

Yoonjae Park

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EDUCATION

- **05/2023** **Ph.D.**, Physical Chemistry, **University of California-Berkeley**, CA, USA
 Advisor: Prof. David T. Limmer
 Thesis: “Interplay between structural dynamics and optoelectronic properties in lead halide perovskites”
- **02/2018** **M. S.**, Physical Chemistry, **Sogang University**, Seoul, South Korea
 Advisor: Prof. Bong June Sung
 Thesis: “Simulation studies on dramatically slow dynamics of glass-forming liquids and seemingly Fickian but heterogeneous dynamics of a single particle in various ways”
- **02/2016** **B.S. Dual major in Chemistry & Mathematics, Summa Cum Laude**, Sogang University, Seoul, South Korea
- **Spring 2015** State University of New York, Geneseo, **Exchange Student Program**

PROFESSIONAL EXPERIENCE

- **2023-2025** **Postdoctoral Associate**, Chemistry, **Massachusetts Institute of Technology**, MA, USA
 Advisor: Prof. Adam P. Willard

PUBLICATIONS

* denotes equal contributions and † denotes corresponding author.

11. **Yoonjae Park** and Adam P. Willard, *Machine learning assisted entropy driven energy transport in 1-, 2-, and 3-D random lattices*, (2025) (in preparation)
10. **Yoonjae Park** and Adam P. Willard, *Extracting Electronic Coupling for Interfacial Electron Transfer via Ring Polymer Instanton Method in Condensed Phases*, (2025) (in preparation)
9. **Yoonjae Park** and Adam P. Willard, *Modeling interfacial electron transfer using path integral molecular dynamics*, (2025) (to be submitted)
8. **Yoonjae Park**, Rohit Rana, Daniel Chabeda, Eran Rabani, and David T. Limmer, *Theoretical insights into the role of lattice fluctuations on the excited behavior of lead halide perovskites*, **Acc. Mater. Res.** (2025) (under review)
7. **Yoonjae Park** and David T. Limmer, *Biexcitons are bound in CsPbBr₃ perovskite nanocrystals*, **Phys. Rev. Materials**, 7, 106002 (2023)
6. Daniel Weinberg[†], **Yoonjae Park**[†], David T. Limmer[†], and Eran Rabani[†], *Size-dependent lattice symmetry breaking determines the exciton fine structure of perovskite nanocrystals*, **Nano Letters**, 23, 11, 4997-5003 (2023)
5. Mengyu Gao, **Yoonjae Park**, Jianbo Jin, Pengcheng Chen, Hannah Devyldere, Yao Yang, Chengyu Song, Zhenni Lin, Qiuchen Zhao, Martin Siron, Mary C. Scott, David T. Limmer, and Peidong Yang, *Direct observation of transient structural dynamics of atomically thin halide perovskite nanowires*, **J. Am. Chem. Soc.**, 145, 4800-4807 (2023)
4. **Yoonjae Park** and David T. Limmer, *Renormalization of excitonic properties by polar phonons*, **J. Chem. Phys.**, Editor's Choice, 157, 104116 (2022)
3. **Yoonjae Park**, Amael Obliger, and David T. Limmer, *Nonlocal screening dictates the radiative lifetimes of excitations in lead halide perovskites*, **Nano Letters**, 22, 2398-2404 (2022)

2. Li Na Quan*, **Yoonjae Park***, Peijun Guo, Mengyu Gao, Jianbo Jin, Jianmei Huang, Jason K. Copper, Adam Schwartzberg, Richard Schaller, David T. Limmer, and Peidong Yang, *Vibrational relaxation dynamics in layered perovskite quantum wells*, **Proc. Natl. Acad. Sci.**, 118 (25) e2104425118 (2021)
1. **Yoonjae Park**, Jeongmin Kim, and Bong June Sung, *Translation-Rotation Decoupling of Tracers of Locally Favorable Structures in Glass-Forming Liquids*, **J. Chem. Phys.** 147, 124503 (2017)

HONORS & AWARDS

<u>Awards</u>	<u>Years</u>
• Kwanjeong Educational Foundation Fellowship	08/2018 – 08/2023
• Berkeley Statistical Mechanics Meeting, Excellent Poster Presentation Prize	01/2022
• The Polymer Society of Korea 2016 Fall Meeting IUPAC PSK40, Excellent Poster Presentation Prize	10/2016
• Sogang University Graduation with Honor, Summa Cum Laude	02/2016
• Rochester Math Olympiad 1st place (the State University of New York, Geneseo)	02/2015
• Sogang University Albatross Scholarship (Top 10% high-grade student)	03/2016, 09/2016, 03/2017, 09/2017
• Sogang University Maru Alumni Scholarship	03/2015, 03/2016
• Sogang University Honors Scholarship	03/2014, 09/2014, 03/2015

PRESENTATIONS

19. Y. Park, <i>Interplay between structural dynamics and optoelectronic properties in lead halide perovskites</i> , Korea Institute of Science and Technology (KIST) (oral presentation)	06 / 2023
18. Y. Park and D. T. Limmer, <i>Biexcitons in lead halide perovskite nanocrystals</i> , APS March Meeting (oral presentation)	03 / 2023
17. Y. Park, <i>Path integral approach for lattice effect on excitonic properties in semiconductors</i> , Berkeley Kavli ENSI Research Seminar (oral presentation)	02 / 2023
16. Y. Park and D. T. Limmer, <i>Biexcitons in lead halide perovskite nanocrystals</i> , Berkeley Statistical Mechanics Meeting (poster presentation)	01 / 2023
15. Y. Park and D. T. Limmer, <i>Path integral approach for lattice effect on excitonic properties</i> , American Conference on Theoretical Chemistry 2022 (poster presentation)	07 / 2022
14. Y. Park and D. T. Limmer, <i>Nonperturbative lattice effects on electron-hole recombination in lead halide perovskites</i> , APS March Meeting (oral presentation)	03 / 2022
13. Y. Park and D. T. Limmer, <i>Nonlocal screening dictates the radiative lifetimes of excitations in lead halide perovskites</i> , Berkeley Statistical Mechanics Meeting (poster virtual presentation)	01 / 2022
12. Y. Park and D. T. Limmer, <i>Electron-hole recombination in hybrid lead halide perovskites from quasiparticle path integral molecular dynamics</i> , CECAM: Path Integral Quantum Mechanics (oral virtual presentation)	06 / 2021
11. Y. Park and D. T. Limmer, <i>Understanding anharmonicity in hybrid lead halide perovskites from molecular dynamics simulations</i> , APS March Meeting (oral virtual presentation)	03 / 2021
10. Y. Park and D. T. Limmer, <i>Vibrational dynamics in 2D layered perovskites from molecular dynamics simulations</i> , ACS Fall National Meeting (oral virtual presentation)	08 / 2020
9. Y. Park and D. T. Limmer, <i>Simulations on the Dynamics of Charge Carriers in Crystalline Lattice using Path</i>	01 / 2020

Integral Framework, Berkeley Statistical Mechanics Meeting (poster presentation)

8. Y. Park and D. T. Limmer, *Simulations on the Dynamics of Charge Carriers in Crystalline Lattice using Path Integral Framework*, Telluride School on Theoretical Chemistry (poster presentation) 07 / 2019
7. Y. Park and B. J. Sung, *Translation-Rotation Decoupling of Tracers of Locally Favorable Structures in Glass-Forming Liquids*, 120th General Meeting of the Korean Chemical Society (poster presentation) 10 / 2017
6. Y. Park and B. J. Sung, *Translation-Rotation Decoupling of Tracers of Locally Favorable Structures in Glass-Forming Liquids*, The Polymer Society of Korea Fall Meeting (oral presentation) 10 / 2017
5. Y. Park and B. J. Sung, *Simulation Study on Translation-Rotation Decoupling of Tracers of Locally Favorable Structures in Glass-Forming Liquids*, Statistical Mechanics Symposium (oral presentation) 07 / 2017
4. Y. Park and B. J. Sung, *Translation-Rotation Decoupling of Tracers of Locally Favorable Structures in Glass-Forming Liquids*, 124th General Meeting of the Korean Physical Chemistry Society (poster presentation) 07 / 2017
3. Y. Park, J. Kim and B. J. Sung, *A Simulation Study on the Structural Motif and the Translation-Rotation Decoupling in Glass-Forming Liquids*, 119th General Meeting of the Korean Chemical Society (poster presentation) 04 / 2017
2. Y. Park, J. Kim and B. J. Sung, *Translational and Rotational Decoupling Using Tracers of Locally Favorable Structures in Glass-Forming Liquids*, Workshop on Statistical Mechanics (oral presentation) 01 / 2017
1. Y. Park, J. Kim and B. J. Sung, *Molecular Dynamics Simulation of the Translation and Rotation Decoupling Using Tracers of Locally Favorable Structures in Binary Glass Formers*, IUPAC PSK40 (poster presentation) 10 / 2016

WORKSHOP AND PROJECT

- Perspective on quantum computing applications in electrochemistry, collaboration: MIT, Zapata, and Chevron 2023-2024
- 2022 School on Electron-Phonon Physics from First Principles, University of Texas, Austin 06 / 2022
- CECAM: Path Integral Quantum Mechanics 06 / 2021
- Telluride School on Theoretical Chemistry 07 / 2019

TEACHING EXPERIENCE

- Graduate Student Instructor at UC Berkeley, *CHM220B Advanced Statistical Mechanics* Spring 2021
- Graduate Student Instructor at UC Berkeley, *CHM120B Physical Chemistry* Spring 2020
- Graduate Student Instructor at UC Berkeley, *CHM1A/AL General Chemistry* Spring 2019
- Teaching Assistant at Sogang University, *CHM2201 Physical Chemistry I* Fall 2017
- Teaching Assistant at Sogang University, *CHM1001 General Chemistry I* Spring 2016, Spring 2017
- Teaching Assistant at Sogang University, *CHM1002 General Chemistry II* Fall 2016

LEADERSHIP ACTIVITY

- UC Berkeley Korean Graduate Student Association 08/2019 - 08/2020
- Student Council of the Department of Chemistry, Sogang University 02/2013 - 02/2015
 - *Vice-President* (02/2014 - 02/2015)

COMPUTER SKILL

- Fortran programming *Advanced*
- Python programming *Intermediate*
- Mathematica *Intermediate*
- Matlab programming *Basic*
- C language programming *Basic*