

Nannan Mao

77 Massachusetts Ave, MIT, Cambridge, MA, 02139

Tel: +1(617)866-7695, Email: maonnmyh@mit.edu

EDUCATION/TRAINING

2022.01 – now	Massachusetts Institute of Technology Research laboratory of electronics (RLE) Research topic: Nonlinear Optical Effect in 2D In-Plane Ferroelectric Materials <i>Advisor: Prof. Jing Kong & William A. Tisdale</i>	Research Scientist
2017.01 – 2022.01	Massachusetts Institute of Technology Research laboratory of electronics (RLE) Research topic: Electron-Phonon Coupling and Nonlinear Optical Effect in 2D Materials <i>Advisor: Prof. Mildred Dresselhaus, Jing Kong & William A. Tisdale</i>	Postdoctoral Associate
2017.6 – now	Boston University Department of Chemistry <i>Advisor: Prof. Xi Ling</i>	Visiting Researcher
2011.09 – 2016.07	Peking University, China College of Chemistry and Molecular Engineering, Physical Chemistry Thesis: Raman Spectroscopy and Optical Anisotropy of Two-Dimensional Black Phosphorus Crystals" <i>Advisor: Prof. Jin Zhang & Lianming Tong</i>	Ph.D. degree
2007.08 – 2011.06	Lanzhou University, China College of Chemistry and Chemical Engineering, Chemistry <i>Advisor: Prof. Haoli Zhang</i>	Bachelor's degree

RESEARCH INTEREST

Optical spectroscopy of nanomaterials, functional nanomaterials

- ◆ Resonance Raman investigation of atomic and electronic structure of nanomaterials.
- ◆ Spontaneous and transient nonlinear optical investigation of nanomaterials (such as ferroelectric 2D materials) and its interfacial dynamics.
- ◆ Exciton dynamics of luminating nanomaterials;
- ◆ Advanced optical imaging and spectroscopy with high temporal and spatial resolution.

RESEARCH EXPERIENCE

- ◆ **Nonlinear optical effect of two-dimensional (2D) ferroelectric materials**
 - ◆ Nonlinear optical imaging of 2D materials (including ferroelectric materials).
 - ◆ Measuring nonlinear optical susceptibility of 2D materials.
 - ◆ Measuring broadband spectrally resolved second harmonic generation spectra of 2D materials;
- ◆ **Exciton and exciton dynamics in 2D semiconductors**
 - ◆ Solvent surrounding-controlled transformation of trion and exciton in monolayer MoS₂;
 - ◆ Exciton dynamics investigation of monolayer transition metal dichalcogenides using time correlated single photon counting module.
- ◆ **Resonance Raman investigation of exciton-phonon coupling in 2D semiconductor**
 - ◆ Raman characterization of nanomaterials: layer number, edge type, crystalline orientation.
 - ◆ Fundamental investigation of electron/exciton-phonon, electron-photon coupling, doping, stain,

interlayer coupling in nanomaterials.

- ◆ Resonance Raman investigation of excitonic state in BP crystals.
- ◆ Revealing Fermi resonance in atomically-thin black phosphorus.

◆ Scanning Near-Field Microscopic (SNOM) investigation of 2D materials

- ◆ Direct imaging of local doping distribution of monolayer WS₂ below the diffraction limit.
- ◆ Distinguishing the different types of WS₂ edges using the near-field Raman and PL signals.

◆ Liquid exfoliation of the 2D materials

- A green mixed-solvent strategy for efficient exfoliation of inorganic graphene analogues

SKILLS

➤ Sample preparation and nanofabrication Techniques

- ✧ 2D materials exfoliation and transfer;
- ✧ Langmuir-Blodgett technique, lithographic technique, metal and organic molecular evaporation

➤ Characterization:

- ✧ Optical technique: polarized optical imaging and spectroscopy, Raman/photoluminescence spectroscopy, Spectroscopic ellipsometer, UV-VIS-NIR
- ✧ Non-optical technique: TEM, SEM, OM, contact angle measurement, scanning probe microscopy (SPM) based surface characterization such AFM, PFM and c-AFM.

➤ Special:

- ✧ Building steady state and ultrafast second/third harmonic generation microscopy and micro-Raman/photoluminescence spectroscopy;
- ✧ Building sensitive optical spectroscopy based on single-photon detection;
- ✧ Matlab/LabVIEW control of home-built optical spectroscopy.

PUBLICATIONS (Total Citations: > 6600; h-index: 31)

First author publications (‡equation contribution)

- (1) **N. Mao**, S. Huang, H. Yan, X. Ling, L. Liang*, J. Kong*, W. A. Tisdale*, Fermi Resonance in Atomically-thin Black Phosphorus, *in preparation*.
- (2) **N. Mao**‡, Y. Luo‡, M.-H. Chiu, C. Shi, X. Ji, T. S. Pieshkov, Y. Lin, H.-L. Tang, A. J. Akey, J. A. Gardener, J.-H. Park, V. Tung, X. Ling, X. Qian, W. L. Wilson, Y. Han*, W. A. Tisdale*, J. Kong*, Giant Nonlinear Optical Response in In-Plane Ferroelectric SnSe, *Adv. Mater.*, 2023, n/a (n/a), 2210894. [Link](#)
- (3) Y. Luo‡, **N. Mao**‡, D. Ding, M.-H. Chiu, X. Ji, K. Watanabe, T. Taniguchi, V. Tung, H. Park, P. Kim, J. Kong and W. L. Wilson*, Electrically Switchable Anisotropic Polariton Propagation in A Ferroelectric van der Waal Semiconductor, *Nature Nanotechnol.*, Nat. Nanotechnol. 18 (2023), 350-356. [Link](#)
- (4) **N. Mao**, Y. Lin, Y.-Q. Bie, T. Palacios, L. Liang, R. Saito, X. Ling, J. Kong, W. A. Tisdale, Resonance-Enhanced Excitation of Interlayer Vibrations in Atomically Thin Black Phosphorus, *Nano Lett.* 21 (2021), 4809-4815. [Link](#)
- (5) N. Wang‡, **N. Mao**‡, Z. Wang, X. Yang, X. Zhou, H. Liu, S. Qiao, X. Lei, J. Wang, H. Xu, X. Ling, Q. Zhang, Q. Feng, J. Kong, Electrochemical Delamination of Ultralarge Few-Layer Black Phosphorus with a Hydrogen-Free Intercalation Mechanism. *Adv. Mater.*, 33 (2021), 2005815. [Link](#)
- (6) **N. Mao**‡, X. Wang‡, Y. Lin, B. G. Sumpter, Q. Ji, T. Palacios, S. Huang, V. Meunier, M. S. Dresselhaus, W. A. Tisdale, L. Liang, X. Ling, J. Kong, Direct Observation of Symmetry-Dependent Electron-Phonon Coupling in Black Phosphorus. *J. Am. Chem. Soc.*, 141(2019), 18994-19001. [Link](#)
- (7) X. Wang‡, **N. Mao**‡, W. Luo, H. Kitadai, X. Ling, Anomalous Phonon Modes in Black Phosphorus Revealed by Resonant Raman Scattering, *J. Phys. Chem. Lett.*, 9 (2018), 2830-2837. [Link](#)
- (8) W. S. Leong‡, Q. Ji‡, **N. Mao**‡, Y. Han, H. Wang, A. J. Goodman, A. Vignon, C. Su, Y. Guo, P.-C. Shen, Z. Gao, D. A. Muller, W. A. Tisdale, J. Kong, Synthetic Lateral Metal-Semiconductor Heterostructures of Transition Metal Disulfides, *J. Am. Chem. Soc.*, 140 (2018), 12354-12358. [Link](#)
- (9) **N. Mao**, J. Tang, L. Xie, J. Wu, B. Han, J. Lin, S. Deng, W. Ji, H. Xu, K. Liu, L. Tong, and J. Zhang, Optical Anisotropy of Black Phosphorus in the Visible Regime, *J. Am. Chem. Soc.*, 138 (2015), 300-305. [Link](#)
ESI highly cited paper
- (10) J. Wu‡, **N. Mao**‡, L. Xie, H. Xu, and J. Zhang, Identifying the Crystalline Orientation of Black Phosphorus Using Angle-Resolved Polarized Raman Spectroscopy, *Angew. Chem. Int. Ed.*, 54 (2015), 2366-69. [Link](#)
ESI highly cited paper

- (11) **N. Mao**, Y. Chen, D. Liu, J. Zhang, and L.M. Xie, Solvatochromic Effect on the Photoluminescence of MoS₂ Monolayers, *Small*, 9 (2013), 1312-15.[Link](#)
- (12) **N. Mao**, J. Wu, B. Han, J. Lin, L. Tong, and J. Zhang, Birefringence-Directed Raman Selection Rules in the Two-Dimensional Black Phosphorus Crystal, *Small*, 19 (2016), 2627-33.[Link](#)
- (13) **N. Mao**, S. Zhang, J. Wu, H. Tian, J. Wu, H. Xu, H. Peng, L. Tong, Investigation of Black Phosphorus as a Nano-optical Polarization Element by Polarized Raman Spectroscopy, *Nano Res.*, 11 (2017), 3154-3163.[Link](#)
- (14) (Invited review) **N. Mao**, S. Zhang, J. Wu, J. Zhang, L. Tong, Lattice Vibration and Raman Scattering in Anisotropic Black Phosphorus Crystals, *Small Methods*, 0 (2018), 1700409.[Link](#)

◆ Second Harmonic Generation

- (15) Z. Zheng, Q. Ma, Z. Bi, S. de la Barrera, M.-H. Liu, **N. Mao**, Y. Zhang, N. Kiper, K. Watanabe, T. Taniguchi, J. Kong, W. A. Tisdale, R. Ashoori, N. Gedik, L. Fu, S.-Y. Xu, P. Jarillo-Herrero, Unconventional Ferroelectricity in Moiré Heterostructures. *Nature*, 588 (2020), 71-76.[Link](#)
ESI highly cited paper,
- (16) Q. Ji, C. Su, **N. Mao**, X. Tian, J.-C. Idrobo, J. Miao, W. A. Tisdale, A. Zettl, J. Li, J. Kong, Revealing the Brønsted-Evans-Polanyi Relation in Halide-activated Fast MoS₂ Growth Toward Millimeter-sized 2D Crystals. *Sci. Adv.* 7 (2021), eabj3274. [Link](#)
- (17) P.-C. Shen, C. Su, Y. Lin, A.-S. Chou, C.-C. Cheng, J.-H. Park, M.-H. Chiu, A.-Y. Lu, H.-L. Tang, M. M. Tavakoli, G. Pitner, X. Ji, Z. Cai, **N. Mao**, J. Wang, V. Tung, J. Li, J. Bokor, A. Zettl, C.-I. Wu, T. Palacios, L.-J. Li, J. Kong, Ultralow contact resistance between semimetal and monolayer semiconductors. *Nature* 593 (2021), 211-217.[Link](#)
ESI highly cited paper, Hot paper
- (18) P.-C. Shen, Y. Lin, C. Su, C. McGahan, A.-Y. Lu, X. Ji, X. Wang, H. Wang, N. Mao, Y. Guo, J.-H. Park, Y. Wang, W. Tisdale, J. Li, X. Ling, K. E. Aidala, T. Palacios, J. Kong, Healing of donor defect states in monolayer molybdenum disulfide using oxygen-incorporated chemical vapour deposition. *Nature Electron.* 5 (2022), 28-36.[Link](#)

◆ 2D Ferroelectric Materials

- (19) C. Shi, **N. Mao**, J. Kong, Y. Han, Uncovering In-Plane Domain Structures in Two-Dimensional Ferroelectric SnSe Using Machine-Learning Assisted 4D-STEM, *Microsc. Microanal.* 28 (2022), 374-375. [Link](#)

◆ Liquid Exfoliation of 2D Materials

- (20) K. Zhou, **N. Mao**, H. Wang, Y. Peng, and H. Zhang, A Mixed-Solvent Strategy for Efficient Exfoliation of Inorganic Graphene Analogues, *Angew. Chem. Int. Ed.*, 50 (2011), 10839-42. [Link](#)

◆ Raman/ Photoluminescence Spectroscopy of 2D Materials

- (21) B. Xu, **N. Mao**, Y. Zhao, L. Tong, J. Zhang, Polarized Raman Spectroscopy for Determining Crystallographic Orientation of Low-Dimensional Materials. *J. Phys. Chem. Lett.*, 12(2021), 7442-7452. [Link](#)
- (22) Q. Feng, **N. Mao**, J. Wu, H. Xu, C. Wang, J. Zhang, and L. Xie, Growth of MoS_{2(1-x)}Se_{2x} (X=0.41-1.00) Monolayer Alloys with Controlled Morphology by Physical Vapor Deposition, *ACS Nano*, 9 (2015), 7450-55.[Link](#)
- (23) S. Zhang, **N. Mao**, J. Wu, L. Tong, J. Zhang, Z. Liu, In-Plane Uniaxial Strain in Black Phosphorus Enables the Identification of Crystalline Orientation. *Small*, 13(2017), 1700466.[Link](#)
- (24) S. Zhang, **N. Mao**, N. Zhang, J. Wu, L. Tong, J. Zhang, Anomalous Polarized Raman Scattering and Large Circular Intensity Differential in Layered Triclinic ReS₂. *ACS Nano*, 11(2017), 10366-10372.[Link](#)
- (25) W. Luo, A. D. Oyedele, **N. Mao**, A. Puretzky, K. Xiao, L. Liang, X. Ling, Excitation-Dependent Anisotropic Raman Response of Atomically Thin Pentagonal PdSe₂. *ACS Physical Chemistry Au*, 2(2022), 482-489.[Link](#)
- (26) Y. Chen, D.O. Dumcenco, Y. Zhu, X. Zhang, **N. Mao**, Q. Feng, M. Zhang, J. Zhang, P. Tan, Y. Huang, and L. Xie, Composition-Dependent Raman Modes of Mo_{1-x}W_xS₂ Monolayer Alloys, *Nanoscale*, 6 (2014), 2833-39.[Link](#)
- (27) Q. Feng, Y. Zhu, J. Hong, M. Zhang, W. Duan, **N. Mao**, J. Wu, H. Xu, F. Dong, F. Lin, C. Jin, C. Wang, J. Zhang, and L. Xie, Growth of Large-Area 2D MoS_{2(1-x)}Se₂, Semiconductor, *Adv. Mater.*, 26 (2014), 2648-53.[Link](#)
ESI highly cited paper
- (28) Xia, J., X.-Z. Li, X. Huang, **N. Mao**, D.-D. Zhu, L. Wang, H. Xu and X.-M. Meng Physical Vapor Deposition Synthesis of Two-Dimensional Orthorhombic SnS Flakes with Strong Angle/Temperature-Dependent Raman Responses. *Nanoscale* 8 (2016), 2063-2070.[Link](#)
ESI highly cited paper
- (29) A.-Y. Lu, L. G. P. Martins, P.-C. Shen, Z. Chen, J.-H. Park, M. Xue, J. Han, **N. Mao**, M.-H. Chiu, T. Palacios, V. Tung, J. Kong, Unraveling the Correlation between Raman and Photoluminescence in Monolayer MoS₂ through Machine-Learning Models. *Adv. Mater.* 34 (2022), 2202911.[Link](#)
- (30) H. Xu, J. Wu, Q. Feng, **N. Mao**, C. Wang, and J. Zhang, High Responsivity and Gate Tunable Graphene-MoS₂ Hybrid Phototransistor, *Small*, 10 (2014), 2300-06.[Link](#)
- (31) M. Zhang, J. Wu, Y. Zhu, D.O. Dumcenco, J. Hong, **N. Mao**, S. Deng, Y. Chen, Y. Yang, C. Jin, S. Chaki, Y. Huang, J. Zhang, and L. Xie, Two-Dimensional Molybdenum Tungsten Diselenide Alloys: Photoluminescence, Raman Scattering, and Electrical Transport, *ACS Nano*, 8 (2014), 7130-37.[Link](#)
- (32) J. Hong, Z. Hu, M. Probert, K. Li, D. Lv, X. Yang, L. Gu, **N. Mao**, Q. Feng, L. Xie, J. Zhang, D. Wu, Z. Zhang, C. Jin, W. Ji, X. Zhang, J. Yuan, and Z. Zhang, Exploring Atomic Defects in Molybdenum Disulphide Monolayers, *Nat.*

Commun., 6 (2015).[Link](#)

ESI highly cited paper

- (33) X. Li, J. Wu, **N. Mao**, J. Zhang, Z. Lei, Z. Liu, and H. Xu, A Self-Powered Graphene-MoS₂ Hybrid Phototransistor with Fast Response Rate and High on-Off Ratio, *Carbon*, 92 (2015), 126-32.[Link](#)
- (34) Y. Wan, H. Zhang, W. Wang, B. Sheng, K. Zhang, Y. Wang, Q. Song, **N. Mao**, Y. Li, X. Wang, J. Zhang, and L. Dai, Origin of Improved Optical Quality of Monolayer Molybdenum Disulfide Grown on Hexagonal Boron Nitride Substrate, *Small*, 12(2015), 198-203.[Link](#)

◆ Graphene-enhanced Raman Scattering

- (35) W. Xu, **N. Mao**, and J. Zhang, Graphene: A Platform for Surface-Enhanced Raman Spectroscopy, *Small*, 9 (2013), 1206-24. (Review) [Link](#)
ESI highly cited paper
- (36) X. Ling, S. Huang, S. Deng, **N. Mao**, J. Kong, M.S. Dresselhaus, and J. Zhang, Lighting up the Raman Signal of Molecules in the Vicinity of Graphene Related Materials, *Acc. Chem. Res.*, 48 (2015), 1862-70. (Review) [Link](#)
- (37) J. Lin, L. Liang, X. Ling, S. Zhang, **N. Mao**, N. Zhang, B.G. Sumpter, V. Meunier, L. Tong, J. Zhang, Enhanced Raman Scattering on in-Plane Anisotropic Layered Materials. *J. Am. Chem. Soc.*, 137 (2015), 15511-15517.[Link](#)

◆ TEM Characterization

- (38) R. Du, N. Zhang, H. Xu, **N. Mao**, W. Duan, J. Wang, Q. Zhao, Z. Liu, and J. Zhang, Cmp Aerogels: Ultrahigh-Surface-Area Carbon-Based Monolithic Materials with Superb Sorption Performance, *Adv. Mater.*, 26 (2014), 8053-+.[Link](#)
- (39) R. Du, N. Zhang, J. Zhu, Y. Wang, C. Xu, Y. Hu, **N. Mao**, H. Xu, W. Duan, L. Zhuang, L. Qu, Y. Hou, and J. Zhang, Nitrogen-Doped Carbon Nanotube Aerogels for High-Performance ORR Catalysts, *Small*, 11 (2015), 3903-08.[Link](#)

CONFERENCE CONTRIBUTIONS

- (1) Oral presentation, “Giant Nonlinear Optical Response via Coherent Stacking of In-Plane Ferroelectric Layers”, 2022 *Material Research Society (MRS) Fall Meeting*, Boston, MA, USA, December 2022;
- (2) Poster presentation, “In-Plane Ferroelectric SnSe with Strong Nonlinear Optical Response”, *ARO MURI Review on "Ab-Initio Solid-State Quantum Materials"*, online, MIT, Cambridge, MA, USA, October 2022;
- (3) **Invited talk**, “Giant Nonlinear Optical Response via Coherent Stacking of In-Plane Ferroelectric Layers”, *ARO MURI "Quantum Materials" Monthly Meeting*, online, MIT, Cambridge, MA, USA, Jan 2022
- (4) Poster presentation, “Resonance Raman Signatures of Atomically-Thin Black Phosphorus”, 2020 *MRS Fall Meeting*, Boston, MA, USA, December 2019;
- (5) Poster presentation, “Strong Coupling between Quantum-Confined Subband Transitions and Phonons in Phosphorene” 2019 *MRS Fall Meeting*, Boston, MA, USA, December 2019;
- (6) **Invited talk**, “Probing the Electron-Phonon Coupling in Black Phosphorus (BP) Using Resonant Raman Spectroscopy” *Physical Chemistry Seminar*, Department of Chemistry, Boston University, Boston, MA, USA, May 2018.
- (7) Oral presentation, “Resonant Raman Scattering in Anisotropic Black Phosphorus Crystals”, *APS March Meeting 2018*, Los Angeles, CA, USA, March 2018.
- (8) Oral presentation, “Strong Anisotropic Optical Property of Black Phosphorus in Visible Region”, *Frontiers of Nanochemistry -2015 (FNC-2015)*, Peking University, Beijing, China, June 2015.
- (9) Poster presentation, “Rapid Identification of the Crystalline Orientation of Black Phosphorus Using Optical Microscopy”, 3rd International Conference on Advanced Applied Raman Spectroscopy (Raman Fest), Xiamen, China, May 2015.
- (10) Poster presentation, “Direct Imaging of Local Doping Distribution of Monolayer WS₂ below the Diffraction Limit”, XXIV. International Conference on Raman Spectroscopie (ICORS 2014), Jena, Germany, August 2014.
- (11) Poster presentation, “Effect of Atomically-Thin Conductive Layer on the Surface Plasmon of Noble Metal Nanostructures”, 3rd International Conference on Frontiers of Plasmonics (FOP3), Xiamen, China, March 2014.
- (12) Poster presentation, “Solvatochromic Effect on the Photoluminescence of MoS₂ Monolayers”, 17th National Conference on Light Scattering, Xi'an China, October 2013.
- (13) Poster presentation, “Solvatochromic Effect on the Photoluminescence of MoS₂ Monolayers”, 19th China-Japan Bilateral Symposium on Intelligent Electrophotonic Materials and Molecular Electronics (SIEMME'19), Beijing, China, September 2013.
- (14) Poster presentation, “Solvatochromic Effect on the Photoluminescence of MoS₂ Monolayers”, 8th Sino-US Symposium on Nanoscale Science and Technology, Hangzhou, China, June 2013.

SELECTED HONORS

2014-2015	Academic Scholarship	<i>Peking University</i>
2013-2014	Academic Scholarship	<i>Peking University</i>
2012-2013	The Star of JieFeng Scholarship	<i>Peking University</i>
2010-2011	Excellent Graduates	<i>Lanzhou University</i>
2009-2010	National Scholarship (top 3%)	<i>Lanzhou University</i>
2007-2009	National Encouragement Scholarship (2 times)	<i>Lanzhou University</i>

TEACHING

- (1) 2012 Fall semester, Teaching Assistant for course **General Chemistry** at Peking University.
- (2) 2013 Fall semester, Teaching Assistant for course **General Chemistry** at Peking University.
Held over 100 students, held office hours, taught recitation, developed and graded assignments and problem sets)
- (3) Attended **MIT Kaufman Teaching Certificate Program**, which is a systematic teaching training program designed for postdoc and graduates [Link](#).

MENTORING

- (1) Mentored Narumi Wong (graduate student at MIT) on the project: *Z-polarized Second Harmonic Generation of Au Film* (Jan. 2022- Oct. 2022).
- (2) Mentored Yongli Duan (visiting graduate student at MIT) on the project: *Electrochemical Exfoliation of Atomically-Thin Black Phosphorus and Its Analogues* (Sep. 2019- Sep. 2022).
- (3) Mentored (Abigail) Zhien Wang (visiting graduate student at MIT) on the project: *Electrochemical Exfoliation of Atomically-Thin Black Phosphorus* (June. 2019- Aug. 2022).
- (4) Mentored Shuhang Pan (visiting graduate student at MIT) on the project: *Photophysics in Twisted Bilayer Transition Metal Dichalcogenides Heterostructures* (Oct. 2020- Dec. 2020).
- (5) Mentored summer high school students on *Second Harmonic Generation (SHG) Effect in Nonlinear Bulk Crystals and SHG microscopy* (Summer 2022 & 2019).
- (6) Mentored Shishu Zhang (graduate student at Peking University) on the project: *Polarized Raman Spectra of Anisotropic 2D Materials ReS₂* (June. 2016- Dec. 2016).
- (7) Mentored Bowen Han (undergraduate student at Peking University) on the project: *Polarized Raman and Optical Investigation of Anisotropic 2D Materials* (Oct. 2014- May 2015).
- (8) Mentored Chenxin Tian (high school student from Beijing 101 Middle School) on the project: *Raman Enhancement Effect on Graphene/Metal nanostructures* (May 2013).

GRANT WRITING

- (1) QuIC – TAQS Preliminary Proposal: Integrated Quantum Interconnects using Novel Nanophotonic Materials and Concepts
Title: Epsilon-Near-Zero Quantum Materials
Co-PIs: Xiaofeng Qian, Zi Jing Wong, Jing Kong
Contributions: brainstorming the key ideas; drafting and editing part of the proposal;

REFERENCES

Prof. Jing Kong (postdoc advisor)

Department of Electrical Engineering and Computer Science and, Massachusetts Institute of Technology,
Cambridge, Massachusetts 02139, United States

Tel: 617-324-4068

Email: jingkong@mit.edu

Prof. William A. Tisdale (postdoc advisor)

Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139.

Tel: 617-253-4975

Email: tisdale@mit.edu

Prof. Jin Zhang (PhD advisor)

College of Chemistry and Molecular Engineering Peking University, Beijing 100871, CHINA.

Tel: 86-10-6275-2555

Email: jinzhang@pku.edu.cn