

**Limei Xu**  
Curriculum Vitae

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**CONTACT INFORMATION**

International Center for Quantum Materials (ICQM)  
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**EDUCATION**

2007 Ph.D., Boston University  
1999 M. S., Beijing Normal University  
1996 B. A., Beijing Normal University (with honors)

**ACADEMIC APPOINTMENTS**

2017-                      Boya Professor, ICQM & School of Physics, Peking University  
2015.7-2017.7           Associate Professor (tenured), ICQM & School of Physics, Peking University  
2011.9-2011.12        Visiting Professor, Chemical Physics Dept., Weizmann Institute of Sciences  
2011.7-2015.6        Associate Professor, ICQM & School of Physics, Peking University  
2008.10-2011.6       Assistant Professor, WPI-AIMR, Tohoku University  
2007.9-2008.10       Post-Doctoral Fellow, Department of Chemistry, University of Utah

**RESEARCH INTERESTS**

**Soft Condensed Matter Physics; Statistical Physics**

- Phase transitions: Critical and supercritical phenomenon, supercooled liquids
- Non-equilibrium statistical physics: glass transition, kinetics and dynamics in nucleation
- Interfacial sciences: water structures and dynamics in bulk / confinement / on surfaces

**HONORS / AWARDS / RECOGNITION**

2019    First Prize of Natural Science of Ministry of Education  
2019    “Reveal the atomic structure and magic effect of hydrated ions” was selected as  
          “Ten Advances in Science in China”  
2019    “Excellent Editor Award”, Science China-Physics, Mechanics & Astronomy  
2018    Tang Lixin Award for Teaching  
2015    Awardee of the National Science Fund for Distinguished Young Scholars  
2011    1000 Young Scientist Award (Recruitment Program for Global Experts of China)  
2007    publication (*Proc. Natl. Acad. Sci* **102**, 16558, 2005) was selected as “Emerging  
          Research Fronts in Physics” by Thomson/ScienceWatch ESI Special Topics.

## GRANTS

- 2015-2019 PI National Basic Research Program (973), Grant No. 2015CB856801 ( ¥ 4,700,000 rmb).
- 2020-2024 PI NSFC, Key Projects of the NSFC, Grant No. ( ¥ 3, 200,000 rmb)
- 2012-2017 Co-PI National Natural Science Foundation of China, Grant No. 11174006 ( ¥ 800,000 rmb).
- 2012-2016 Co-PI National Basic Research Program (973), Grant No. 2012CB921404 ( ¥ 900,000 rmb).
- 2013-2016 PI National Natural Science Foundation of China, Grant No.11290162 ( ¥ 600,000 rmb)
- 2009-2013 PI Grant-in-Aid for Young Scientists, Japanese Society for Promotion Science (Kakenhi) (5,000,000 JPY)
- 2009-2011 PI WPI-AIMR Fusion Research Award, Tohoku University, Japan (3,000,000 million JPY)

## SERVICES

### *Conference organizers:*

- Organizing Committee, 2023 CPS Annual Meeting, topics of Soft Matter
- Organizing Committee, 2023 Statistical Physics Annual Meeting
- Organizing Committee, 2020 Statistical Physics Annual Meeting
- Co-organizers, Soft Matter, Annual Meeting of the Chinese Physics Society, Chengdu, 2017/9/12;
- Organizing Committee, 26<sup>th</sup> IUPAP STATPHY- Topics of Soft Matter
- Co-chair, The International Conference on Water Sciences, Beijing, 2014/4/14-2014/4/17;
- Co-organizers, the 4th International Symposium on Slow Dynamics in Complex Systems, Sendai, Japan, 2012/12/2-2012/12/7;
- Co-organizers, the 5<sup>th</sup> Discussion Meeting on Glass Transition, Sendai, Japan, 2012/02/28-2012/03/02;
- Co-organizers, Horizons in Emerging & Scaling (HES) Symposium and Gala, Boston, USA, 2011/03/18-2011/03/20;
- Co-organizers, the 4<sup>th</sup> Discussion Meeting on Glass Transition, Sendai, Japan, 2011/02/28-2011/03/2.
- Scientific Committee, the 6<sup>th</sup> International Conference--Physics of Liquid Matter: Modern Problems, Kyiv, Ukraine, 2014/5/23-2014/5/27;

### *Board Member*

- Associate Editor Science China-Physics, Mechanics & Astronomy
- Associate Editor Chinese Physics Letters

Co-Editor            Europhysics Letters  
Editorial Board    Journal of Physics: Condensed Matter

### ***Journal Referee***

Nature Communication, PNAS, PRL, Soft Matter, JCP, JPCL, PCCP, etc.

### ***Committee Member***

- Chinese Physical Society—Women in Physics working Group
- Chinese Physical Society-- Division of Glass Materials
- Chinese Physical Society--Division of Condensed Matter Physics & Statistical Physics
- Council Member of the Chinese Physical Society    (2015-2019)

### ***University Service***

- Vice Dean, School of Physics, Peking University (2019-present)
- Associate director: International Center for Quantum Materials, PKU (2015-2020)
- Chair: ICQM Committee of Student Affairs (2015-2018)

### **TEACHING**

Computational Physics	graduate & undergraduate
Statistical Physics	undergraduate
Frontiers in Quantum Materials	undergraduate

### **LIST OF PUBLICATIONS**

1. Machine learning aided atomic structure identification of interfacial ionic hydrates from AFM images. B Tang, Y Song, M Qin, Y Tian, ZW Wu, Y Jiang\*, D Cao\*, **L Xu\***. National Science Review 2023, nwac282.
2. Conformal boundary conditions of symmetry-enriched quantum critical spin chains. XJ Yu, RZ Huang, HH Song, **L Xu**, C Ding, L Zhang. Physical Review Letters 2022, 129:210601.
3. Fidelity susceptibility as a diagnostic of the commensurate-incommensurate transition: A revisit of the programmable Rydberg chain. XJ Yu, S Yang, JB Xu, **L Xu\***, Physical Review B 2022, 106:165124.
4. Visualizing Eigen/Zundel cations and their interconversion in monolayer water on metal surfaces. Ye Tian, Jiani Hong, Duanyun Cao, Sifan You, Yizhi Song, Bowei Cheng, Zhichang Wang, Dong Guan, Xinmeng Liu, Zhengpu Zhao, Xin-Zheng Li, **Li-Mei Xu**, Jing Guo, Ji Chen, En-Ge Wang, Ying Jiang. Science 2022, 377:315-319.
5. Advances in Atomic Force Microscopy: Imaging of Two-and Three-Dimensional Interfacial Water. D Cao, Y Song, BZ Tang, L Xu\*. Frontiers in Chemistry 2021,9:745446.
6. Qiong Gao, Jingdong Ai, Shixiang Tang, Minhuan Li, Yanhuang Chen, Jiping Huang, Hua Tong, Lei Xu, **Limei Xu\***, Hajime Tanaka\*, and Peng Tan\*. Fast crystal growth at ultra-low temperatures. Nature Materials 2021, 20: 1431-1439. [Citations: 12](#)
- 7.

8. Glass polyamorphism in gallium: Two amorphous solid states and their transformation on the potential energy landscape. Y Liu, G Sun, **L Xu\***. *Journal of Chemical Physics* 2021,154:134503.
9. Energy stored in nanoscale water capillary bridges formed between chemically heterogeneous surfaces with circular patches. BZ Tang, XJ Yu, SV Buldyrev, N Giovambattista, **L Xu\***. *Chinese Physics B* 2020, 29:114703.
10. Yingqi Zhang, Liying Zhou, Shengye Tao, Jinfeng Li, Kaiming Zheng, Yuanchao Hu, Kaixuan Fang, Cheng Song, **Limei Xu\***, Kefu Yao, Zhengjun Zhang, Na Chen\*. Widely tunable structure and properties via oxygen manipulation in amorphous alloys. *Science China* 2021, 64: 2305-2312.
11. Jianqing Guo, Liying Zhou, Andrea Zen, Angelos Michaelides, Xifan Wu, Enge Wang\*, **Limei Xu\***, and Ji Chen\*. "Hydration of NH<sub>4</sub> in Water: Bifurcated Hydrogen Bonding Structures and Fast Rotational Dynamics". *Phys. Rev. Lett* 2020, 125:106001. [Citations: 12](#)
12. Binze Tang, Sergey V. Buldyrev, **Limei Xu\***, and Nicolas Giovambattista\*. "Energy Stored in Nanoscale Water Capillary Bridges between Patchy Surfaces". *Langmuir* 2020, 36, 7246–7251
13. Bin-Ze Tang, Xue-Jia Yu, Sergey V. Buldyrev\*, Nicolas Giovambattista\*, and **Limei Xu\***. "Energy stored in nanoscale water capillary bridges formed between chemically heterogeneous surfaces with circular patches". *Chin. Phys. B* 2020, 29:114703.
14. Yizhi Liu, Gang Sun, Ali Eltareb, Gustavo E. Lopez\*, Nicolas Giovambattista\*, and **Limei Xu\***. "Nuclear quantum effects on the thermodynamic response functions of a polymorphic waterlike monatomic liquid". *Phys. Rev. Research* 2020, 2: 013153.
15. R. Ma, D. Cao, C. Zhu, Y. Tian, J. Peng, J. Guo, J. Chen, X. Li, J. Francisco, X. Zeng\*, **L. Xu\***, E. Wang\* and Y. Jiang\*. Atomic imaging of edge structure and growth of a two-dimensional hexagonal ice. *Nature* 577, 60–63 (2020). [Citations: 117. Highly Cited paper.](#)
16. L. Zhou, J. Xu, **LM. Xu\***, X. Wu\*, Importance of van der Waals effects on the hydration of metal ions from the Hofmeister series. *J. Chem. Phys.* 150, 124505 (2019)
17. Guo J., Cao D.Y., Chen J., Bian K., **Xu L.**, Wang E.G., and Jiang Y. "Probing the intermolecular coupled vibrations in a water cluster with inelastic electron tunneling spectroscopy". *J. Chem. Phys.*152, 234301 (2020)
18. D. Cao, Y. Song, J. Peng, R. Ma, J. Guo, J. Chen, X. Li, Y. Jiang, E. Wang and **L. Xu\***, "Advances in Atomic Force Microscopy: Weakly Perturbative Imaging of the Interfacial Water." *Frontiers in Chemistry* 7 (2019): 626.
19. R.Zhang, J.Dong, T.Luo, Tang, F.Tang, X.Peng, C.Zhou, X.Yang, **L.Xu**, Z.Ren. Adsorption Structure and Coverage-Dependent Orientation Analysis of Sub-Monolayer Acetonitrile on TiO<sub>2</sub>(110). *J. Phys. Chem. C.* 123, 17915 (2019).
20. Z. W. Wu, W. Kob, W. H. Wang, **L. Xu\***, "Stretched and compressed exponentials in the relaxation dynamics of a metallic glass-forming melt" *Nature Comm.* 9, 5334(2018). [Citations: 45](#)
21. R. Wang. **L. Xu\***, F. Wang\*. Molecular-scale processes affecting growth rates of ice at moderate supercooling. *Front. Phys.* 13, 138116 (2018) [Citations 9](#)

22. J. B. Peng, D. Y. Cao, Z. L. He, J. Guo, P. Hapala, R.Z. Ma, B.W. Cheng, J. Chen, W.J. Xie, X.Z. Li, P. Jelinek, **L. Xu\***, Y. Q. Gao\*, E. G. Wang\*, Y. Jiang\*. “The effect of hydration number on the interfacial transport of sodium ions.” *Nature* 557, 701–705 (2018). [Citations: 177 Highly Cited Paper](#)
17. G. Sun, **L. Xu\***, N. Giovambattista\*. Anomalous features in the potential energy landscape of a water-like monatomic model with liquid and gas polymorphism. *Phys Rev. Lett.* 120, 035701 (2018) . [Citations: 8](#)
18. J. Peng, J. Guo, P. Hapala, D. Cao, R. Ma, B. Cheng, **L. Xu**, M. Ondráček, P. Jelínek\*, E.-G. Wang\*, and Y. Jiang\*, “Weakly perturbative imaging of interfacial water with submolecular resolution by atomic force microscopy”, *Nature Communications* 9, 122 (2018). [Citations: 112](#)
19. H. Z. Shen, M. H. Chen, Z. R. Sun, **L. Xu**, E. G. Wang\*, X. F. Wu\*. Signature of the hydrogen-bonded environment of liquid water in X-ray emission spectra from first-principles calculations. *Frontiers of Physics* 13, 138204 (2017). [Citations: 2](#)
20. Z. R. Sun, M. H. Chen, L. Z. Zheng, J. P. Wang, B. Santra, H. Z. Shen, **L. Xu**, W. Kang, M. L. Klein, X. F. Wu. “X-ray absorption of liquid water by advanced ab initio methods.” *Phys. Rev. B* 96, 104202(2017). [Citations: 2](#)
21. R. Z. Li, Z. W. Wu, **L. Xu\***. Liquid-liquid phase transition and anomalous properties. *ACTA PHYSICA SINICA* 66 (17), 176410 (2017).
22. Z. W. Wu, M. Z. Li, **L. Xu**, W. H. Wang. Inherited structure of amorphous matter. *ACTA PHYSICA SINICA* 66 (17), 176405 (2017).
23. W. J. Smit, F. J. Tang, M. A. Sanchez, E. H. G. Backus, **L. Xu**, T. Hasegawa, M. Bonn, H. J. Bakker, Y. Nagata . Excess hydrogen bond at the ice-vapor interface around 200K. *Phys. Rev. Letts.* 119, 133003(2017). [Citations: 51](#)
24. G. Sun, **L. Xu\***, N. Giovambattista\*. Relationship between the Potential Energy Landscape and the Dynamic Crossover in a Water-Like Monatomic Liquid with a Liquid-Liquid Phase Transition. *J Chem Phys.* 146, 014503 (2017). [Citations: 14](#)
25. S. P. Pan, W. H. Wang, M. Z. Li, **L. Xu\***. “Structural origin of fractional Stokes-Einstein relation in glass-forming liquids”, *Scientific Reports* 7, 39938 (2017). [Citations: 28](#)
26. S. Cervený, F. Mallamace, J. Swenson, M. Vogel, and **L. Xu**. Confined Water as Model of Supercooled Water. *Chemical Reviews* 116, 7608-7625 (2016). [Citations: 276](#)
27. G. Sun, Y. Wang, A. Lomakin, G. B. Benedek, H. E. Stanley, **L. Xu\***, S. V. Buldyrev. The phase behavior study of human antibody solution using multi-modeling. *J. Chem. Phys.* 145, 194901(2016). [Citations: 15](#)
28. G. Sun, **L. Xu\***. Confinement effects on phase transitions of water-like liquids. *Scientia-Sinica Physica, Mechanica & Astronomica* 46, 057005(2016). [Citations: 5](#)
29. P Gallo, K. Amann-Winkel, C. A. Angell, M. A. Anisimov, F. Caupin, C. Chakravarty, E. Lascaris, T. Loerting, A. Z. Panagiotopoulos, J. Russo, J. A. Sellberg, H. E. Stanley, H. Tanaka, C. Vega, **L. Xu**, and L. G. M. Pettersson. Water: A tale of Two Liquids.

Chemical Reviews 116, 7463-7500 (2016). **Citation: 643 (highly cited paper)**

30. R. Z. Li, G. Sun, **L. Xu\***. Anomalous properties and the liquid-liquid phase transition in gallium. *Journal of Chemical Physics* 145, 054506 (2016). **Citations: 16**
31. G. Sun, N. Giovambattista, **L. Xu\***. Confinement effects on the liquid-liquid phase transition and anomalous properties of a monatomic water-like liquid. *J. Chem. Phys.* 143, 244503(2015). **Citations: 11**
32. R. Z. Li, J. Chen, X. Z. Li, E. G. Wang, **L. Xu\***. Supercritical phenomenon of hydrogen beyond the liquid-liquid phase transition. *New Journal of Physics* 17, 063023 (2015). **Citations: 16**
33. J. Luo, **L. Xu\***, C. A. Angell, H. E. Stanley, and S. V. Buldyrev. Physics of the Jagla Model as the Liquid-Liquid Coexistence Line slope varies. *J Chem Phys* **142**, 224501 (2015). **Citations: 19**
34. L. Gu, **L. Xu**, Q. S. Zhang, D Pan, N. Chen, D. V. Louzguine-Luzgin, K. F. Yao, W. H. Wang & Y. Ikahara. Direct in situ observation of metallic glass deformation by real-time nano-scale indentation. *Scientific Reports* 5, 9122 (2015). **Citations: 14**
35. J. C. Wei, **L. Xu\***, F. Song\*. Range effect on percolation threshold and structural properties for short-range attractive spheres. *J. Chem. Phys.* 142, 034504 (2015).
36. J. Wedekind, **L. Xu**, S.V Buldyrev, H.E Stanley, D. Reguera, G. Franzese. "Optimization of crystal nucleation close to a metastable fluid-fluid phase transition." *Scientific reports* 5, 11260. **Citations: 24**
37. Y. C. He, G. Sun, K. Koga, **L. Xu\***. Electrostatic field-exposed water in nanotube". *Scientific Reports* 4, 6596 (2014). **Citations: 28**
38. G. Sun, J. Tangpanitanon, H. Z. Shen, W. Bo, J. M. Xue, E. G. Wang, **L. Xu\***. "Physisorption of molecular hydrogen on carbon nanotube with vacant defects. *J. Chem. Phys.* **140**, 204712 (2014). **Citations: 8**
39. J. Chen, J. Guo, X. Z. Meng, J. B. Peng, J. M. Sheng, **L. Xu**, Y. Jiang, X. Z. Li, E. G. Wang. An unconventional bilayer ice structure on a NaCl(001) film. *Nature Communication* 5, 4056 (2014). **Citations: 75**
40. M. Cheng, D. Wang, Z. Sun, J. Zhao, R. Yang, G. Wang, W. Yang, G. Xie, J. Zhang, P. Chen, C. He, D. Liu, **L. Xu**, D. Shi, E. Wang, and G. Zhang. A Route toward Digital Manipulation of Water Nanodroplets on Surfaces. *ACS Nano* 8, 3955–3960 (2014). (Highlighted by <http://www.nanowerk.com/spotlight/spotid=35011.php>). **Citation: 35**
41. J. Luo, **L. Xu\***, E. Lascaris, H. E. Stanley, and S. V. Buldyrev. Behavior of the Widom Line in Critical Phenomena. *Phys. Rev. Lett.* 112, 135701 (2014). **Citation: 21**
42. Z. Sun, G. Sun, Y. Chen, and **L. Xu\***. Liquid-liquid phase transition in water. *Science China-Phys Mech & Astron* 57, 810-818 (2014). (invited review) **Citations: 13**
43. J. Guo, X. Z. Meng, J. Chen, J. B. Peng, J. M. Sheng, X. Z. Li, **L. Xu**, J. R. Shi, E. G. Wang, and Y. Jiang. Real-space imaging of interfacial water with submolecular resolution. *Nature Materials* 13, 184-189 (2014). (Highlighted by <http://www.nanowerk.com/spotlight/spotid=35011.php>). **Citations: 185**

44. Chen, J; Guo, J; Meng, XZ; Peng, JB; Sheng, JM; Xu, LM; Jiang, Y; Li, XZ; Wang, EG. An unconventional bilayer ice structure on a NaCl(001) film. *Nature Communications* 5, 4056 (2014). [Citations: 75](#)
45. Z. Sun, D. Pan, **L. Xu**, and E. G. Wang\*. Progress in the structural and physical properties of surface. *Science China - Phys Mech & Astron* 43, 1144–1150 (2013). Invited Review. [Citations: 2](#)
46. G. Sun, N. Giovambattista, E. G. Wang, and **L. Xu\***. Effects of surface structure and solvophilicity on the crystallization of confined liquids. *Soft Matter* 9, 11374 (2013). [Citations: 10](#)
47. **L. Xu\***, S. V. Buldyrev, H. E. Stanley, and G. Franzese. Homogeneous crystal nucleation near a metastable fluid-fluid phase transition. *Phys. Rev. Lett.* 109, 095702 (2012). [Citations: 25](#)
48. Z. Sun, D. Pan, **L. Xu\***, and E. G. Wang\*. The role of proton ordering in adsorption preference of polar molecule on ice surface. *Proc. Natl. Acad. Sci. USA* 109, 13177-13181 (2012). [Citations: 33](#) Highlighted by <http://www.natureasia.com/en/nchina/article/10.1038/nchina.2012.60>.
49. **L. Xu\*** and V. Molinero, “Is There a Liquid-Liquid Transition in Confined Water?” *J. Phys. Chem. B* 115, 14210-14216 (2011). [Citations: 36](#)
50. H. E. Stanley, S. V. Buldyrev, P. Kumar, F. Mallamace, M. G. Mazza, K. Stokley, **L. Xu**, G. Franzese. Water in nanoconfined and biological environments. *J. Non-Cryst. Solids* 357, 629-640 (2011). [Citations: 29](#)
51. **L. Xu\***, N. Giovambattista, S. V. Buldyrev, P. G. Debenedetti, and H. E. Stanley. Water-like glass polymorphism in a monoatomic isotropic Jagla model. *J. Chem. Phys.* 134, 064507 (2011). [Citations: 42](#)
52. **Xu, LM**; Buldyrev, SV; Giovambattista, N; Angell, CA; Stanley, HE. A monoatomic system with a liquid-liquid critical point and two distinct glassy states. *J. Chem. Phys.* 130, 054505 (2011). [Citations: 69](#)
53. **L. Xu\***, S. V. Buldyrev, N. Giovambattista, and H. E. Stanley. Liquid-liquid phase transition and glass transition in monoatomic model system. *International Journal of Material Science* 11, 5185-5201 (2010).
54. H. E. Stanley, S. V. Buldyrev, G. Franzese, P. Kumar, F. mallamace, M. G. Mazza, K. Stokoly, and **L. Xu**, “Liquid polyamorphism: water in nanoconfined and biological environments.” *J. Phys.: Condensed Matter* 22, 284101 (2010). [Citations: 50](#)
55. **L. Xu** and Valeria Molinero, “Liquid-vapor oscillations of water nanoconfined between hydrophobic disks: thermodynamics and kinetics.” *J. Phys. Chem. B* 114, 7320 (2010). [Citations: 39](#)
56. **L. Xu\***, S. V. Buldyrev, F. W. Starr, F. Mallamace, and H. E. Stanley. “Appearance of a fractional Stokes-Einstein relation in water and a structural interpretation of its onset.” *Nature Physics* 5, 565-569 (2009). [Citations: 256](#)
57. S. V. Buldyrev, G. Malescio, C. A. Angell, N. Giovambattista, S. Prestipino, F. Saija, H. E. Stanley, and **L. Xu**. “Unusual phase behavior of one-component systems with two-scale isotropic interactions.” *J. Phys.: Condensed Matter* 21, 504106 (2009). [Citations: 131](#)

58. H. E. Stanley, P. Kumar, M. G. Mazza, K. Stokley, S. V. Buldyrev, G. Franzese, M. Mallamace, and L. Xu. "Heterogeneities in confined water & protein hydration water." J. Phys.: Condensed Matter 21, 504105 (2009). [Citations: 17](#)
59. L. Xu\*, S. V. Buldyrev, N. Giovambattista, C. A. Angell, and H. E. Stanley. "Glass transition and density minimum in Jagla model". J. Chem. Phys. 130, 054505 (2009). [Citations: 100](#)
60. H. E. Stanley, S. V. buldyrev, S.-H. Chen, G. Franzese, S. Han, P. Kumar, F. mallamace, M. G. Mazza, L. Xu, and Z. Yan. "Liquid Polyamorphism and the Anomalous Behavior of Water." Advances in Solid State Physics 48, 249-266 (2009).
61. H. E. Stanley, P. Kumar, G. Franzese, L. Xu, Z. Yan, M.G. Mazza, S. V. Buldyrev, S.H. Chen, F. Mallamace. "Liquid polyamorphism: Possible relation to the anomalous behaviour of water". European Physical Journal-Special Topics 161, 1-17 (2008). [Citations: 51](#)
62. H. E. Stanley, P. Kumar, L. Xu, Z. Yan, M. G. Mazza, S. V. Buldyrev, and S. -H. Chen, F. Mallamace. "The puzzling unsolved mysteries of liquid water: A lecture for students". Physica A 386, 729-743 (2007). [Citations: 90](#)
63. P. Kumar, Z. Yan, L. Xu, M. G. Mazza, S. V. Buldyrev, S.-H. Chen, S. Sastry, H. E. Stanley. "Protein glass transition and the liquid-liquid critical point of water," Phys. Rev. Lett. **97**, 177802 (2006). [Citations: 261](#)
64. L. Xu\*, S. V. Buldyrev, C. A. Angell, H. E. Stanley. "Thermodynamics and dynamics of the two-scale spherically-symmetric Jagla model of anomalous liquids," Phys. Rev. E **74**, 031108 (2006). [Citations: 211](#)
65. L. Xu\*, I. Ehrenberg, S. V. Buldyrev and H. E. Stanley. "Relation between the liquid-liquid phase transition and dynamic behavior in the Jagla model," J. Phys.: Condensed Matter **18**, S2239 (2006). [Citations: 34](#)
66. L. Xu\*, P. Kumar, S. V. Buldyrev, S.-H. Chen, P. H. Poole, F. Sciortino and H. E. Stanley. "Relation between the widom line and the strong-fragile dynamic crossover in systems with a liquid-liquid phase transition." Proc. Natl. Acad. Sci. USA 102, 16558 (2005). [Citations: 847 \(Selected as Emerging Research Fronts in Physics in April 2007: \[http://www.esi-topics.com/erf/2007/april07-Xu\\\_Stanley.html\]\(http://www.esi-topics.com/erf/2007/april07-Xu\_Stanley.html\)\)](#).
67. L. Xu\*, P. Ch. Ivanov, K. Hu, Z. Chen, A. Carbone, H. E. Stanley, "Quantifying signals with power-law correlations: A comparative study of detrended fluctuation analysis and detrended moving average techniques", Phys. Rev. E **71**, 051101 (2005). [Citations: 320](#)
68. L. Xu\*, Z. Chen, K. Hu, H. E. Stanley, P. Ch. Ivanov. "Spurious detection of phase synchronization in coupled nonlinear oscillators," Phys. Rev. E **73**, 065201[**Rapid communication**] (2006). [Citations: 45](#)
69. P. Shi, G. Hu, and L. Xu, " The largest lyapunov exponent of coupled map lattice systems," Acta Physica Sinica **49**, 24 (2000). [Citations: 5](#)
70. H. E. Stanley, P. Kumar, G. Franzese, L. Xu, Z. Yan, M. G. Mazza, S.-H. Chen, F. Mallamace, and S. V. Buldyrev, "Liquid Polyamorphism: Some Unsolved Puzzles of Water in Bulk, Nanoconfined, and Biological Environments," in *Fifth International Workshop on Complex Systems, Sendai, Japan*, edited by M. Tokuyama, I. Oppenheim, and H. Nishiyama, AIP Conf. Proc. **982**, 251-271 (2008).



71. H. E. Stanley, P. Kumar, **L. Xu**, Z. Yan, M. G. Mazza, S. V. Buldyrev, S.-H. Chen, and F. Mallamace, "New Results on Water in Bulk, Nanoconfined, and Biological Environments," in *Proceedings of CTNEXT07, Complexity, Metastability and Nonextensivity, Catania, Italy, 1-5 July 2007*, edited by S. Abe, H. J. Herrmann, P. Quarati, A. Rapisarda, and C. Tsallis (American Institute of Physics, 2007), pp. 193-212.
72. H. E. Stanley, P. Kumar, **L. Xu**, Z. Yan, M. G. Mazza, S. V. Buldyrev, and S.-H. Chen, "Relation between the Widom Line and the Dynamic Crossover in Bulk Water and in Protein Hydration Water," in *Proceedings of the Eighth International Conference on Quasi-Elastic Neutron Scattering*, edited by P. E. Sokol, H. Kaiser, D. Baxter, R. Pynn, D. Bossev, and M. Leuschner (Materials Research Society, Warrendale PA, 2007), pp. 3.

### **INVITED TALKS**

- 1) "Structure and Dynamics of Water on Surfaces". Invited talk, the 7<sup>th</sup> International Soft Matter Conference, IUPAP(WG 15), Osaka, Japan, 2023.
- 2) "Topological Event and Plastic Events in glasses", Invited talk, the 7<sup>th</sup> Statistical Physics Complex Systems Conference, Kunming, 2023.
- 3) "Supercritical Phenomenon in glassforming systems". invited talk, the AAPPS Statistical Physics Conferences, virtual July 31-August 1<sup>st</sup>, 2022.
- 4) "Supercritical Phenomenon in glassforming systems", Plenary talk, the 6<sup>th</sup> Statistical Physics Complex Systems Conference, Chuangchun, July 31-August 1<sup>st</sup>, 2021.
- 5) "Structure and Dynamics of water-ion hydrates at interfaces". Colloquium, City University of Hong Kong, Nov 18<sup>th</sup>, 2020
- 6) "Structure and Dynamics of water-ion hydrates at interfaces", invited talk, July 14-16<sup>th</sup>, 2019, Workshop on Structure and Dynamics of Glass, Supercooled and Nanocofined Fluids, Buenos Aires, Argentina.
- 7) "Connectivity between structure and dynamics in glass-forming liquids", invited talk, IUPAP (C3) STATPHY, 2019, Buenos Aires, Argentina.
- 8) "Connectivity between structure and dynamics in glass-forming liquids", invited talk, Jan. 15<sup>th</sup>, 2019, Kunming Institute of Technology, Kunming.
- 9) "Dynamic transition and its structural origin in glass-forming liquids", 2019 International Workshop on Glass Physics in Beijing September 25<sup>th</sup>-28<sup>th</sup>, 2019, Beijing.
- 10) "Connectivity between structure and dynamics in glass-forming liquids", invited talk, April 27<sup>th</sup>, 2019. Soft Matter Workshop in Beijing, Beijing.
- 11) "Connectivity between dynamics, structure and phase transition in glass-forming liquids", Colloquium, Feb 25<sup>th</sup>, 2019. Huazhong Institute of Technology, Wuhan.
- 12) "Study of phase transition and dynamics using potential energy landscape method", invited talk, September, 2018, Chinese Physical Society, Dalian, China.
- 13) "The phase behavior study of antibody protein solutions using multiscale modeling", invited talk, Nov 10-12, 2018, The 11th National Conference on Soft Matter Physics and

Biophysics, Chongqing, China.

- 14) “Structure and dynamics of water on surfaces”, *invited talk*, July 1-5, 2018, Manchester, UK.
- 15) “Structure and dynamics of water in low dimensions”, Lecture, July 4-12, 2018, Erice, Italy.
- 16) “Phase behavior study of protein using multi-scale modeling”, invited talk, July 12-14, Baiona, Spain.
- 17) “Connection between Structure and dynamics in glass-forming liquids,” *invited talk*, June 19-21, 2018. CSRC, Beijing.
- 18) “Connection between Structure and dynamics in glass-forming liquids,” *plenary talk*, May 18-22, 2018. The 8<sup>th</sup> International Conference on Physics of Liquid Matters: Modern Problems (PLMMP), Kiev, Ukraine.
- 19) “Liquid-liquid phase transition in complex systems,” *invited talk*, January 16-19, 2018. International Workshop for PSL, City University of Hongkong, Hongkong.
- 20) “Dynamic crossover and its structural origin”. *Department seminar*, Feb 17<sup>th</sup>, 2017, Boston University
- 21) “Supercritical phenomenon and its application in complex liquids”. *Colloquium*, Feb 14<sup>th</sup>, 2017, Yeshiva University.
- 22) “Molecular dynamics simulations and its application in the phase transition of complex liquids”, *Lecturer*, August 5-6, 2016. Summer School on Statistical Physics and Complex Systems, Rizhao, China.
- 23) “Understand water-like anomalies with two-scale isotropic interactions”, *invited Lectures*, July 23-31, 2016. International School of Neutron Science and Instrumentation 3<sup>rd</sup> Course: Water and the Water Systems, Erice-Sicily, Italy
- 24) “Dynamic crossover and structure correlation”, *invited Lectures*, July 23-31, 2016. International School of Neutron Science and Instrumentation 3<sup>rd</sup> Course: Water and the Water Systems, Erice-Sicily, Italy
- 25) “The phase behavior study of antibody solutions using multi-scale modeling,” *invited talk*, September 3, 2016. Annual Meeting of the Chinese Physical Society, Beijing, China.
- 26) “The phase behavior study of antibody solutions using multi-scale modeling,” *invited talk*, June 26-27, 2016. International Conference on Soft Matters, Tianjin, China.
- 27) “Dynamic transition and phase transition”. *Colloquium*, April 8<sup>th</sup>, 2016. Zhejiang University, Hangzhou, China.
- 28) “Correlation between dynamics and structure”, *invited talk*, May 7-14, 2016. Annual meeting on Soft Matter and Complex Systems, Hangzhou, China.
- 29) “Dynamic crossover in glass-forming liquids”, *invited talk*, May 14<sup>th</sup>, 2016. Workshop on Structure and properties of metallic glasses, Dongnan University, Nanjing, China.
- 30) “Multi-scale modeling of phase behavior of antibody solutions”, *invited talk*, May 8<sup>th</sup>, 2016, Huazhong Agriculture University, Wuhan, China.

- 31) “Dynamic crossover in glass-forming liquids”, *invited talk*, March 25, 2015. Beijing Computational Science Research Center, Beijing, China.
- 32) “Supercritical phenomenon and its application in complex liquids”, *invited talk*, City University of Hongkong, Jan 27<sup>th</sup>, 2016.
- 33) “Structural origin of fractional Stokes-Einstein relation in glass-forming liquids”, *invited talk*, 1<sup>st</sup> CityU-PKU Workshop on disorder and disordered Materials, Jan 25-26, 2016.
- 34) “Structural origin of fractional Stokes-Einstein relation in glass-forming liquids”, *invited talk*, December 26, Statistical physics and complex systems workshop, Beijing University of Posts and Telecommunications, Beijing, China.
- 35) “Critical and supercritical phenomenon in complex systems”, *invited talk*, The 5<sup>th</sup> Joint ICQ Annual Workshop, August 13-15, 2015, Hefei.
- 36) “Structural origin of fractional Stokes-Einstein relation in glass-forming liquids”, *Plenary talk, August 18–20, 2015*. The 8<sup>th</sup> Cross-Strait Statistical Physics Workshop, Taiwan.
- 37) “Structural origin of fractional Stokes-Einstein relation in glass-forming liquids” *invited talk*, The 3<sup>rd</sup> East Asia Joint Seminar on Statistical Physics October 14-17<sup>th</sup>, 2015, Seoul, South Korea.
- 38) “Supercritical phenomenon and its application in complex liquids”, *invited talk*, Workshop on structure and dynamics of supercooled water and other glassy, OCTOBER10-13<sup>th</sup>, 2015, Palermo, Italy
- 39) “Study of liquid phase transition using potential energy landscape method”. *Invited talk*, Sept 10-13, 2015. The Annul Meeting of the Chinese Physical Society (CPS), Changchun, China.
- 40) “Multi-scale modeling of phase behavior of antibody solutions”. *Invited talk*, Sept 10-13, 2015. The Annul Meeting of the Chinese Physical Society (CPS), Changchun, China.
- 41) “Supercritical phenomenon and its application in complex liquids”. *Plenary talk*, July 22-24, 2015. The 3<sup>rd</sup> International Conference on Statistical Physics and Complex systems. Lanzhou, China.
- 42) “Confinement and surface chemistry effect on phase behavior of water “, *invited talk*, October 13<sup>th</sup>-17<sup>th</sup>, 2014. Workshop on “Theoretical Interpretations of Experimental Data”, Stockholm, Sweden.
- 43) “Understand water-like anomalies with two-scale interactions”, *invited talk*, October 20<sup>th</sup>-24<sup>th</sup>, 2014. International conference on Water—the most anomalous liquid, Stockholm, Sweden.
- 44) “Confinement and surface chemistry effect on phase behavior of water”, *invited talk*, October 27<sup>th</sup>-31<sup>th</sup>, 2014. Workshop on “Thermodynamics and Simulations of Water”, Stockholm, Sweden.
- 45) “Structural origin of fractional Stokes-Einstein relation in glass-forming liquids”, *invited talk*, November 7<sup>th</sup>-8<sup>th</sup>, 2014. The 9<sup>th</sup> Workshop for Soft Matter Physics and Biophysics, Wenzhou, china.

- 46) “Supercritical phenomenon in systems with liquid-liquid phase transition”, *invited talk*, September 11<sup>th</sup> -14<sup>th</sup>, 2014. Chinese Physical Society Annual Meeting (2014), Haierbin, China.
- 47) “Effect of hydrophobic /hydrophilic confinement on the phase behaviors of water”, *invited talk*, September 5<sup>th</sup>-8<sup>th</sup>, 2014. Workshop on Complex Systems and Statistical Physics, Changchun, China.
- 48) “Understanding the anomalous behavior of water,” *invited talk*, June 27-30, 2014. The 25<sup>th</sup> StatPhys Satellite meeting, Taiwan.
- 49) “Study of spontaneous nucleation near a metastable critical point”, *invited talk*, July 13<sup>th</sup>-16<sup>th</sup>, 2014. The 13<sup>th</sup> international Conference on Condensed Matter Theory and Computational Materials, Chengdu, China.
- 50) “Phase behavior of water in bulk, confinement and on surfaces”, *keynote talk*, May 23<sup>th</sup>-27<sup>th</sup>, 2014. The 6<sup>th</sup> Physics of Liquid Matter: Modern Problems (PLMMP), Kyve, Uklain.
- 51) “Understand the anomalous behavior of water”, *Seminar*, May 7<sup>th</sup>, 2014. Renmin University of China, Beijing, China.
- 52) “Liquid transition and glass transition”, *invited talk*, Dec 16<sup>th</sup>, 2013. Institute of Physics, Chinese Academy of Sciences, Beijing, China.
- 53) “Study of spontaneous nucleation near a metastable critical point”, *invited talk*, Nov 8<sup>th</sup>-10<sup>th</sup>, 2013. West-Lake workshop on statistical physics and complex system, Hangzhou, China.
- 54) “Understanding the anomalous behavior of water”, *invited talk*, Aug 12<sup>th</sup>-14<sup>th</sup>, 2013. The 12<sup>th</sup> international Conference on Condensed Matter Theory and Computational Materials, Guangzhou, China.
- 55) “Understanding the liquid-liquid phase transition of water in bulk and confinement”, *invited talk*, July 21<sup>st</sup>-26<sup>th</sup>, 2013. The 7<sup>th</sup> International Discussion Meeting on Relaxation in complex systems, Barcelona, Spain.
- 56) “Understanding the anomalous phase behaviors of water”, *invited talk*, July 4<sup>th</sup>, 2013, Kyushu University, Japan.
- 57) “Phase transition of water in bulk and confined systems”, *invited talk*, June 4<sup>th</sup>, 2013. Workshop on Water Sciences, Beijing, China.
- 58) “Understanding the anomalous behavior of water”, *seminar*, May 27<sup>th</sup>, 2014. Beijing Normal University, China.
- 59) “Understanding the anomalous behavior of water”, *Colloquium*, March 19<sup>th</sup>, 2013, Fudan University, China.
- 60) “Phase behavior of water confined within hydrophilic/hydrophobic geometries”, *invited talk*, Dec 3<sup>rd</sup>, 2012. The 4th International Symposium on Slow Dynamics in Complex Systems, Sendai, Japan.
- 61) “How does hydrophilic/hydrophobic confinement affect the phase behavior of water”, *invited talk*, July 24<sup>th</sup>, 2012. The 11<sup>th</sup> international Conference on Condensed Matter Theory and Computational Materials, Lanzhou, China.

- 62) “Computational study on spontaneous nucleation”, *invited talk*, Feb 28<sup>th</sup>, 2012. The 5<sup>th</sup> Discussion Meeting on Slow Glass Transitions, Sendai, Japan.
- 63) “Water-Like Glass Polyamorphism in Monoatomic Isotropic Model”, *invited talk*, Feb 28<sup>th</sup>, 2011. The 4<sup>th</sup> Discussion Meeting on Slow Glass Transitions, Sendai, Japan.
- 64) “Critical phenomenon in hydrophic/hydrophobic confined water”, *invited talk*, Sept 15<sup>th</sup>, 2011. Chinese Physical Society annual meeting, Hangzhou, China
- 65) “Understanding of anomalous behavior of water”, *invited talk*, July 16<sup>th</sup>, 2011. Annual meeting of Theoretical Physics, Jinhua, China
- 66) “Liquid-vapor oscillations of water confined within hydrophobic surfaces”, *seminar*, May 30<sup>th</sup>, 2010. Shanghai Jiaotong University, Shanghai, China.
- 67) “Phase behaviors of water confined in hydrophilic and hydrophobic surfaces”, *invited talk* on Nov 13<sup>th</sup>, 2010, Florence, Italy.
- 68) “Stability of glasses in systems with liquid-liquid transformations,” *seminar*, April 9<sup>th</sup>, 2010. University of Science and Technology of China
- 69) “Critical phenomenon in soft matters,” *colloquium*, April 7<sup>th</sup>, 2010, Department of Physics, Shanghai Jiaotong University, Shanghai, China.
- 70) “Polyamorphism and polyamorphism,” *invited talk*, Dec 24<sup>th</sup>, 2009. Institute of Physics, Chinese Academy of Sciences, Beijing, China.
- 71) “Unusual phase behavior in monoatomic systems,” *invited talk*, November 7<sup>th</sup>, 2009. The first international conference on slow dynamics. Pusan National University, Pusan, South Korea.
- 72) “Can one understand water anomalies with a simple potential,” *invited talk*, July 7<sup>th</sup>, 2009. Organosoft and Hybrid Materials Laboratory, Tohoku University, Japan.
- 73) “Fractional Stokes-Einstein relation in water,” *invited talk*, April 30<sup>th</sup>, 2009. Advanced Functional Materials Lab, Tohoku University, Japan.
- 74) “Critical phenomenon and glass transition in water”, *invited talk*, February 27<sup>th</sup>, 2009. The second conference on slow dynamics and glasses, Tohoku University, Japan.
- 75) “Polyamorphism in monoatomic systems,” *invited talk*, February 14<sup>th</sup>, 2009. Institute of Fluid Science, Tohoku University, Japan.
- 76) “Phase synchronization in coupled nonlinear oscillators,” *invited talk*, February 23<sup>rd</sup>, 2007. University of Notre Dame, Notre Dame, Indiana, USA.
- 77) “Can one understand water anomalies with a simple two-scale potential”, *invited talk*, April 24<sup>th</sup>, 2007. University of Texas at Austin, Austin, Texas, USA.
- 78) “Water anomalies and liquid-liquid phase transition,” *invited talk*, February 15<sup>th</sup>, 2007. Ken State Institute, Kent, Ohio, USA.