

Liming Zhang

Department of Chemistry
Fudan University, Shanghai
2005 Songhu Road, Fudan University, Shanghai

Email: lmzhangfudan@gmail.com

CURRENT POSITION

Professor of Physical Chemistry 2017-present

EDUCATION

Peking University 2007-2012

Ph. D. in Chemistry
Advisor: Prof. Zhongfan Liu

Shandong University 2003-2007

B. S. in Chemistry,

RESEARCH EXPERIENCE

Stanford University, Stanford, CA (Postdoctoral Fellow)

With Prof. William C. Chueh 2014-2017

- Thermally-enhanced photoelectrochemistry for solar water splitting [*Energy Environ. Sci.*, 2016].
 - Develop monolithic Mo:BiVO₄/SnO₂/Si photoanode.
 - Significant enhanced photocurrent was discovered by thermally activating minority carrier diffusion length.
- Quantifying & elucidating thermally-enhanced minority carrier diffusion length using radius-controlled rutile nanowires [*Nano Lett.*, 2017].
 - The minority carrier diffusion length, along with its activation energy, was quantitatively extracted for the first time from temperature-dependent photocurrents by varying the radius of TiO_{2-x} nanowires.
- Solid-state architecture for a high-current, elevated-temperature photoelectrochemical cell.
 - Solid state photoelectrochemical cell was constructed by using the semiconductor light absorber and the ionic conductor.

University of California, Berkeley, Berkeley, CA (Postdoctoral Fellow)

With Prof. Peidong Yang 2012-2014

- Interlayer coupling in dichalcogenides [*Nat. Commun.* 2014; *Nano Lett.* 2014].
 - Evolution of interlayer coupling with twisted angles in as-grown MoS₂ bilayers.
 - Chemical vapor deposition growth of MoS₂ spirals with atomically thin helical periodicity that exhibits a chiral structure and breaks the three-dimensional inversion symmetry.
- MoS₂ wrapped nanowire array for solar water splitting [*Nano Res.* 2015].

- Developed a coaxial structure of MoS₂ wrapped Si nanowire and further apply it into the solar hydrogen proton reduction.

Peking University, Beijing, China

(Graduate Student)

with Prof. Zhongfan Liu

2007-2012

- The Photochemistry of graphene [*Nat. Commun.* 2013; *JACS* 2011; *Small* 2013; *Small* 2013; *Photofunctional Layered Materials*, Springer, 2015].
 - Photocatalytic patterning and modification of graphene and carbon nanotube.
 - Photo-induced free radical modification of graphene.
 - Janus graphene from asymmetric two-dimensional chemistry.

HONORS AND AWARDS

The Thousand Talents Program for Distinguished Young Scholars	2017
Bruker Nano Fellowship for Outstanding Individual	2011
Zhongchenyulan Fellowship	2010
“The Star of Nano” Award	2009
Gangsong Fellowship	2009
Honors for B.S. degree	2007

SELECTED PUBLICATIONS (10 listed; #: indicate equal contribution)

A. Thermally-enhanced photoelectrochemistry for solar water splitting.

1. L. M. Zhang[#], L. Sun[#], Z. X. Guan, S. C. Lee, Y. Z. Li, D. Deng, Y. Y. Li, N. A. Ahlborg, M. Bloor, N. A. Melosh, W. C. Chueh, Quantifying & elucidating thermally-enhanced minority carrier diffusion length using radius-controlled rutile nanowires. *Nano Lett.* **2017**, accepted.
2. L. M. Zhang[#], X. F. Ye[#], M. Bloor, A. Poletayev, N. A. Melosh, W. C. Chueh, Significantly enhanced photocurrent for water oxidation in monolithic Mo:BiVO₄/SnO₂/Si by thermally increasing the minority carrier diffusion length, *Energy Environ. Sci.*, **2016**, 9, 2044-2052.

B. Interlayer coupling in metal dichalcogenides.

3. K. H. Liu[#], L. M. Zhang[#], T. Cao[#], C. H. Jin, D. Qiu, Q. Zhou, A. Zettl, P. Yang, S. G. Louie, F. Wang, Evolution of interlayer coupling in twisted molybdenum disulfide bilayers, *Nat. Commun.* **2014**, 5, 4966.
4. L. M. Zhang[#], K. H. Liu[#], A. B. Wong, J. Kim, X. Hong, C. Liu, T. Cao, S. G. Louie, F. Wang, P. Yang, Three-dimensional spirals of atomic layered MoS₂, *Nano Lett.* **2014**, 14, 6418-6423.
5. L. M. Zhang[#], C. Liu[#], A. B. Wong, J. Resasco, P. Yang, MoS₂-wrapped silicon nanowires for photoelectro-chemical water reduction, *Nano Res.* **2015**, 8, 281-287.

C. Photoelectrochemistry of Graphene.

6. L. M. Zhang[#], J. W. Yu, M. M. Yang, Q. Xie, H. Peng, Z. F. Liu, Janus graphene from asymmetric two-dimension chemistry, *Nat. Commun.* **2013**, 4, 1443.
7. L. M. Zhang[#], L. Zhou[#], M. M. Yang, Z. R. Liu, Q. Xie, H. Peng, Z. F. Liu, Photo-induced free radical modification of graphene, *Small*, **2013**, 9, 1134-1143.
8. Y. F. Nie[#], L. M. Zhang[#], D. Wu, Y. B. Chen, G. M. Zhang, Q. Xie, Z. F. Liu, Photocatalytic engineering

of single-walled carbon nanotubes: from metal-semiconductor conversion, cutting to patterning, *Small*, **2013**, 9, 1336-1341.

9. L. M. Zhang, S. Diao, Y. F. Nie, K. Yan, N. Liu, B. Y. Dai, Q. Xie, A. Reina, J. Kong, Z. F. Liu, Photocatalytic patterning and modification of graphene, *J. Am. Chem. Soc.* **2011**, 133, 2706-2713.

Highlighted by Nature: Chemical scissors cut graphene *Nature* 2011, 470, 308.

10. L. M. Zhang, Z. F. Liu, Photochemistry of graphene, *Structural and Bonding*, Springer, **2015**, 213-238.

INDEPENDENT JOURNAL REVIEWERS FOR

Journal of the American Chemical Society

Energy & Environmental Science

ACS Applied Materials & Interfaces

Carbon

Scientific Reports

Nano Letters

Inorganic Chemistry

Chemical Communications

Nano Research

PATENTS

- Z. F. Liu & **L. M. Zhang** "TiO₂-aided photochemical cutting of graphene", China patent, ZL 2009 1 008 0079.2
- Z. F. Liu, **L. M. Zhang**, J. W. Yu, H. Peng and Q. Xie "Asymmetric modification of monolayer graphene" China Patent, ZL 2012 1 0348152.1

REFERENCES

Zhongfan Liu

Academician of Chinese Academy of Sciences and Professor of Chemistry

Center for Nanochemistry, College of Chemical and Molecular Engineering, Peking University

Email: zfliu@pku.edu.cn

Phone: +86-010-62758600

Peidong Yang

S. K. and Angela Chan Distinguished Professor of Energy and Professor of Chemistry

Department of Chemistry, University of California, Berkeley

Email: p_yang@berkeley.edu

Phone: +1-510-643-1545

William C. Chueh

Assistant Professor

Department of Materials Science and Engineering, Stanford University

Email: wchueh@stanford.edu

Phone: +1-650-725-7515