

# Yoonjae Park

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## EDUCATION AND RESEARCH

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- 07/2023 ~ *Postdoctoral Researcher*, Chemistry, **Massachusetts Institute of Technology**, MA, USA  
Advisor: Prof. Adam P. Willard
- 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*

## PUBLICATIONS

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9. **Yoonjae Park** and Adam P. Willard, *Electron transfer near the electrochemical interface with ring polymer molecular dynamics*, (2024) (in prep)
8. **Yoonjae Park**, Eran Rabani, and David T. Limmer, *The role of lattice fluctuations on the behavior of excited states in lead halide perovskite*, (2024) (in prep)
7. **Yoonjae Park** and David T. Limmer, *Biexcitons are bound in CsPbBr<sub>3</sub> 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

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

## PRESENTATIONS

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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 Integral Framework</i> , Berkeley Statistical Mechanics Meeting (poster presentation)	01 / 2020
8. Y. Park and D. T. Limmer, <i>Simulations on the Dynamics of Charge Carriers in Crystalline Lattice using Path Integral Framework</i> , Telluride School on Theoretical Chemistry (poster presentation)	07 / 2019
7. Y. Park and B. J. Sung, <i>Translation-Rotation Decoupling of Tracers of Locally Favorable Structures in Glass-Forming Liquids</i> , 120 <sup>th</sup> General Meeting of the Korean Chemical Society (poster presentation)	10 / 2017
6. Y. Park and B. J. Sung, <i>Translation-Rotation Decoupling of Tracers of Locally Favorable Structures in Glass-Forming Liquids</i> , 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*, 124<sup>th</sup> 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*, 119<sup>th</sup> 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**

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- 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**

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- 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**

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- 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**

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