



Celeste Melamed

Postdoctoral Scholar, Materials Science and Engineering

Bio

BIO

Celeste Melamed is a postdoctoral scholar with the Chueh group at Stanford. Her interests include ionics, structural chemistry and transport, and materials by design, with the overarching goal of a sustainable energy economy. She is currently developing thin film synthetic methods to investigate interfacial structure and evolution in solid-state battery materials. She received her PhD in Materials Science at Colorado School of Mines and the National Renewable Energy Laboratory in 2021, where she investigated the interplay between local and long-range structure in new ternary nitrides for optoelectronic applications. She received a B.S. in Physics from Harvey Mudd College in 2015.

PROFESSIONAL EDUCATION

- Doctor of Philosophy, Colorado School of Mines (2021)
- PhD, Colorado School of Mines , Materials Science (2021)
- BS, Harvey Mudd College , Physics (2015)

STANFORD ADVISORS

- William Chueh, Postdoctoral Faculty Sponsor

Publications

PUBLICATIONS

- **Effect of H⁺ Exchange and Surface Impurities on Bulk and Interfacial Electrochemistry of Garnet Solid Electrolytes** *CHEMISTRY OF MATERIALS*
Wang, S., Barks, E., Lin, P., Xu, X., Melamed, C., McConohy, G., Nemsak, S., Chueh, W. C.
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- **Combinatorial Synthesis of Cation-Disordered Manganese Tin Nitride MnSnN₂ Thin Films with Magnetic and Semiconducting Properties** *CHEMISTRY OF MATERIALS*
Rom, C. L., Smaha, R. W., Melamed, C. L., Schnepf, R., Heinselman, K. N., Mangum, J. S., Lee, S., Lany, S., Schelhas, L. T., Greenaway, A. L., Neilson, J., Bauers, S. R., Tamboli, et al
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- **Mechanical regulation of lithium intrusion probability in garnet solid electrolytes** *NATURE ENERGY*
McConohy, G., Xu, X., Cui, T., Barks, E., Wang, S., Kaeli, E., Melamed, C., Gu, X., Chueh, W. C.
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- **Short-Range Order Tunes Optical Properties in Long-Range Disordered ZnSnN₂-ZnO Alloy** *CHEMISTRY OF MATERIALS*
Melamed, C. L., Miller, M. K., Cordell, J., Pucurimay, L., Livingood, A., Schnepf, R. R., Pan, J., Heinselman, K. N., Vila, F. D., Mis, A., Nordlund, D., Levy-Wendt, B., Lany, et al
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- **Surface conversion of single-crystal Bi₂Se₃ to beta-In₂Se₃** *JOURNAL OF CRYSTAL GROWTH*
McMahon, W. E., Melamed, C. L., Zhang, H., Blackburn, J. L., Diplo, P., Tamboli, A. C., Toberer, E. S., Norman, A. G.
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- **Ternary Nitride Materials: Fundamentals and Emerging Device Applications** *ANNUAL REVIEW OF MATERIALS RESEARCH, VOL 51, 2021*
Greenaway, A. L., Melamed, C. L., Tellekamp, M., Woods-Robinson, R., Toberer, E. S., Neilson, J. R., Tamboli, A. C., Clarke, D. R.
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- **Combinatorial investigation of structural and optical properties of cation-disordered ZnGeN₂** *JOURNAL OF MATERIALS CHEMISTRY C*
Melamed, C. L., Pan, J., Mis, A., Heinselman, K., Schnepf, R. R., Woods-Robinson, R., Cordell, J. J., Lany, S., Toberer, E. S., Tamboli, A. C.
2020; 8 (26): 8736-8746
- **Utilizing Site Disorder in the Development of New Energy-Relevant Semiconductors** *ACS ENERGY LETTERS*
Schnepf, R. R., Cordell, J. J., Tellekamp, M., Melamed, C. L., Greenaway, A. L., Mis, A., Brennecke, G. L., Christensen, S., Tucker, G. J., Toberer, E. S., Lany, S., Tamboli, A. C.
2020; 5 (6): 2027-2041
- **Combinatorial Synthesis of Magnesium Tin Nitride Semiconductors** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
Greenaway, A. L., Loutris, A. L., Heinselman, K. N., Melamed, C. L., Schnepf, R. R., Tellekamp, M., Woods-Robinson, R., Sherbondy, R., Bardgett, D., Bauers, S., Zakutayev, A., Christensen, S. T., Lany, et al
2020; 142 (18): 8421-8430
- **Using resonant energy X-ray diffraction to extract chemical order parameters in ternary semiconductors** *JOURNAL OF MATERIALS CHEMISTRY C*
Schnepf, R. R., Levy-Wendt, B. L., Tellekamp, M., Ortiz, B. R., Melamed, C. L., Schelhas, L. T., Stone, K. H., Toney, M. F., Toberer, E. S., Tamboli, A. C.
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- **Growth of GaAs on single-crystal layered-2D Bi₂Se₃** *JOURNAL OF CRYSTAL GROWTH*
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- **Heteroepitaxial Integration of ZnGeN₂ on GaN Buffers Using Molecular Beam Epitaxy** *CRYSTAL GROWTH & DESIGN*
Tellekamp, M., Melamed, C. L., Norman, A. G., Tamboli, A.
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- **Combinatorial Tuning of Structural and Optoelectronic Properties in CuXZn_{1-X}S** *MATTER*
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2019; 1 (4): 862-880
- **Ternary nitride semiconductors in the rocksalt crystal structure** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
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- **COMBIfor: Data-Analysis Package for Combinatorial Materials Science** *ACS COMBINATORIAL SCIENCE*
Talley, K. R., Bauers, S. R., Melamed, C. L., Papac, M. C., Heinselman, K. N., Khan, I., Roberts, D. M., Jacobson, V., Mis, A., Brennecke, G. L., Perkins, J. D., Zakutayev, A.
2019; 21 (7): 537-547
- **Blue-green emission from epitaxial yet cation-disordered ZnGeN₂-xO_x** *PHYSICAL REVIEW MATERIALS*
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- **Exciton photoluminescence and benign defect complex formation in zinc tin nitride** *MATERIALS HORIZONS*
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- **Band Edge Positions and Their Impact on the Simulated Device Performance of ZnSnN₂-Based Solar Cells** *IEEE JOURNAL OF PHOTOVOLTAICS*
Arca, E., Fioretti, A., Lany, S., Tamboli, A. C., Teeter, G., Melamed, C., Pan, J., Wood, K. N., Toberer, E., Zakutayev, A.
2018; 8 (1): 110-117
- **Large Area Atomically Flat Surfaces via Exfoliation of Bulk Bi₂Se₃ Single Crystals** *CHEMISTRY OF MATERIALS*
Melamed, C. L., Ortiz, B. R., Gorai, P., Martinez, A. D., McMahon, W. E., Miller, E. M., Stevanovic, V., Tamboli, A. C., Norman, A. G., Toberer, E. S.
2017; 29 (19): 8472-8477
- **Combinatorial insights into doping control and transport properties of zinc tin nitride** *JOURNAL OF MATERIALS CHEMISTRY C*
Fioretti, A. N., Zakutayev, A., Moutinho, H., Melamed, C., Perkins, J. D., Norman, A. G., Al-Jassim, M., Toberer, E. S., Tamboli, A. C.
2015; 3 (42): 11017-11028