Stanford

Tony Heinz

Director, Edward L. Ginzton Laboratory, Professor of Applied Physics, of Photon Science, and, by courtesy, of Electrical Engineering

Curriculum Vitae available Online Resume available Online

CONTACT INFORMATION

- **Administrative Contact Stanford/Ginzton Lab**

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Bio

BIO

Tony Heinz is a Professor of Applied Physics and Photon Science at Stanford University, with a courtesy appointment in Electrical Engineering and a joint affiliation with SLAC National Accelerator Laboratory. Heinz received a BS degree in Physics from Stanford University in 1978 and a PhD degree, also in Physics, from the University of California at Berkeley in 1982. Heinz was subsequently at the IBM Research Division in Yorktown Heights, NY until he joined Columbia University in 1995 as a Professor of Electrical Engineering and Physics. At Columbia, he served as the Chair of the Department of Electrical Engineering from 2003 until 2007. He has also served as a Scientific Director of the Columbia Nanoscale Science and Engineering Center (NSEC) and of the Energy Frontier Research Center (EFRC). He was the President of the Optical Society of America in 2012. Heinz joined Stanford University in 2015, serving as the Director of the Chemical Sciences Division at SLAC from that time until 2019. He also served from 2017 to 2022 as the Associate Laboratory Director for Energy Sciences, with oversight for the Materials Science, Chemical Science, Computer Science, and the Applied Energy Divisions.

ACADEMIC APPOINTMENTS

- Professor, Applied Physics
- Professor, Photon Science Directorate
- Professor (By courtesy), Electrical Engineering
- Principal Investigator, Stanford Institute for Materials and Energy Sciences
- Principal Investigator, Stanford PULSE Institute

ADMINISTRATIVE APPOINTMENTS

- Professor of Applied Physics, of Photon Science, and, by courtesy, of Electrical Engineering, Stanford University, (2015- present)
- Associate Laboratory Director, Energy Sciences, SLAC, (2017-2022)
- Director, Chemical Science Division, SLAC, (2015-2019)
- David M. Rickey Professor, Columbia University, (2001-2014)
- Professor of Physics and Electrical Engineering, Columbia University, (1995-2000)

- Senior Department Manager, Department Manager, Research Staff Member, IBM Research Division, T. J. Watson Research Center, (1983-1995)

HONORS AND AWARDS

- Fellow, American Physical Soc., American Vacuum Soc., Materials Research Society, Optica, IEEE, AAAS, NAS
- Frederic Ives Medal / Jarus W. Quinn Prize, Optica (2026)
- Zewail Award in Ultrafast Science and Technology, American Chemical Society (2025)
- Pioneer Award in Nanotechnology, IEEE - Nanotechnology Council (2024)
- Arthur L. Schawlow Prize, American Physical Society (2022)
- Medard W Welch Award, American Vacuum Society (2021)
- William Meggers Award, Optical Society of America (2020)
- Citation Laureate in Physics, Clarivate Web of Science (2019)
- Frank Isakson Prize, American Physical Society (2014)
- Julius Springer Prize for Applied Physics (with Phaedon Avouris), Springer (2008)
- Great Teacher Award, Columbia University (2005)
- Alexander von Humboldt Research Award, Alexander von Humboldt-Stiftung Foundation, Germany (1996)
- Ernst Abbe Medal, International Commission for Optics Prize (1995)
- IBM Invention Award, IBM (1994)
- IBM Outstanding Technical Achievement Award, IBM (1992)
- IBM Graduate Fellow, University of California, Berkeley (1982-83)
- National Science Foundation Graduate Fellow, University of California, Berkeley (1978-81)
- Levine Award for Outstanding Studies in Physics, Stanford University (1978)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Associate Editor, 2D Materials, The Institute of Physics (2018 - present)
- Scientific Advisory Boards, Fritz-Haber Institute, Berlin; Max-Born Institute, Berlin (2014 - 2023)
- Editor, North America, 2D Materials journal, The Institute of Physics (2014 - 2018)
- Chair, Subcommittee on Optics and Photonics, NSF Dir. of Math and Physical Science (2013 - 2015)
- President, Optical Society of America (2012 - 2012)
- Chair, Scientific Advisory Board, Center for Integrated Nanotechnologies, Sandia National Laboratories (2011 - 2017)
- Chair, Gordon Conference on Ultrafast Dynamics of Cooperative Phenomena (2010 - 2010)
- Scientific Director, DOE Energy Frontier Research Center at Columbia (EFRC) (2009 - 2014)
- Scientific Director, NSF Nanoscale Science & Engineering Center at Columbia (2006 - 2012)
- Chair, Board of Editors, Optical Society of America (2006 - 2009)
- Chair, International Conference on Quantum Electronics (IQEC) (2002 - 2002)
- Chair, Division of Laser Science, American Physical Society (2001 - 2002)
- Chair, Review Panel, Optical Technology Division, Physics Laboratory, National Institute of Standards and Technology (NIST) (2000 - 2005)
- Director, Adriatico Symposium on Laser Applications in Science, Abdus Salam International Centre for Theoretical Physics (ICTP) (2000 - 2000)
- Chair, Quantum Electronics and Laser Science Conference (QELS) (1995 - 1995)
- Editor, Journal of the Optical Society of America B (JOSA B) (1994 - 2000)

PROFESSIONAL EDUCATION

- B.S. (with Distinction), Stanford University , Physics (1978)
- Ph.D., University of California, Berkeley , Physics (1982)

LINKS

- Heinz group website: http://heinz.stanford.edu
- Stanford PULSE Institute: http://ultrafast.stanford.edu
- Ginzton Laboratory: http://ginzton.stanford.edu
- SIMES - Stanford Institute for Materials and Energy Sciences: http://simes.stanford.edu/
- SLAC National Accelerator Laboratory: http://slac.stanford.edu
- Dept. of Applied Physics: https://appliedphysics.stanford.edu
- Dept. of Electrical Engineering: https://ee.stanford.edu
- Dept. of Photon Science: https://faculty.slac.stanford.edu/photon-science-faculty

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Heinz's research has centered on the elucidation of the properties and dynamics of nanoscale materials through the application of a wide range of optical spectroscopies. His research on surfaces, interfaces, and nanoscale materials, such as carbon nanotubes, graphene and other 2D materials, has been recognized by Optics Prize of the International Commission for Optics, a Research Award of the von Humboldt Foundation, the Julius Springer Prize for Applied Physics, and the Isakson Prize of the American Physical Society.

Teaching

COURSES

2025-26

- Lasers: EE 236C (Spr)
- Modern Physics for Engineers: EE 65, ENGR 65 (Win)

2024-25

- Lasers: EE 236C (Spr)

2023-24

- Lasers: EE 236C (Spr)
- Modern Physics for Engineers: EE 65, ENGR 65 (Spr)

2022-23

- Lasers: EE 236C (Spr)
- Optics and Electronics Seminar: APPPHYS 483 (Aut)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Han Hiller, Jack Hirschman, Samuel Sahel-Schackis

Postdoctoral Faculty Sponsor

Sheikh Rubaiat Ul Haque, Ruishi Qi, Xixi Qin

Doctoral Dissertation Advisor (AC)

Xueqi Chen, Danny Ha, Amal Mathew, Yannick Pleimling, Jierong Wang, Alexandra Zimmerman

Orals Evaluator

Jay Qu

Doctoral Dissertation Co-Advisor (AC)

Supavit Pokawanvit

Doctoral (Program)

Elena Corbae, Matthew Maksymowych, Jan-Lucas Uslu, Catherine Weibel, Blake Wendland, Gerald Xu

Publications

PUBLICATIONS

- **Ultrafast Moire-Resolved Spectroscopy of Interlayer-Exciton Thermalization in Twisted WSe2/WS2 Heterobilayers** *PHYSICAL REVIEW LETTERS*
  Kim, J., Lee, H., Gollner, C., Pleimling, Y., Lee, S., Watanabe, K., Taniguchi, T., Jo, M., Heinz, T., Choi, H.
  2026; 136 (16)
- **Ultrafast Moiré-Resolved Spectroscopy of Interlayer-Exciton Thermalization in Twisted WSe_{2}/WS_{2} Heterobilayers.** *Physical review letters*
  Kim, J., Lee, H., Gollner, C., Pleimling, Y., Lee, S., Watanabe, K., Taniguchi, T., Jo, M. H., Heinz, T., Choi, H.
  2026; 136 (16): 166902
- **Time-domain terahertz emission spectroscopy on van der Waals materials** *MRS COMMUNICATIONS*
  Gollner, C., Lindenberg, A., Heinz, T. F.
  2026
- **Direct Nanoscale Mapping of Band Alignment in Single-Layer Semiconducting Lateral Heterojunctions.** *Nano letters*
  Sahoo, C., Chakraborty, S. K., Kousika, A., Jones, A. J., Sharma, M., Nielsen, T. S., Jiang, Z., Kolasseri, I. A., Das, S., Watson, M. D., Cacho, C., Watanabe, K., Taniguchi, et al
  2026
- **Electric-Field-Tuned Consecutive Topological Phase Transitions between Distinct Correlated Insulators in Moiré MoTe_{2}/WSe_{2} Heterobilayer.** *Physical review letters*
  Chang, X., Tao, Z., Shen, B., Tian, W., Hu, J., Pistunova, K., Watanabe, K., Taniguchi, T., Heinz, T. F., Li, T., Mak, K. F., Shan, J., Jiang, et al
  2026; 136 (9): 096503
- **Electric-Field-Tuned Consecutive Topological Phase Transitions between Distinct Correlated Insulators in Moire MoTe2/WSe2 Heterobilayer** *PHYSICAL REVIEW LETTERS*
  Chang, X., Tao, Z., Shen, B., Tian, W., Hu, J., Pistunova, K., Watanabe, K., Taniguchi, T., Heinz, T. F., Li, T., Mak, K., Shan, J., Jiang, et al
  2026; 136 (9)
- **Atomic-Scale Moiré and Electronic Structure Analysis of Twisted Epitaxial MoS2-Au-MoS2 Heterostructures.** *Nano letters*
  Cui, Y., Xu, K., Ren, P., Yuan, L., Czaja, P., Barnum, A., Sarkar, P., Altman, A., Bustillo, K., Kundu, S., Ramdas, A., Wang, X., Wan, et al
  2026
- **Ultrabroadband Spacetime Nanoscopy of Terahertz Polaritons in a van der Waals Cavity.** *Small (Weinheim an der Bergstrasse, Germany)*
  Wehmeier, L., Xu, S., Chen, X., Yu, S. J., Lin, Y., Dai, Z., Wang, H., Yao, H., Hu, J., Homes, C. C., Janzen, E., Edgar, J. H., Zheng, et al
  2026: e05899
- **Room-temperature valley-selective emission in Si-MoSe2 heterostructures enabled by high-quality-factor chiroptical cavities.** *Nature communications*
  Pan, F., Li, X., Johnson, A. C., Dhuey, S., Saunders, A., Hu, M. X., Dixon, J. P., Dagli, S., Lau, S. C., Weng, T., Chen, C. Y., Zeng, J. H., Apte, et al
  2025

- **Tuning the Quantum-Well Structure of Single-Crystal Layered Perovskite Heterostructures(vol 147, pg 40171, 2025)** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Deshmukh, A. P., Chen, Y., Cleron, J. L., Tie, M., Wen, J., Heinz, T. F., Filip, M. R., Karunadasa, H. I.
  2025
- **Tuning the Quantum-Well Structure of Single-Crystal Layered Perovskite Heterostructures.** *Journal of the American Chemical Society*
  Deshmukh, A. P., Chen, Y., Cleron, J. L., Tie, M., Wen, J., Heinz, T. F., Filip, M. R., Karunadasa, H. I.
  2025
- **Nonresonant Raman Control of Ferroelectric Polarization.** *Advanced materials (Deerfield Beach, Fla.)*
  Shi, J., Heide, C., Xu, H., Shen, Y., Henstridge, M., Sedwick, I., Mangu, A., Peng, X., Zhang, S., Trigo, M., Heinz, T. F., Li, J., Nelson, et al
  2025: e10524
- **Roadmap for Photonics with 2D Materials.** *ACS photonics*
  de Abajo, F. J., Basov, D. N., Koppens, F. H., Orsini, L., Ceccanti, M., Castilla, S., Cavicchi, L., Polini, M., Gonçalves, P. A., Costa, A. T., Peres, N. M., Mortensen, N. A., Bharadwaj, et al
  2025; 12 (8): 3961-4095
- **Magnetically Tunable Polariton Cavities in van der Waals Heterostructures.** *Nano letters*
  Mayer, R. A., Chen, X., Jing, R., Tsuneto, M., Zhou, B., Zhou, Z., Zheng, W., Pu, R., Xu, S., Liu, T., Yao, H., Wehmeier, L., Dong, et al
  2025
- **Phase-Selective Synthesis of Rhombohedral WS2 Multilayers by Confined-Space Hybrid Metal-Organic Chemical Vapor Deposition.** *Nano letters*
  Zhang, Z., Hocking, M., Peng, Z., Pendharkar, M., Courtney, E. D., Hu, J., Kastner, M. A., Goldhaber-Gordon, D., Heinz, T. F., Mannix, A. J.
  2024
- **Deterministic fabrication of graphene hexagonal boron nitride moire superlattices.** *Proceedings of the National Academy of Sciences of the United States of America*
  Kamat, R. V., Sharpe, A. L., Pendharkar, M., Hu, J., Tran, S. J., Zaborski, G. J., Hocking, M., Finney, J., Watanabe, K., Taniguchi, T., Kastner, M. A., Mannix, A. J., Heinz, et al
  2024; 121 (40): e2410993121
- **Chemically Tailored Growth of 2D Semiconductors via Hybrid Metal-Organic Chemical Vapor Deposition.** *ACS nano*
  Zhang, Z., Hoang, L., Hocking, M., Peng, Z., Hu, J., Zaborski, G., Reddy, P. D., Dollard, J., Goldhaber-Gordon, D., Heinz, T. F., Pop, E., Mannix, A. J.
  2024
- **Direct Exfoliation of Nanoribbons from Bulk van der Waals Crystals.** *Small (Weinheim an der Bergstrasse, Germany)*
  Saunders, A. P., Chen, V., Wang, J., Li, Q., Johnson, A. C., McKeown-Green, A. S., Zeng, H. J., Mac, T. K., Trinh, M. T., Heinz, T. F., Pop, E., Liu, F.
  2024: e2403504
- **Giant Terahertz Birefringence in an Ultrathin Anisotropic Semimetal.** *Nano letters*
  Sie, E. J., Othman, M. A., Nyby, C. M., Pemmaraju, D., Garcia, C. A., Wang, Y., Guzelturk, B., Xia, C., Xiao, J., Poletayev, A., Ofori-Okai, B. K., Hoffmann, M. C., Park, et al
  2024
- **Tunable Phonon Polariton Hybridization in a van der Waals Hetero-Bicrystal.** *Advanced materials (Deerfield Beach, Fla.)*
  Wehmeier, L., Yu, S. J., Chen, X., Mayer, R. A., Xiong, L., Yao, H., Jiang, Y., Hu, J., Janzen, E., Edgar, J. H., Zheng, X., Heinz, T. F., Basov, et al
  2024: e2401349
- **Quantum control of exciton wave functions in 2D semiconductors.** *Science advances*
  Hu, J., Lorchat, E., Chen, X., Watanabe, K., Taniguchi, T., Heinz, T. F., Murthy, P. A., Chervy, T.
  2024; 10 (12): eadk6369
- **Millimeter-Scale Exfoliation of hBN with Tunable Flake Thickness for Scalable Encapsulation** *ACS APPLIED NANO MATERIALS*
  McKeown-Green, A. S., Zeng, H. J., Saunders, A. P., Li, J., Shi, J., Shen, Y., Pan, F., Hu, J., Dionne, J. A., Heinz, T. F., Wu, S. M., Zheng, F., Liu, et al
  2024
- **Hidden phonon highways promote photoinduced interlayer energy transfer in twisted transition metal dichalcogenide heterostructures.** *Science advances*

Johnson, A. C., Georgaras, J. D., Shen, X., Yao, H., Saunders, A. P., Zeng, H. J., Kim, H., Sood, A., Heinz, T. F., Lindenberg, A. M., Luo, D., da Jornada, F. H., Liu, et al
2024; 10 (4): eadj8819

- **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
  2024; 121 (4): e2314454121
- **Valley-Coherent Quantum Anomalous Hall State in AB-Stacked MoTe2/WSe2 Bilayers** *PHYSICAL REVIEW X*
  Tao, Z., Shen, B., Jiang, S., Li, T., Li, L., Ma, L., Zhao, W., Hu, J., Pistunova, K., Watanabe, K., Taniguchi, T., Heinz, T. F., Mak, et al
  2024; 14 (1)
- **Hyperbolic Polaritonic Rulers Based on van der Waals α-MoO3 Waveguides and Resonators.** *ACS nano*
  Yu, S. J., Yao, H., Hu, G., Jiang, Y., Zheng, X., Fan, S., Heinz, T. F., Fan, J. A.
  2023
- **Moiré-Assisted Strain Transfer in Vertical van der Waals Heterostructures.** *Nano letters*
  Hu, J., Yu, L., Chen, X., Lee, W., Mate, C. M., Heinz, T. F.
  2023
- **Observation of quadrupolar and dipolar excitons in a semiconductor heterotrilayer.** *Nature materials*
  Yu, L., Pistunova, K., Hu, J., Watanabe, K., Taniguchi, T., Heinz, T. F.
  2023
- **Giant room-temperature nonlinearities in a monolayer Janus topological semiconductor.** *Nature communications*
  Shi, J., Xu, H., Heide, C., HuangFu, C., Xia, C., de Quesada, F., Shen, H., Zhang, T., Yu, L., Johnson, A., Liu, F., Shi, E., Jiao, et al
  2023; 14 (1): 4953
- **Selective Electron-Phonon Coupling in Dimerized 1T-TaS2 Revealed by Resonance Raman Spectroscopy.** *ACS nano*
  Ramos, S. L., Carvalho, B. R., Monteiro Lobato, R. L., Ribeiro-Soares, J., Fantini, C., Ribeiro, H. B., Molino, L., Plumadore, R., Heinz, T., Luican-Mayer, A., Pimenta, M. A.
  2023
- **Controlling Valley-Specific Light Emission from Monolayer MoS2 with Achiral Dielectric Metasurfaces.** *Nano letters*
  Liu, Y., Lau, S. C., Cheng, W., Johnson, A., Li, Q., Simmerman, E., Karni, O., Hu, J., Liu, F., Brongersma, M. L., Heinz, T. F., Dionne, J. A.
  2023
- **X-ray free electron laser studies of electron and phonon dynamics of graphene adsorbed on copper** *PHYSICAL REVIEW MATERIALS*
  Ogasawara, H., Wang, H., Gladh, J., Gallo, A., Page, R., Voss, J., Luntz, A., Diesen, E., Abild-Pedersen, F., Nilsson, A., Soldemo, M., Zajac, M., Attar, et al
  2023; 7 (2)
- **High-harmonic generation from artificially stacked 2D crystals** *NANOPHOTONICS*
  Heide, C., Kobayashi, Y., Johnson, A. C., Heinz, T. F., Reis, D. A., Liu, F., Ghimire, S.
  2023
- **Floquet engineering of strongly driven excitons in monolayer tungsten disulfide** *NATURE PHYSICS*
  Kobayashi, Y., Heide, C., Johnson, A. C., Tiwari, V., Liu, F., Reis, D. A., Heinz, T. F., Ghimire, S.
  2023
- **High-harmonic generation from artificially stacked 2D crystals.** *Nanophotonics (Berlin, Germany)*
  Heide, C., Kobayashi, Y., Johnson, A. C., Heinz, T. F., Reis, D. A., Liu, F., Ghimire, S.
  2023; 12 (2): 255-261
- **Atom-Specific Probing of Electron Dynamics in an Atomic Adsorbate by Time-Resolved X-Ray Spectroscopy.** *Physical review letters*
  Schreck, S., Diesen, E., Dell'Angela, M., Liu, C., Weston, M., Capotondi, F., Ogasawara, H., LaRue, J., Costantini, R., Beye, M., Miedema, P. S., Halldin Stenlid, J., Gladh, et al
  2022; 129 (27): 276001
- **Bidirectional phonon emission in two-dimensional heterostructures triggered by ultrafast charge transfer.** *Nature nanotechnology*

Sood, A., Haber, J. B., Carlström, J., Peterson, E. A., Barre, E., Georgaras, J. D., Reid, A. H., Shen, X., Zajac, M. E., Regan, E. C., Yang, J., Taniguchi, T., Watanabe, et al
2022

- **Symmetry-resolved CO desorption and oxidation dynamics on O/Ru(0001) probed at the C K-edge by ultrafast x-ray spectroscopy** *JOURNAL OF CHEMICAL PHYSICS*
  LaRue, J., Liu, B., Rodrigues, G. L. S., Liu, C., Torres, J., Schreck, S., Diesen, E., Weston, M., Ogasawara, H., Perakis, F., Dell'Angela, M., Capotondi, F., Ball, et al
  2022; 157 (16): 164705

- **The Reststrahlen Effect in the Optically Thin Limit: A Framework for Resonant Response in Thin Media.** *Nano letters*
  Ma, E. Y., Hu, J., Waldecker, L., Watanabe, K., Taniguchi, T., Liu, F., Heinz, T. F.
  2022

- **Probing topological phase transitions using high-harmonic generation** *NATURE PHOTONICS*
  Heide, C., Kobayashi, Y., Baykusheva, D. R., Jain, D., Sobota, J. A., Hashimoto, M., Kirchmann, P. S., Oh, S., Heinz, T. F., Reis, D. A., Ghimire, S.
  2022

- **Probing electron-hole coherence in strongly driven 2D materials using high-harmonic generation** *OPTICA*
  Heide, C., Kobayashi, Y., Johnson, A. C., Liu, F., Heinz, T. F., Reis, D. A., Ghimire, S.
  2022; 9 (5): 512-516

- **Optical absorption of interlayer excitons in transition-metal dichalcogenide heterostructures.** *Science (New York, N.Y.)*
  Barre, E., Karni, O., Liu, E., O'Beirne, A. L., Chen, X., Ribeiro, H. B., Yu, L., Kim, B., Watanabe, K., Taniguchi, T., Barmak, K., Lui, C. H., Refaely-Abramson, et al
  2022; 376 (6591): 406-410

- **Visible Out-of-plane Polarized Luminescence and Electronic Resonance in Black Phosphorus.** *Nano letters*
  Schue, L., Goudreault, F. A., Righi, A., Resende, G. C., Lefebvre, V., Godbout, E., Tie, M., Ribeiro, H. B., Heinz, T. F., Pimenta, M. A., Cote, M., Francoeur, S., Martel, et al
  2022

- **Structure of the moire exciton captured by imaging its electron and hole.** *Nature*
  Karni, O., Barre, E., Pareek, V., Georgaras, J. D., Man, M. K., Sahoo, C., Bacon, D. R., Zhu, X., Ribeiro, H. B., O'Beirne, A. L., Hu, J., Al-Mahboob, A., Abdelrasoul, et al
  2022; 603 (7900): 247-252

- **Ultrahigh-Quality Infrared Polaritonic Resonators Based on Bottom-Up-Synthesized van der Waals Nanoribbons.** *ACS nano*
  Yu, S., Jiang, Y., Roberts, J. A., Huber, M. A., Yao, H., Shi, X., Bechtel, H. A., Gilbert Corder, S. N., Heinz, T. F., Zheng, X., Fan, J. A.
  1800

- **Excitons in strained and suspended monolayer WSe2** *2D MATERIALS*
  Aslan, B., Yule, C., Yu, Y., Lee, Y., Heinz, T. F., Cao, L., Brongersma, M. L.
  2022; 9 (1)

- **Ultrahigh-quality van der Waals hyperbolic polariton resonators**
  Yu, S., Jiang, Y., Roberts, J. A., Huber, M. A., Yao, H., Shi, X., Bechtel, H. A., Corder, S. N. G., Heinz, T. F., Zheng, X., Fan, J. A.
  edited by Chang-Hasnain, C. J., Fan, J. A., Zhou, W.
  SPIE-INT SOC OPTICAL ENGINEERING.2022

- **All-Optical Probe of Three-Dimensional Topological Insulators Based on High-Harmonic Generation by Circularly Polarized Laser Fields.** *Nano letters*
  Baykusheva, D., Chacon, A., Lu, J., Bailey, T. P., Sobota, J. A., Soifer, H., Kirchmann, P. S., Rotundu, C., Uher, C., Heinz, T. F., Reis, D. A., Ghimire, S.
  2021

- **Hot carrier transport limits the displacive excitation of coherent phonons in bismuth** *APPLIED PHYSICS LETTERS*
  Jnawali, G., Boschetto, D., Malard, L. M., Heinz, T. F., Sciaini, G., Thiemann, F., Payer, T., Kremeyer, L., Meyer zu Heringdorf, F., Horn-von Hoegen, M.
  2021; 119 (9)

- **Direct observation of ultrafast hydrogen bond strengthening in liquid water.** *Nature*
  Yang, J., Dettori, R., Nunes, J. P., List, N. H., Biasin, E., Centurion, M., Chen, Z., Cordones, A. A., Deponte, D. P., Heinz, T. F., Kozina, M. E., Ledbetter, K., Lin, et al
  2021; 596 (7873): 531-535

- **Light Absorption and Emission Dominated by Trions in the Type-I van der Waals Heterostructures** *ACS PHOTONICS*
  Bae, H., Kim, S., Lee, S., Noh, M., Karni, O., O'Beirne, A. L., Barre, E., Sim, S., Cha, S., Jo, M., Heinz, T. F., Choi, H.
  2021; 8 (7): 1972-1978

- **Signatures of moire trions in WSe2/MoSe2 heterobilayers.** *Nature*
  Liu, E., Barre, E., van Baren, J., Wilson, M., Taniguchi, T., Watanabe, K., Cui, Y., Gabor, N. M., Heinz, T. F., Chang, Y., Lui, C. H.
  2021; 594 (7861): 46-50

- **Enhanced nonlinear interaction of polaritons via excitonic Rydberg states in monolayer WSe2.** *Nature communications*
  Gu, J., Walther, V., Waldecker, L., Rhodes, D., Raja, A., Hone, J. C., Heinz, T. F., Kena-Cohen, S., Pohl, T., Menon, V. M.
  2021; 12 (1): 2269

- **High-Performance p-n Junction Transition Metal Dichalcogenide Photovoltaic Cells Enabled by MoOx Doping and Passivation.** *Nano letters*
  Nassiri Nazif, K., Kumar, A., Hong, J., Lee, N., Islam, R., McClellan, C. J., Karni, O., van de Groep, J., Heinz, T. F., Pop, E., Brongersma, M. L., Saraswat, K. C.
  2021

- **Experimental measurement of the intrinsic excitonic wave function.** *Science advances*
  Man, M. K., Madeo, J., Sahoo, C., Xie, K., Campbell, M., Pareek, V., Karmakar, A., Wong, E. L., Al-Mahboob, A., Chan, N. S., Bacon, D. R., Zhu, X., Abdelrasoul, et al
  2021; 7 (17)

- **Site-Controlled Quantum Emitters in Monolayer MoSe2.** *Nano letters*
  Yu, L., Deng, M., Zhang, J. L., Borghardt, S., Kardynal, B., Vuckovic, J., Heinz, T. F.
  2021

- **Tuning electrical and interfacial thermal properties of bilayer MoS2 via electrochemical intercalation.** *Nanotechnology*
  Xiong, F. n., Yalon, E. n., McClellan, C. n., Zhang, J. n., Aslan, O. B., Sood, A. n., Sun, J. n., Andolina, C. M., Al-Saidi, W. A., Goodson, K. E., Heinz, T. n., Cui, Y. n., Pop, et al
  2021

- **Time-resolved ARPES of excitons in a 2D semiconductor**
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