Baekjune Kang

Department of Physics

Ulsan National Institute of Science and Technology (UNIST)

50, UNIST-gil, Eonyang-eup, Ulju-gun, Ulsan, Republic of Korea

baekjunekang@unist.ac.kr / (+82)-10-5556-1497 /
https://scholar.google.com/citations?user=VrUgebAAAAAJ&hl=ko /
https://sites.google.com/view/baekjune-kang/home

Research Interest

Strongly Correlated Systems, Frustrated Spin Systems, Quantum Materials, Heterostructure, Optical Spectroscopy

Education and Employment

Basic Science Institute, UNIST

Postdoctoral Researcher 2025.09–Current

Advisor: Prof. Changhee Sohn

Department of Physics, UNIST

Ph.D. in Physics 2020.03–2025.08

Advisor: Prof. Changhee Sohn

Thesis: Optical Spectroscopy Studies on the Electronic and Magnetic Structure of Triangular and Hexagonal Layered Oxides

Multi-disciplinary majors of Physics and Computer Science and Engineering, UNIST

B.S. in Physics and Computer Science and Engineering 2016.03–2020.02

Selected Publication List

B. Kang†, U. Choi, T. Jung, S. Noh, ... & C. Sohn, "Optical detection of bond-dependent and frustrated spin in the two-dimensional cobalt-based honeycomb antiferromagnet $Cu_3Co_2SbO_6$." *Nature Communications*, **16**, 1323 (2025). https://doi.org/10.1038/s41467-025-56652-w

J. Jeong, **B. Kang†**, J. Song, ... & C. Sohn, "Transparent conducting oxides $SrNbO_3$ thin film with record high figure of merit." *Journal of the European Ceramic Society*, **44**, 6764 (2024). https://doi.org/10.1016/j.jeurceramsoc.2024.04.050

B. Kang†, M. Park, S. Song, S. Noh, ... & C. Sohn, "Honeycomb oxide heterostructure as a candidate host for a Kitaev quantum spin liquid." *Physical Review B*, **107**, 075103 (2023) https://doi.org/10.1103/PhysRevB.107.075103

G. H. Kim, M. Park, S. Samanta, U. Choi, **B. Kang**, U. Seo, ... & C. Sohn, "Suppression of

antiferromagnetic order by strain-enhanced frustration in honeycomb cobaltate." *Science advances*, **10**, eadn8694 (2024). https://doi.org/10.1126/sciadv.adn8694

J. Mun, E. K. Ko, **B. Kang**, B. Gil, ... & M. Kim, Extended oxygen octahedral tilt proximity near oxide heterostructures. *Nano Letters*, **23**, 1036 (2023). https://doi.org/10.1021/acs.nanolett.2c04633

B. Kang†, J. Shin, M. Kang, U. Choi, ... & C. Sohn, "Colossal optical anisotropy in wide-bandgap semiconductor $CuAlO_2$." *arXiv preprint arXiv:2412.12697*. (2024) *under review in Physical Review Letters, https://arxiv.org/abs/2412.12697*

Selected Conference Presentation

Oral Presentation — *APS March Meeting 2025*

"Observation of Bond-Dependent Frustrated Spins via Spin-Exciton Coupling in the Cobalt Honeycomb Antiferromagnet $Cu_3Co_2SbO_6$"

Oral Presentation — *2025 KPS Spring Meeting*

"Colossal optical anisotropy and two-dimensionally confined exciton in delafossite $CuAlO_2$"

Oral Presentation — UNIST Solid-State Physics Symposium

"Two-dimensional Exciton of $CuAlO_2$"

Oral Presentation — *2022 KPS Fall Meeting*

"Heterostructure approach of quantum spin liquid"

Selected Award/Honor/Scholar

Research Excellence Award in "UNIST"	No. 2024-5
Outstanding Presentation Award in "the Korean Magnetics Society"	KMS 2023-232
*Outstanding Student Paper Award i*n "the Korean Physical Society"	BUG 2023-007
National Science & Technology Scholarship	2018.09 – 2020.02
Magna Cum Laude in "UNIST"	No. 3913

Research and Technical Expertise

Pulsed Laser Deposition: Design and Fabrication of instrument, Synthesis of heterostructure

Material Characterization: Measurement and analysis of diverse physical properties

Optical Measurements: Ellipsometry, FTIR (Low temperature to room temperature)

Synchrotron-Based Experiments: (Tr-) XAS, XMLD, XMCD, Diffraction techniques

Experimental Automation: LabVIEW-based automated control setup (PPMS, FTIR, etc..)

References

Changhee Sohn

Assistant Professor

Department of Physics, UNIST

E-mail: chsohn@unist.ac.kr