

Curriculum Vitae

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PROFESSIONAL EXPERIENCE

Feb 2017 – present	Assistant Professor, Department of Physics, Sungkyunkwan University
Aug 2013 – Feb 2017	Postdoctoral Researcher Department of Chemistry, University of Pennsylvania
Feb 2003 – Feb 2005	Military Service, the Republic of Korea Army

EDUCATION

Sep 2006 – Aug 2013	Ph.D., Seoul National University; Physics major Thesis adviser: Prof. Jisoon Ihm Thesis title: "First-principles study of the defect-related electronic structure and properties in the honeycomb lattice systems"
Mar 1999 – Feb 2006	B.Sc., Seoul National University; Physics and Mathematics (dual) major

RESEARCH INTERESTS

Computational condensed matter physics and materials science using first-principles electronic structure calculations

Topological band theory and topological materials; low-dimensional materials (graphene, carbon nanotube; transition metal dichalcogenides); energy harvesting and storage materials (bulk photovoltaic effects; hydrogen storage)

PEER-REVIEWED PUBLICATIONS

16. Benjamin J. Wieder, Barry Bradlyn, Zhijun Wang, Jennifer Cano, Youngkuk Kim, Hyeong-Seok D. Kim, Andrew M. Rappe, C. L. Kane, and B. Andrei Bernevig "Wallpaper Fermions and the Topological Dirac Insulator", [arXiv:1705.01617](https://arxiv.org/abs/1705.01617)
15. Julian Gebhardt, Youngkuk Kim, and Andrew M Rappe, "Influence of the Dimensionality and Organic Cation on Crystal and Electronic Structure of Organometallic Halide Perovskites", *J. Phys. Chem. C*, **121** (12), 6569-6574 (2017) – Published 1 March 2017
14. Carl H. Naylor, William M. Parkin, Zhaoli Gao, Hojin Kang, Mehmet Noyan, Robert B Wexler, Liang Z Tan, Youngkuk Kim, Christopher E Kehayias, Frank Streller, Yu Ren Zhou, Robert Carpick, Zhengtang Luo, Yung Woo Park, Andrew M Rappe, Marija Drndić, James M Kikkawa, and A T Charlie Johnson "Large-area synthesis of high-quality monolayer 1T-WTe₂ flake ", *2D Materials* **4**, 021008 (2017) – Published 1 February 2017
13. Carl H. Naylor, William M. Parkin, Jinglei Ping, Zhaoli Gao, Yu Ren Zhou, Youngkuk Kim, Frank Streller, Robert W. Carpick, Andrew M. Rappe, Marija Drndic, James M. Kikkawa, and A. T. Charlie Johnson "Monolayer single-crystal 1T-MoTe₂ grown by chemical vapor deposition exhibits a weak antilocalization effect ", *Nano Lett.*, **16**, pp. 4297–4304 (2016) – Published 25 May 2016

12. Benjamin J. Wieder, Youngkuk Kim, Andrew M. Rappe, and Charles L. Kane “*Double Dirac semimetals in Three Dimensions*”, an editor’s suggestion, *Phys. Rev. Lett.* **116**, 186402 (2016) – Published 5 May 2016 [highlighted in *Nat. Phys.* **12**, 528 (2016)]
11. Fan Zheng, John A. Brehm, Steve M. Young, Youngkuk Kim, and Andrew M. Rappe “*Substantial optical dielectric enhancement by volume compression in LiAsSe₂*”, *Phys. Rev. B* **93**, 195210 (2016) – Published 20 May 2016
10. Dong Liang, Youngkuk Kim, Dequan Er, Andrew M. Rappe, and Vivek B. Shenoy “*Two-dimensional π -conjugated covalent-organic frameworks as quantum anomalous Hall topological insulators*”, *Phys. Rev. Lett.* **116**, 096601 (2016) – Published 29 February 2016
9. Shi Liu, Youngkuk Kim, Liang Z. Tan, and Andrew M. Rappe “*Strain induced ferroelectric topological insulator*”, *Nano Lett.* **16**, 1663 (2016) – Published 27 January 2016
8. Youngkuk Kim, Eugene J. Mele, Charles L. Kane, and Andrew M. Rappe “*Layered topological crystalline insulators*”, *Phys. Rev. Lett.* **115**, 086802 (2015) – Published 20 August 2015
7. Youngkuk Kim, Benjamin J. Wieder, Charles L. Kane, and Andrew M. Rappe “*Dirac line node in inversion symmetric crystals*”, *Phys. Rev. Lett.* **115**, 036806 (2015) – Published 17 July 2015
6. Dongwook Kim, Youngkuk Kim, Jisoon Ihm, Euijoon Yoon, and Gun-Do Lee, “*Atomic-scale mechanism of grain boundary motion in graphene*”, *Carbon* **84**, pp.146-150 (2015) – Published April 2015
5. Youngkuk Kim, Hosub Jin, Keunsu Choi, and Jisoon Ihm, “*Topological domain walls and quantum valley Hall effects in Silicene*”, *Phys. Rev. B* **89**, 085429 (2014) – Published 28 February 2014
4. Youngkuk Kim, Jisoon Ihm, Euijoon Yoon, and Gun-Do Lee, “*Dynamics and stability of divacancy defects in graphene*”, *Phys. Rev. B* **84**, 075445 (2011) – Published 10 August 2011
3. Jino Im, Youngkuk Kim, Choong-Ki Lee, Minsung Kim, Jisoon Ihm, and Hyoung Joon Choi, “*Nanometer-scale loop currents and induced magnetic dipoles in carbon nanotube with defects*”, *Nano Lett.* **11**, 1418 (2011) – Published 04 March 2011
2. Yuanchang Li, Xiaobin Chen, Gang Zhou, Wenhui Duan, Youngkuk Kim, Minsung Kim, and Jisoon Ihm, “*Trends in charge transfer and spin alignment of metallocene on graphene*”, *Phys. Rev. B* **83**, 195443 (2011) – Published 31 May 2011
1. Manh Cuong Nguyen, Moon-Hyung Cha, Jaehyun Bae, Youngkuk Kim, Minsung Kim, and Jisoon Ihm, “*Calcium-decorated, hydroxylated single-walled carbon nanotubes for hydrogen storage: a first-principles study*”, *ChemPhyChem* **12**, 777-780 (2011) – Published 27 December 2010

AWARDS AND HONORS

Scholarships - Lecture and Research (2010, 2011); Brain Korea 21 (2007 – 2011); Seoul Scholarship Foundation (2007 – 2009); U-San Foundation (2007-2008); Superior Academic Performance, Seoul National University (1999 – 2003, 2006); Merit-based full scholarship, Seoul National University (2005); Lotte Foundation (2002)

TALKS

Invited

4. The 20th Asian Workshop on First-Principles Electronic Structure Calculations, Nanjing University, Nanjing, China 2017, "*Topological nonsymmorphic Dirac insulator*"
3. The 13th KIAS Electronic Structure Workshop, Seoul, Korea 2017, " *$Z_4 \times Z_2$ topological Dirac insulators*"
2. Electronic structure workshop, University of New Mexico, Albuquerque, New Mexico, USA. 2016 "*Nonsymmorphic Dirac and double Dirac semimetals*"
1. 6th International Symposium on Computational Challenges and Tools for Nanotubes, Montreal, Canada. 2010 "*Orbital motions of electrons and induced magnetic fields in defected carbon nanotubes*"

Contributed

4. KPS Spring Meeting, Daejeon, Korea 2017 "*Novel topological crystalline insulating phase*"
3. APS March Meeting, Baltimore, Maryland, USA. 2016 "*Topological Dirac line nodes in centrosymmetric semimetals*"
2. APS March Meeting, San Antonio, Texas, USA. 2015 "*Topological crystalline insulator states in layered materials*"
1. APS March Meeting, Baltimore, Maryland, USA. 2013 "*First-principles study on quantum valley hall effects in silicene*"