Amy E. Louks

Golden, CO 80401

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Education

Colorado School of Mines - Golden, CO

- Doctor of Philosophy in Materials Science — 2022 – Current
- Bachelor of Science in Chemical Engineering; Minor in Energy — 2015 – 2019

Research Experience

National Renewable Energy Laboratory – Golden, Colorado — December 2017 – Present

Perovskite Researcher I — August 2022 – Present

Mentors: Joe Berry, Axel Palmstrom

- Makes perovskite thin film devices via spin coating and blade coating
- Develops standard high performing and reproducible processes for use amongst many researchers
- Uses in-situ spectroscopy and imaging during active layer coating for film level studies

Perovskite Research Technician — May 2019 – August 2022

Mentors: Joe Berry, Axel Palmstrom

- Made perovskite thin film devices via spin coating, blade coating, and slot die coating
- Managed a stability parameter analyzer and organized and communicated collected data
- Analyzed devices pre and post degradation and looked for solutions to improve stability
- Developed processes for highly efficient and stable perovskite solar cells

Undergraduate researcher — December 2017 – May 2019

Mentors: Joe Berry, Matthew Reese

- Performed various stability studies on perovskite thin film solar cells
- Developed a stability parameter analyzer tool that allows for various mechanisms of degradation to be tested
- Analyzed spectral data of various perovskite photovoltaic cells

Awards and Honors

- Key Contributor Award – National Renewable Energy Laboratory, 2020, 2021
- Employee of the Month – National Renewable Energy Laboratory, February 2023

Publications

Citation tracking at: Google Scholar

Co-First authors denoted by *, bolded author is me

1. Tirawat, R., **Louks, A. E.**, Yang, M., Habisreutinger, S. N., van de Lagemaat, J., Uličná, S., Kerner, R. A., Zhu, K., Schelhas, L. T., Palmstrom, A. F., & Berry, J. J. (2024). Measuring metal halide perovskite single cell degradation consistent with module-based conditions. *Sustainable Energy & Fuels*, *8*(3), 546–553. [doi]
2. **Louks, A. E.*,** Tirawat, R.*, Yang, M., Habisreutinger, S. N., Harvey, S. P., Schutt, K., Zhu, K., Berry, J. J., & Palmstrom, A. F. (2023). Improving stability of triple-cation perovskite solar cells under high-temperature operation. *Solar RRL*, *7*(16). [doi]
3. Dunfield, S. P., **Louks, A. E.**, Waxse, J., Tirawat, R., Robbins, S., Berry, J. J., & Reese, M. O. (2023). Forty-two days in the spa, building a stability parameter analyzer to probe degradation mechanisms in perovskite photovoltaic devices. *Sustainable Energy & Fuels*, *7*(14), 3294–3305. [doi]
4. Gaulding, E. A., **Louks, A. E.**, Yang, M., Tirawat, R., Wilson, M. J., Shaw, L. K., Silverman, T. J., Luther, J. M., Palmstrom, A. F., Berry, J. J., & Reese, M. O. (2022). Package development for reliability testing of perovskites. *ACS Energy Letters*, *7*(8), 2641–2645. [doi]
5. Jiang, Q., Tong, J., Scheidt, R. A., Wang, X., **Louks, A. E.**, Xian, Y., Tirawat, R., Palmstrom, A. F., Hautzinger, M. P., Harvey, S. P., Johnston, S., Schelhas, L. T., Larson, B. W., Warren, E. L., Beard, M. C., Berry, J. J., Yan, Y., & Zhu, K. (2022). Compositional texture engineering for highly stable wide-bandgap perovskite solar cells. *Science*, *378*(6626), 1295–1300. [doi]
6. Tong, J., Jiang, Q., Ferguson, A. J., Palmstrom, A. F., Wang, X., Hao, J., Dunfield, S. P., **Louks, A. E.**, Harvey, S. P., Li, C., Lu, H., France, R. M., Johnson, S. A., Zhang, F., Yang, M., Geisz, J. F., McGehee, M. D., Beard, M. C., Yan, Y., Kuciauskas, D., Berry, J. J., & Zhu, K. (2022). Carrier control in Sn–pb perovskites via 2D cation engineering for all-perovskite tandem solar cells with improved efficiency and stability. *Nature Energy*, *7*(7), 642–651. [doi]
7. Schloemer, T. H., Raiford, J. A., Gehan, T. S., Moot, T., Nanayakkara, S., Harvey, S. P., Bramante, R. C., Dunfield, S., **Louks, A. E.**, Maughan, A. E., Bliss, L., McGehee, M. D., van Hest, M. F., Reese, M. O., Bent, S. F., Berry, J. J., Luther, J. M., &

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Sellinger, A. (2020). The molybdenum oxide interface limits the high-temperature operational stability of unencapsulated perovskite solar cells. *ACS Energy Letters*, *5*(7), 2349–2360. [doi]

Presentations

- International Summit on Organic and Hybrid Photovoltaics Stability Conference, Poster, 2024 (HZB, Berlin)
- Materials Research Society Spring Conference, Oral Talk, 2024 (Seattle)
- Rocky Mountain Solid State Chemistry Workshop, Poster, 2023 (CU Boulder, Boulder)

Relevant Lab Skills

- **Computer:** Microsoft Office, ASPEN PLUS V10, python
- **Communication:** Technical writing, presentations, workable knowledge of American Sign Language
- **Lab Skills**: UV-Vis spectroscopy, mass spectrometry, organic separation and extraction, purification techniques, solar simulator usage, spin coating, blade coating, slot die coating, RF sputtering, photoluminescence spectroscopy and imaging

Teaching and Leadership Experience

Treasure Valley Family YMCA – Boise, Idaho September 2012- July 2018

Head Lifeguard

- Lead and maintained a safe and family-oriented pool deck
- Trained lifeguards weekly by administering tests and encouraging them to take lead in real incidents

STEMbus USA - Boise, Idaho Summer 2016

Intern

- Worked with K-12 on their understanding of STEM subjects

Y Camp Junior Counselor – Boise, Idaho Summer 2014, 2015

- Worked with kids to develop new personal and social skills while having fun

Micron Technology Foundation Chip Camp – Boise, Idaho Summer 2012, 2013

- Worked with kids to further their understanding of semiconductor manufacturing

Kappa Kappa Psi at Colorado School of Mines 2015 – 2019

Vice President of Service

- Organized regular community service events for members of the band
- Organized food/managed budget for all marching band events, such as football games and other performances
- Managed outreach, fundraising, and individual service projects proposed by other band members