Stanford

Harold Hwang

Director, Stanford Institute for Materials and Energy Sciences (SIMES), Professor of Applied Physics, of Photon Science and Senior Fellow at the Precourt Institute for Energy

Bio

ACADEMIC APPOINTMENTS

- Professor, Applied Physics
- Professor, Photon Science Directorate
- Senior Fellow, Precourt Institute for Energy
- Director, Stanford Institute for Materials and Energy Sciences

Teaching

COURSES

2023-24

- Solid State Physics II: APPPHYS 273 (Aut)

2022-23

- Solid State Physics II: APPPHYS 273 (Aut)

2021-22

- Solid State Physics II: APPPHYS 273 (Aut)

2020-21

- Solid State Physics II: APPPHYS 273 (Aut)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Sanyum Channa, Fangze Liu, Victor Zhang

Postdoctoral Faculty Sponsor

Minyong Han, Eun Kyo Ko, Jiarui Li, Elyse Schriber, Jiayue Wang, Yijun Yu

Doctoral Dissertation Advisor (AC)

Kevin Crust, Martin Gonzalez, Yonghun Lee, Tiffany Wang, Xin Wei

Doctoral Dissertation Co-Advisor (AC)

Sam Abernethy

Doctoral (Program)

Fatih Dinc, Tudor Giurgica-Tiron, Xue Han, Omer Hazon, YoungJu Jo, Megan Nantel

Postdoctoral Research Mentor

Paulina Majchrzak

Publications

PUBLICATIONS

- **Scanning SQUID study of ferromagnetism and superconductivity in infinite-layer nickelates** *PHYSICAL REVIEW MATERIALS*
  Shi, R. A., Wang, B., Iguchi, Y., Osada, M., Lee, K., Goodge, B. H., Kourkoutis, L. F., Hwang, H. Y., Moler, K. A.
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- **Interlayer engineering of Fe3GeTe2: From 3D superlattice to 2D monolayer.** *Proceedings of the National Academy of Sciences of the United States of America*
  Wu, Y., Wang, B. Y., Yu, Y., Li, Y., Ribeiro, H. B., Wang, J., Xu, R., Liu, Y., Ye, Y., Zhou, J., Ke, F., Harbola, V., Heinz, et al
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- **Twisted epitaxy of gold nanodisks grown between twisted substrate layers of molybdenum disulfide.** *Science (New York, N.Y.)*
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  2024; 383 (6679): 212-219
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  2024
- **Delamination-Assisted Ultrafast Wrinkle Formation in a Freestanding Film.** *Nano letters*
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- **Visualizing Polar Distortions and Interface Effects with Multislice Ptychography.** *Microscopy and microanalysis : the official journal of Microscopy Society of America, Microbeam Analysis Society, Microscopical Society of Canada*
  Harikrishnan, K. P., Li, Y. E., Crust, K. J., Khandelwal, A., Shao, Y. T., Chen, Z., Zhang, C., Guguschev, C., Xu, R., Hwang, H. Y., Schlom, D. G., Muller, D. A.
  2023; 29 (Supplement_1): 1626-1627
- **Publisher Correction: Geometric frustration of Jahn-Teller order in the infinite-layer lattice.** *Nature*
  Kim, W. J., Smeaton, M. A., Jia, C., Goodge, B. H., Cho, B. G., Lee, K., Osada, M., Jost, D., Ievlev, A. V., Moritz, B., Kourkoutis, L. F., Devereaux, T. P., Hwang, et al
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- **Linear-in-temperature resistivity for optimally superconducting (Nd,Sr)NiO2.** *Nature*
  Lee, K., Wang, B. Y., Osada, M., Goodge, B. H., Wang, T. C., Lee, Y., Harvey, S., Kim, W. J., Yu, Y., Murthy, C., Raghu, S., Kourkoutis, L. F., Hwang, et al
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- **Electrostatic modulation of the lateral carrier density profile in field effect devices with nonlinear dielectrics** *PHYSICAL REVIEW B*
  Persky, E., Yoon, H., Xie, Y., Hwang, H. Y., Ruhman, J., Kalisky, B.
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  Wang, B. Y., Wang, T. C., Hsu, Y. T., Osada, M., Lee, K., Jia, C., Duffy, C., Li, D., Fowlie, J., Beasley, M. R., Devereaux, T. P., Fisher, I. R., Hussey, et al
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- **Geometric frustration of Jahn-Teller order in the infinite-layer lattice.** *Nature*
  Kim, W. J., Smeaton, M. A., Jia, C., Goodge, B. H., Cho, B., Lee, K., Osada, M., Jost, D., Ievlev, A. V., Moritz, B., Kourkoutis, L. F., Devereaux, T. P., Hwang, et al
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- **Size-Induced Ferroelectricity in Antiferroelectric Oxide Membranes.** *Advanced materials (Deerfield Beach, Fla.)*
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- **Electrostatic gating and intercalation in 2D materials** *NATURE REVIEWS MATERIALS*
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- **Intrinsic magnetism in superconducting infinite-layer nickelates** *NATURE PHYSICS*
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- **Nickelate Superconductivity without Rare-Earth Magnetism: (La,Sr)NiO2.** *Advanced materials (Deerfield Beach, Fla.)*
  Osada, M., Wang, B. Y., Goodge, B. H., Harvey, S. P., Lee, K., Li, D., Kourkoutis, L. F., Hwang, H. Y.
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- **Understanding Degradation Mechanisms in SrIrO3 Oxygen Evolution Electrocatalysts: Chemical and Structural Microscopy at the Nanoscale** *ADVANCED FUNCTIONAL MATERIALS*
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- **Stabilization of Sr3Al2O6 Growth Templates for Ex Situ Synthesis of Freestanding Crystalline Oxide Membranes.** *Nano letters*
  Li, D., Adamo, C., Wang, B. Y., Yoon, H., Chen, Z., Hong, S. S., Lu, D., Cui, Y., Hikita, Y., Hwang, H. Y.
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  Lee, K., Flores, R. A., Liu, Y., Wang, B., Hikita, Y., Sinclair, R., Bajdich, M., Hwang, H. Y.
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  Chen, Z., Wang, B., Swartz, A. G., Yoon, H., Hikita, Y., Raghu, S., Hwang, H. Y.
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  Rischau, C., Li, Y., Fauque, B., Inoue, H., Kim, M., Bell, C., Hwang, H. Y., Kapitulnik, A., Behnia, K.
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- **Doping evolution of the Mott-Hubbard landscape in infinite-layer nickelates.** *Proceedings of the National Academy of Sciences of the United States of America*
  Goodge, B. H., Li, D., Lee, K., Osada, M., Wang, B. Y., Sawatzky, G. A., Hwang, H. Y., Kourkoutis, L. F.
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- **Isotropic Pauli-limited superconductivity in the infinite-layer nickelate Nd0.775Sr0.225NiO2** *NATURE PHYSICS*
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  Osada, M., Wang, B., Lee, K., Li, D., Hwang, H. Y.
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  Pesquera, D., Parsonnet, E., Qualls, A., Xu, R., Gubser, A. J., Kim, J., Jiang, Y., Velarde, G., Huang, Y., Hwang, H. Y., Ramesh, R., Martin, L. W.
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- **Superconducting Dome in Nd1-xSrxNiO2 Infinite Layer Films** *PHYSICAL REVIEW LETTERS*
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- **Magnetism and Conductivity Along Structural Domain Walls of SrTiO3** *JOURNAL OF SUPERCONDUCTIVITY AND NOVEL MAGNETISM*
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- **Electrotunable liquid sulfur microdroplets.** *Nature communications*
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- **A Two-Dimensional MoS2 Catalysis Transistor by Solid-State Ion Gating Manipulation and Adjustment (SIGMA).** *Nano letters*
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