



Dr. Christopher T. Parzyck

Postdoctoral Scholar, Photon Science, SLAC

Bio

BIO

My research interests lie at the intersection of materials science and condensed matter physics. I work on thin film synthesis of oxide and metal systems by molecular-beam epitaxy (MBE). Applications range from answering fundamental physics questions about high temperature superconductivity to developing practical synthesis routines and new materials for next generation electron sources. In addition, I work on projects involving spectroscopic probes of thin film systems, including angle-resolved photoemission spectroscopy (ARPES) and resonant soft x-ray scattering (RSXS) measurements.

PROFESSIONAL EDUCATION

- Doctor of Philosophy, Cornell University , Physics (2023)
- Master of Science, Cornell University , Physics (2019)
- Master of Science, The University of New Mexico , Mathematics (2016)
- Bachelor of Science, University of California, San Diego , Physics & Mathematics (2013)

STANFORD ADVISORS

- Thomas Devereaux, Postdoctoral Faculty Sponsor

LINKS

- Personal Site: <https://www.parzyck.net/>

Publications

PUBLICATIONS

- **Growth of tetragonal PtO by molecular-beam epitaxy and its integration into $\beta\text{-Ga}_{2}\text{O}_{3}$ Schottky diodes** *APL MATERIALS*
Hensling, F. V. E., Parzyck, C. T., Cromer, B., Al Mamun, M., Suyolcu, Y., Kalaydjian, L., Subedi, I., Park, J., Azizie, K., Song, Q., Van Aken, P. A., Podraza, N. J., Cho, et al
2025; 13 (11)
- **Anisotropic spin stripe domains in bilayer $\text{La}_{3}\text{Ni}_{2}\text{O}_{7}$** *NATURE COMMUNICATIONS*
Gupta, N. K., Gong, R., Wu, Y., Kang, M., Parzyck, C. T., Gregory, B. Z., Costa, N., Sutarto, R., Sarker, S., Singer, A., Schlom, D. G., Shen, K. M., Hawthorn, et al
2025; 16 (1)
- **Superconductivity in the Parent Infinite-Layer Nickelate NdNiO_{2}** *PHYSICAL REVIEW X*
Parzyck, C. T., Wu, Y., Bhatt, L., Kang, M., Arthur, Z., Pedersen, T. M., Sutarto, R., Fan, S., Pellicciari, J., Bisogni, V., Herranz, G., Georgescu, A. B., Hawthorn, et al
2025; 15 (2)

- **Is $\text{Ba}_{1-x}\text{K}_x\text{Fe}_2\text{As}_2$ a high- T_c superconductor?** *JOURNAL OF PHYSICS-CONDENSED MATTER*
Hensling, F. E., Dahliah, D., Smeaton, M. A., Shrestha, B., Show, Parzyck, C. T., Hennighausen, C., Kotsonis, G. N., Rignanes, G., Barone, M. R., Subedi, D., A. S., Shen, K. M., Faeth, et al
2024; 36 (31)
- **Surface reconstructions and electronic structure of metallic delafossite thin films** *APL MATERIALS*
Song, Q., He, Z., Faeth, B. D., Parzyck, C. T., Scheid, A., Mowers, C. J., Feng, Y., Xu, Q., Hasko, S., Park, J., Barone, M. R., Suyolcu, Y., van Aken, et al
2024; 12 (8)
- **Synthesis of thin film infinite-layer nickelates by atomic hydrogen reduction: Clarifying the role of the capping layer** *APL MATERIALS*
Parzyck, C. T., Anil, V., Wu, Y., Goodge, B. H., Roddy, M., Kourkoutis, L. F., Schlom, D. G., Shen, K. M.
2024; 12 (3)
- **Absence of $3d$ charge density wave order in the infinite-layer nickelate NdNiO_2** (Jan , 2024 , 10.1038/s41563-024-01797-0) *NATURE MATERIALS*
Parzyck, C. T., Gupta, N. K., Wu, Y., Anil, V., Bhatt, L., Bouliane, M., Gong, R., Gregory, B. Z., Luo, A., Sutarto, R., He, F., Chuang, Y., Zhou, et al
2024; 23 (3): 440
- **Absence of $3d$ charge density wave order in the infinite-layer nickelate NdNiO_2** *NATURE MATERIALS*
Parzyck, C. T., Gupta, N. K., Wu, Y., Anil, V., Bhatt, L., Bouliane, M., Gong, R., Gregory, B. Z., Luo, A., Sutarto, R., He, F., Chuang, Y., Zhou, et al
2024; 23 (4): 486-491
- **Atomically smooth films of CsSb : A chemically robust visible light photocathode** *APL MATERIALS*
Parzyck, C. T., Pennington, C. A., DeBenedetti, W. I., Balajka, J., Echeverria, E. M., Paik, H., Moreschini, L., Faeth, B. D., Hu, C., Nangoi, J. K., Anil, V., Arias, T. A., Hines, et al
2023; 11 (10)
- **Growth of PdCoO_2 films with controlled termination by molecular-beam epitaxy and determination of their electronic structure by angle-resolved photoemission spectroscopy** *APL MATERIALS*
Song, Q., Sun, J., Parzyck, C. T., Miao, L., Xu, Q., Hensling, F. V. E., Barone, M. R., Hu, C., Kim, J., Faeth, B. D., Paik, H., King, P. D. C., Shen, et al
2022; 10 (9)
- **Canonical approach to cation flux calibration in oxide molecular-beam epitaxy** *PHYSICAL REVIEW MATERIALS*
Sun, J., Parzyck, C. T., Lee, J. H., Brooks, C. M., Kourkoutis, L. F., Ke, X., Misra, R., Schubert, J., Hensling, F., Barone, M. R., Wang, Z., Holtz, M. E., Schreiber, et al
2022; 6 (3)
- **Single-Crystal Alkali Antimonide Photocathodes: High Efficiency in the Ultrathin Limit** *PHYSICAL REVIEW LETTERS*
Parzyck, C. T., Galdi, A., Nangoi, J. K., DeBenedetti, W. J., Balajka, J., Faeth, B. D., Paik, H., Hu, C., Arias, T. A., Hines, M. A., Schlom, D. G., Shen, K. M., Maxson, et al
2022; 128 (11): 114801
- **Strong interlayer interactions in bilayer and trilayer moire superlattices** *SCIENCE ADVANCES*
Xie, S., Faeth, B. D., Tang, Y., Li, L., Gerber, E., Parzyck, C. T., Chowdhury, D., Zhang, Y., Jozwiak, C., Bostwick, A., Rotenberg, E., Kim, E., Shan, et al
2022; 8 (12): eabk1911
- **Interfacial charge transfer and persistent metallicity of ultrathin $\text{SrIrO}_3/\text{SrRuO}_3$ heterostructures** *SCIENCE ADVANCES*
Nelson, J. N., Schreiber, N. J., Georgescu, A. B., Goodge, B. H., Faeth, B. D., Parzyck, C. T., Zeledon, C., Kourkoutis, L. F., Millis, A. J., Georges, A., Schlom, D. G., Shen, K. M.
2022; 8 (5): eabj0481
- **Computational synthesis of substrates by crystal cleavage** *NPJ COMPUTATIONAL MATERIALS*
Paul, J. T., Galdi, A., Parzyck, C., Shen, K. M., Maxson, J., Hennig, R. G.
2021; 7 (1)
- **Interfacial Electron-Phonon Coupling Constants Extracted from Intrinsic Replica Bands in Monolayer FeSe/SrTiO_3** *PHYSICAL REVIEW LETTERS*

Faeth, B. D., Xie, S., Yang, S., Kawasaki, J. K., Nelson, J. N., Zhang, S., Parzyck, C., Mishra, P., Li, C., Jozwiak, C., Bostwick, A., Rotenberg, E., Schlom, et al
2021; 127 (1): 016803

- **Incoherent Cooper Pairing and Pseudogap Behavior in Single-Layer FeSe/SrTiO₃** *PHYSICAL REVIEW X*
Faeth, B. D., Yang, S., Kawasaki, J. K., Nelson, J. N., Mishra, P., Parzyck, C. T., Li, C., Schlom, D. G., Shen, K. M.
2021; 11 (2)
- **Mott gap collapse in lightly hole-doped Sr_{2-x}K_xIrO₄** *NATURE COMMUNICATIONS*
Nelson, J. N., Parzyck, C. T., Faeth, B. D., Kawasaki, J. K., Schlom, D. G., Shen, K. M.
2020; 11 (1): 2597
- **Enhanced surface superconductivity in Ba(Fe_{0.95}Co_{0.05})₂As₂** *APPLIED PHYSICS LETTERS*
Parzyck, C. T., Faeth, B. D., Tam, G. N., Stewart, G. R., Shen, K. M.
2020; 116 (6)
- **Low energy photoemission from (100) Ba_{1-x}La_xSnO₃ thin films for photocathode applications** *EUROPEAN PHYSICAL JOURNAL-SPECIAL TOPICS*
Galdi, A., Pierce, C. M., Cultrera, L., Adhikari, G., Schroeder, W., Paik, H., Schlom, D. G., Nangoi, J. K., Arias, T. A., Lochocki, E., Parzyck, C., Shen, K. M., Maxson, et al
2019; 228 (3): 713-718
- **Stress relaxation in quasi-two-dimensional self-assembled nanoparticle monolayers** *PHYSICAL REVIEW E*
Boucheron, L. S., Stanley, J. T., Dai, Y., You, S., Parzyck, C. T., Narayanan, S., Sandy, A. R., Jiang, Z., Meron, M., Lin, B., Shpyrko, O. G.
2018; 97 (5): 052803
- **Coarse spectral characterization of warm x-rays at the Z facility using a filtered thermoluminescent dosimeter array** *REVIEW OF SCIENTIFIC INSTRUMENTS*
Harper-Slaboszewicz, V. J., Ulmen, B. A., Parzyck, C. T., Ampleford, D. J., McCourt, A. L., Bell, K. S., Coverdale, C. A.
2017; 88 (4): 043501