- **Interwoven Three-Dimensional Architecture of Cobalt Oxide Nanobrush-Graphene@Ni<sub>x</sub>Co<sub>2-x</sub>(OH)<sub>6</sub> for High-Performance Supercapacitors** *NANO LETTERS*

- Qu, L., Zhao, Y., Khan, A. M., Han, C., Hercule, K. M., Yan, M., Liu, X., Chen, W., Wang, D., Cai, Z., Xu, W., Zhao, K., Zheng, et al  
2015; 15 (3): 2037-2044
- **Laminar flame speeds, counterflow ignition, and kinetic modeling of the butene isomers** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*  
Zhao, P., Yuan, W., Sun, H., Li, Y., Kelley, A. P., Zheng, X., Law, C. K.  
2015; 35: 309-316
  - **Fabrication of Nanowire Electronics on Nonconventional Substrates by Water-Assisted Transfer Printing Method** *MICRO- AND NANOTECHNOLOGY SENSORS, SYSTEMS, AND APPLICATIONS VII*  
Lee, C. H., Kim, D. R., Zheng, X.  
2015; 9467
  - **Titanium incorporation into hematite photoelectrodes: theoretical considerations and experimental observations** *ENERGY & ENVIRONMENTAL SCIENCE*  
Kronawitter, C. X., Zegkinoglou, I., Shen, S., Liao, P., Cho, I. S., Zandi, O., Liu, Y., Lashgari, K., Westin, G., Guo, J., Himpel, F. J., Carter, E. A., Zheng, et al  
2014; 7 (10): 3100-3121
  - **Transfer Printing Methods for Flexible Thin Film Solar Cells: Basic Concepts and Working Principles** *ACS NANO*  
Lee, C. H., Kim, D. R., Zheng, X.  
2014; 8 (9): 8746-8756
  - **Sol-flame synthesis of cobalt-doped TiO<sub>2</sub> nanowires with enhanced electrocatalytic activity for oxygen evolution reaction.** *Physical chemistry chemical physics*  
Cai, L., Cho, I. S., Logar, M., Mehta, A., He, J., Lee, C. H., Rao, P. M., Feng, Y., Wilcox, J., Prinz, F. B., Zheng, X.  
2014; 16 (24): 12299-12306
  - **Simultaneously Efficient Light Absorption and Charge Separation in WO<sub>3</sub>/BiVO<sub>4</sub> Core/Shell Nanowire Photoanode for Photoelectrochemical Water Oxidation.** *Nano letters*  
Rao, P. M., Cai, L., Liu, C., Cho, I. S., Lee, C. H., Weisse, J. M., Yang, P., Zheng, X.  
2014; 14 (2): 1099-1105
  - **Rapid and Controllable Flame Reduction of TiO<sub>2</sub> Nanowires for Enhanced Solar Water-Splitting** *NANO LETTERS*  
Cho, I. S., Logar, M., Lee, C. H., Cai, L., Prinz, F. B., Zheng, X.  
2014; 14 (1): 24-31
  - **Flash ignition of freestanding porous silicon films: effects of film thickness and porosity.** *Nano letters*  
Ohkura, Y., Weisse, J. M., Cai, L., Zheng, X.  
2013; 13 (11): 5528-5533
  - **Peel-and-Stick: Mechanism Study for Efficient Fabrication of Flexible/Transparent Thin-film Electronics** *SCIENTIFIC REPORTS*  
Lee, C. H., Kim, J., Zou, C., Cho, I. S., Weisse, J. M., Nemeth, W., Wang, Q., van Duin, A. C., Kim, T., Zheng, X.  
2013; 3
  - **Electroassisted Transfer of Vertical Silicon Wire Arrays Using a Sacrificial Porous Silicon Layer** *NANO LETTERS*  
Weisse, J. M., Lee, C. H., Kim, D. R., Cai, L., Rao, P. M., Zheng, X.  
2013; 13 (9): 4362-4368
  - **Morphological control of heterostructured nanowires synthesized by sol-flame method** *NANOSCALE RESEARCH LETTERS*  
Luo, R., Cho, I. S., Feng, Y., Cai, L., Rao, P. M., Zheng, X.  
2013; 8
  - **Sol-Flame Synthesis: A General Strategy To Decorate Nanowires with Metal Oxide/Noble Metal Nanoparticles** *NANO LETTERS*  
Peng, Y., Cho, I. S., Rao, P. M., Cai, L., Zheng, X.  
2013; 13 (3): 855-860
  - **Reducing minimum flash ignition energy of Al microparticles by addition of WO<sub>3</sub> nanoparticles** *APPLIED PHYSICS LETTERS*  
Ohkura, Y., Rao, P. M., Cho, I. S., Zheng, X.  
2013; 102 (4)
  - **Flame synthesis of 1-D complex metal oxide nanomaterials** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*  
Cai, L., Rao, P. M., Feng, Y., Zheng, X.  
2013; 34: 2229-2236



- **Codoping titanium dioxide nanowires with tungsten and carbon for enhanced photoelectrochemical performance.** *Nature communications*  
Cho, I. S., Lee, C. H., Feng, Y., Logar, M., Rao, P. M., Cai, L., Kim, D. R., Sinclair, R., Zheng, X.  
2013; 4: 1723-?
- **Morphological control of heterostructured nanowires synthesized by sol-flame method.** *Nanoscale research letters*  
Luo, R., Cho, I. S., Feng, Y., Cai, L., Rao, P. M., Zheng, X.  
2013; 8 (1): 347-?
- **Flame synthesis of WO<sub>3</sub> nanotubes and nanowires for efficient photoelectrochemical water-splitting** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*  
Rao, P. M., Cho, I. S., Zheng, X.  
2013; 34: 2187-2195
- **Sol-flame synthesis of hybrid metal oxide nanowires** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*  
Feng, Y., Cho, I. S., Cai, L., Rao, P. M., Zheng, X.  
2013; 34: 2179-2186
- **Peel-and-Stick: Fabricating Thin Film Solar Cell on Universal Substrates** *SCIENTIFIC REPORTS*  
Lee, C. H., Kim, D. R., Cho, I. S., William, N., Wang, Q., Zheng, X.  
2012; 2
- **Shrinking and Growing: Grain Boundary Density Reduction for Efficient Polysilicon Thin-Film Solar Cells** *NANO LETTERS*  
Kim, D. R., Lee, C. H., Weisse, J. M., Cho, I. S., Zheng, X.  
2012; 12 (12): 6485-6491
- **Thermal conductivity in porous silicon nanowire arrays** *NANOSCALE RESEARCH LETTERS*  
Weisse, J. M., Marconnet, A. M., Kim, D. R., Rao, P. M., Panzer, M. A., Goodson, K. E., Zheng, X.  
2012; 7
- **Copper Ion Enhanced Synthesis of Nanostructured Cobalt Oxide Catalyst for Oxidation of Methane** *CHEMCATCHEM*  
Feng, Y., Zheng, X.  
2012; 4 (10): 1551-1554
- **Fabrication of Flexible and Vertical Silicon Nanowire Electronics** *NANO LETTERS*  
Weisse, J. M., Lee, C. H., Kim, D. R., Zheng, X.  
2012; 12 (6): 3339-3343
- **Nanowire electronics that can be shaped to fit any surface and attach to any material developed at Stanford** *SENSOR REVIEW*  
Zheng, X., Bergeron, L.  
2012; 32 (3): 256-256
- **Flash ignition of Al nanoparticles: Mechanism and applications** *COMBUSTION AND FLAME*  
Ohkura, Y., Rao, P. M., Zheng, X.  
2011; 158 (12): 2544-2548
- **Branched TiO<sub>2</sub> 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
- **Fabrication of Nanowire Electronics on Nonconventional Substrates by Water-Assisted Transfer Printing Method** *NANO LETTERS*  
Lee, C. H., Kim, D. R., Zheng, X.  
2011; 11 (8): 3435-3439
- **Hybrid Si Microwire and Planar Solar Cells: Passivation and Characterization** *NANO LETTERS*  
Kim, D. R., Lee, C. H., Rao, P. M., Cho, I. S., Zheng, X.  
2011; 11 (7): 2704-2708
- **Unique Magnetic Properties of Single Crystal gamma-Fe<sub>2</sub>O<sub>3</sub> Nanowires Synthesized by Flame Vapor Deposition** *NANO LETTERS*  
Rao, P. M., Zheng, X.  
2011; 11 (6): 2390-2395

- **Vertical Transfer of Uniform Silicon Nanowire Arrays via Crack Formation** *NANO LETTERS*  
Weisse, J. M., Kim, D. R., Lee, C. H., Zheng, X.  
2011; 11 (3): 1300-1305
- **Morphology-Controlled Flame Synthesis of Single, Branched, and Flower-like alpha-MoO<sub>3</sub> Nanobelt Arrays** *NANO LETTERS*  
Cai, L., Rao, P. M., Zheng, X.  
2011; 11 (2): 872-877
- **Synthesis and ignition of energetic CuO/Al core/shell nanowires** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*  
Ohkura, Y., Liu, S., Rao, P. M., Zheng, X.  
2011; 33: 1909-1915
- **Methane oxidation over catalytic copper oxides nanowires** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*  
Feng, Y., Rao, P. M., Kim, D. R., Zheng, X.  
2011; 33: 3169-3175
- **Flame synthesis of tungsten oxide nanostructures on diverse substrates** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*  
Rao, P. M., Zheng, X.  
2011; 33: 1891-1898
- **Orientation-controlled alignment of axially modulated pn silicon nanowires.** *Nano letters*  
Lee, C. H., Kim, D. R., Zheng, X.  
2010; 10 (12): 5116-22
- **Orientation-Controlled Alignment of Axially Modulated pn Silicon Nanowires** *NANO LETTERS*  
Lee, C. H., Kim, D. R., Zheng, X.  
2010; 10 (12): 5116-5122
- **Plasma-Enhanced Catalytic CuO Nanowires for CO Oxidation** *NANO LETTERS*  
Feng, Y., Zheng, X.  
2010; 10 (11): 4762-4766
- **Characterization of the wettability of thin nanostructured films in the presence of evaporation** *JOURNAL OF COLLOID AND INTERFACE SCIENCE*  
Rogacs, A., Steinbrenner, J. E., Rowlette, J. A., Weisse, J. M., Zheng, X. L., Goodson, K. E.  
2010; 349 (1): 354-360
- **Fabricating nanowire devices on diverse substrates by simple transfer-printing methods** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Lee, C. H., Kim, D. R., Zheng, X.  
2010; 107 (22): 9950-9955
- **Direct Growth of Nanowire Logic Gates and Photovoltaic Devices** *NANO LETTERS*  
Kim, D. R., Lee, C. H., Zheng, X.  
2010; 10 (3): 1050-1054
- **Rapid Catalyst-Free Flame Synthesis of Dense, Aligned alpha-Fe<sub>2</sub>O<sub>3</sub> Nanoflake and CuO Nanoneedle Arrays** *NANO LETTERS*  
Rao, P. M., Zheng, X.  
2009; 9 (8): 3001-3006
- **Probing Flow Velocity with Silicon Nanowire Sensors** *NANO LETTERS*  
Kim, D. R., Lee, C. H., Zheng, X.  
2009; 9 (5): 1984-1988
- **Single and Tandem Axial p-i-n Nanowire Photovoltaic Devices** *NANO LETTERS*  
Kempa, T. J., Tian, B., Kim, D. R., Hu, J., Zheng, X., Lieber, C. M.  
2008; 8 (10): 3456-3460
- **Numerical Characterization and Optimization of the Microfluidics for Nanowire Biosensors** *NANO LETTERS*  
Kim, D. R., Zheng, X.  
2008; 8 (10): 3233-3237

- **Coaxial silicon nanowires as solar cells and nanoelectronic power sources** *NATURE*  
Tian, B., Zheng, X., Kempa, T. J., Fang, Y., Yu, N., Yu, G., Huang, J., Lieber, C. M.  
2007; 449 (7164): 885-U8
- **Experimental counterflow ignition temperatures and reaction mechanisms of 1,3-butadiene** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*  
Zheng, X. L., Lu, T. F., Law, C. K.  
2007; 31: 367-375
- **Thermochemical and kinetic analyses on oxidation of isobutenyl radical and 2-hydroperoxymethyl-2-propenyl radical** *JOURNAL OF PHYSICAL CHEMISTRY A*  
Zheng, X. L., Sun, H. Y., Law, C. K.  
2005; 109 (40): 9044-9053
- **Nonpremixed ignition of H-2/air in a mixing layer with a vortex** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*  
Zheng, X. L., Yuan, J., Law, C. K.  
2005; 30: 415-421
- **Experimental determination of counterflow ignition temperatures and laminar flame speeds of C-2-C-3 hydrocarbons at atmospheric and elevated pressures** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*  
Jomaas, G., Zheng, X. L., Zhu, D. L., Law, C. K.  
2005; 30: 193-200
- **Experimental and computational study of nonpremixed ignition of dimethyl ether in counterflow** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*  
Zheng, X. L., Lu, T. F., Law, C. K., Westbrook, C. K., Curran, H. J.  
2005; 30: 1101-1109
- **Ignition of premixed hydrogen/air by heated counterflow under reduced and elevated pressures** *COMBUSTION AND FLAME*  
Zheng, X. L., Law, C. K.  
2004; 136 (1-2): 168-179
- **Ignition of premixed hydrogen/air by heated counterflow** *PROCEEDINGS OF THE COMBUSTION INSTITUTE*  
Zheng, X. L., Blouch, J. D., Zhu, D. L., Kreutz, T. G., Law, C. K.  
2002; 29: 1637-1643
- **Experimental and Computational Study of Non-premixed Ignition of Dimethyl Ether in Counterflow** *Proceedings of the Combustion Institute*  
Zheng, X. L., Lu, T. F., Law, C. K., Westbrook, C. K., Curran, H. J.  
2005: 1101-1109