Stanford

Stacey Bent

Jagdeep & Roshni Singh Professor in the School of Eng, Professor of Energy Science and Eng, Senior Fellow at Precourt & Prof, by courtesy, of Electrical Eng, Materials Sci Eng & Chemistry

Chemical Engineering

Bio

BIO

The research in the Bent laboratory is focused on understanding and controlling surface and interfacial chemistry and applying this knowledge to a range of problems in semiconductor processing, micro- and nano-electronics, nanotechnology, and sustainable and renewable energy. Much of the research aims to develop a molecular-level understanding in these systems, and hence the group uses of a variety of molecular probes. Systems currently under study in the group include functionalization of semiconductor surfaces, mechanisms and control of atomic layer deposition, molecular layer deposition, nanoscale materials for light absorption, interface engineering in photovoltaics, catalyst and electrocatalyst deposition.

ACADEMIC APPOINTMENTS

- Professor, Chemical Engineering
- Professor, Energy Science & Engineering
- Senior Fellow, Precourt Institute for Energy
- Professor (By courtesy), Chemistry
- Professor (By courtesy), Materials Science and Engineering
- Professor (By courtesy), Electrical Engineering
- Member, Bio-X
- Senior Fellow, Precourt Institute for Energy
- Director, The TomKat Center for Sustainable Energy
- Affiliate, Stanford Woods Institute for the Environment

HONORS AND AWARDS

- ALD (Atomic Layer Deposition) 2021 Innovator Award, American Vacuum Society (2021)
- Braskem Award for Excellence in Materials Engineering and Science, American Institute of Chemical Engineers (2021)
- Member, National Academy of Engineering (2020)
- SRC Technical Excellence Award, Semiconductor Research Corporation (2020)
- ACS Award in Surface Chemistry, American Chemical Society (2018)
- Bert and Candace Forbes University Fellow in Undergraduate Education, Stanford University (2013)
- Fellow, American Chemical Society (2013)
- Stanford Medal for Faculty Excellence Fostering Undergraduate Research, Stanford University (2013)
- Jagdeep and Roshni Singh Chair, School of Engineering (2012)

- Fellow, World Technology Network (2011)
- Award for Excellence in Undergraduate Teaching, Tau Beta Pi (2006)
- Fellow, AVS (2006)
- Coblentz Award, The Coblentz Society (2001)
- Peter Mark Memorial Award, American Vacuum Society (2000)
- Camille Dreyfus Teacher-Scholar, The Camille Dreyfus Teacher-Scholar Awards Program (1998)
- Research Corporation Cottrell Scholar, Research Corporation (1998)
- Terman Faculty Fellow, Stanford University (1998)
- Beckman Young Investigator, Arnold and Mabel Beckman Foundation (1997)
- CAREER Award, National Science Foundation (1995)

PROGRAM AFFILIATIONS

- Stanford SystemX Alliance

PROFESSIONAL EDUCATION

- PhD, Stanford University , Chemistry (1992)
- BS, U.C. Berkeley , Chemical Engineering (1987)

LINKS

- http://bentgroup.stanford.edu: http://bentgroup.stanford.edu

Teaching

COURSES

2025-26

- Structure and Reactivity of Solid Surfaces: CHEMENG 424, ENERGY 424 (Spr)

2023-24

- Colloquium: CHEMENG 699 (Aut, Win, Spr)
- Graduate Practical Training: CHEMENG 299 (Sum)

2022-23

- Graduate Practical Training: CHEMENG 299 (Sum)
- Special Topics in Semiconductor Processing: CHEMENG 501 (Aut)
- Structure and Reactivity of Solid Surfaces: CHEMENG 424 (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Jesse Matthews

Postdoctoral Faculty Sponsor

Yu Sen Jiang, Jeongmin Lee, Madina Telkhozhayeva

Doctoral Dissertation Advisor (AC)

Lilliana Brandao, Dea Fackovic Volcanjk, Maggy Harake, Nadine Humphrey, Anna Kolln, Bang Nhan, Ololade Oriowo, Karl Persson, Kenzie Sanroman Gutierrez, Sanzeeda Baig Shuchi, Long Than

Doctoral Dissertation Co-Advisor (AC)

Genni Liccardo

Doctoral (Program)

Bryce De Muth

Postdoctoral Research Mentor

Tzu-Ling Liu

Publications

PUBLICATIONS

- **Aromatic organic-tin hybrid films as electron beam resists** *APPLIED SURFACE SCIENCE*
  Lewis, J., Than, L., Bent, S. F.
  2026; 732
- **Effect of Oxide Chemistry on Pt Redistribution and Site Exposure in ALD-Coated Catalysts** *ACS CATALYSIS*
  Nhan, B. T., Mandal, S. C., Smith, J., Liccardo, G., Richardson, S., Abild-Pedersen, F., Chi, M., Cargnello, M., Bent, S. F.
  2026
- **Effect of molecular layer deposition parameters on the electron beam resist properties of hafnicone hybrid films** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY A*
  Lewis, J., Than, L., Bent, S. F.
  2026; 44 (2)
- **Opportunities and Challenges of Machine Learning in Atomic Layer Deposition** *CHEMISTRY OF MATERIALS*
  Westermayr, J., Bent, S. F., Tonner-Zech, R.
  2026
- **Anhydrous Atomic Layer Deposition of HfO2: Mechanistic Analysis of the Tetrakis(dimethylamido)hafnium (TDMAH)-O2 Process.** *Langmuir : the ACS journal of surfaces and colloids*
  Kim, M., Seo, S., Jeon, W. P., Lee, Y., Lee, J., Kim, H., Shong, B., Bent, S. F.
  2025
- **Cryogenic X-ray photoelectron spectroscopy for battery interfaces.** *Nature*
  Shuchi, S. B., D'Acunto, G., Sayavong, P., Oyakhire, S. T., Sanroman Gutierrez, K. M., Risner-Jamtgaard, J., Choi, I. R., Cui, Y., Bent, S. F.
  2025; 646 (8086): 850-855
- **Effect of Networking Density on the Patterning Performance of Molecular Layer Deposited Alucone Electron Beam/EUV Resists.** *ACS applied materials & interfaces*
  Than, L. V., D'Acunto, G., Harake, M., Im, H., Kostko, O., Bent, S. F.
  2025
- **Precursor Engineering of Atomic Layer Deposition for Top-Gate Insulators on Monolayer MoS2 Transistors.** *ACS nano*
  Shearer, A. B., Ko, J. S., Hoang, A. T., Werbrouck, A., Rothman, A., Volcanjk, D. F., Lee, Y. M., Bennett, R. K., Mannix, A. J., Saraswat, K. C., Pop, E., Bent, S. F.
  2025
- **Role of Precursor Miscibility in Area-Selective Atomic Layer Deposition.** *Advanced materials (Deerfield Beach, Fla.)*
  Shearer, A., Cho, Y., Werbrouck, A., Rothman, A., Liu, T. L., Bent, S. F.
  2025: e06699
- **Optoelectronic Properties of Atomic Layer Deposited and Sputtered MoS2 Films.** *ACS applied materials & interfaces*
  Nattoo, C. A., Peña, T., Nassiri Nazif, K., Wu, X., Rahimisheikh, S., D'Acunto, G., Bent, S. F., Hadermann, J., Pop, E.
  2025
- **Atomic layer deposition of nickel sulfide thin films and their thermal and electrochemical stability** *JOURNAL OF MATERIALS CHEMISTRY A*
  Mattinen, M., Schroeder, J., Hatanpaeae, T., Popov, G., Mizohata, K., Leskelae, M., Jaramillo, T. F., Stevens, M., Bent, S. F., Ritala, M.

2025

- **John Ekerdt - the man, the myth, the legend…** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY A*
  Bent, S. F., Chang, J. P.
  2025; 43 (4)
- **Revealing and Quantifying Carbon Corrosion in Aqueous Manganese-Based Batteries.** *Nano letters*
  Ravi, A., Zhang, G., Holoubek, J., Li, Y., Hao, H., Cai, A., Shuchi, S. B., Feng, G., Han, J., Li, J., Bent, S. F., Zheng, X., Cui, et al
  2025
- **Galvanic corrosion underlies coulombic efficiency differences in high-performing lithium metal battery electrolytes** *ENERGY & ENVIRONMENTAL SCIENCE*
  Oyakhire, S. T., Kim, S., Zhang, W., Shuchi, S., Cui, Y., Bent, S. F.
  2025
- **Crystalline 1D Coordination Polymer Inhibitor Layer Leads to Vertical Sidewalls in Selectively Deposited ZnO on Nanoscale Patterns.** *ACS nano*
  Shearer, A., Cho, Y., Kim, M., Werbrouck, A., Liu, T. L., Takacs, C. J., Shong, B., Bent, S. F.
  2025
- **Atomic and molecular layer deposition on unconventional substrates: challenges and perspectives from energy applications.** *Nanotechnology*
  Cho, Y., D'Acunto, G., Nanda, J., Bent, S. F.
  2025
- **Achieving 1-nm-Scale Equivalent Oxide Thickness Top-Gate Dielectric on Monolayer Transition Metal Dichalcogenide Transistors With CMOS-Friendly Approaches** *IEEE TRANSACTIONS ON ELECTRON DEVICES*
  Ko, J., Shearer, A. B., Lee, S., Neilson, K., Jaikissoon, M., Kim, K., Bent, S. F., Pop, E., Saraswat, K. C.
  2025; 72 (3): 1514-1519
- **Molecular Design in Area-Selective Atomic Layer Deposition: Understanding Inhibitors and Precursors** *CHEMISTRY OF MATERIALS*
  Lee, Y., Rothman, A., Shearer, A. B., Bent, S. F.
  2025
- **Deposition and Degradation Mechanism of Zinc Thiolate Thin Films via Hybrid Molecular Layer Deposition** *CHEMISTRY OF MATERIALS*
  Lewis, J., Shi, J., Werbrouck, A., Bent, S. F.
  2025
- **Enhanced ALD Nucleation on Polymeric Separator for Improved Li-S Batteries.** *ACS applied materials & interfaces*
  D'Acunto, G., Shuchi, S. B., Zheng, X., Than, L. V., Geierstanger, E. M., Harake, M., Cui, A., Werbrouck, A., Mattinen, M., Cui, Y., Bent, S. F.
  2025
- **Nanostructure fabrication by area selective deposition: a brief review.** *Materials horizons*
  Liu, T. L., Bent, S. F.
  2025
- **Exploring the potential landscape of chemical engineering science** *NATURE CHEMICAL ENGINEERING*
  Adjiman, C. S., Angeli, P., Bardow, A., Bent, S. F., Brandon, N., Galloway, K., Gorte, R. J., Guillen-Gosalbez, G., Gutierrez-Antonio, C., Hatzell, M. C., Jewett, M. C., Kanga, M., Kopke, et al
  2025; 2 (1): 19-25
- **Role of Molecular Orientation: Comparison of Nitrogenous Aromatic Small Molecule Inhibitors for Area-Selective Atomic Layer Deposition** *CHEMISTRY OF MATERIALS*
  Shearer, A., Pieck, F., Yarbrough, J., Werbrouck, A., Tonner-Zech, R., Bent, S. F.
  2024
- **Comparison of Al- and Hf-based hybrid photoresists grown by molecular layer deposition for extreme ultraviolet lithography** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY A*
  Ravi, A., Than, L., Lewis, J., Shi, J., Werbrouck, A., Han, J., Mattinen, M., Bent, S. F.
  2024; 42 (6)

- **Dynamics of precatalyst conversion and iron incorporation in nickel-based alkaline oxygen evolution reaction catalysts** *CELL REPORTS PHYSICAL SCIENCE*
  Mattinen, M., Schroder, J., D'Acunto, G., Ritala, M., Jaramillo, T. F., Stevens, M., Bent, S. F.
  2024; 5 (11)
- **Deconvoluting Effects of Lithium Morphology and SEI Stability at Moderate Current Density Using Interface Engineering** *ADVANCED MATERIALS INTERFACES*
  Shuchi, S., Oyakhire, S. T., Zhang, W., Sayavong, P., Ye, Y., Chen, Y., Yu, Z., Cui, Y., Bent, S. F.
  2024
- **Enhanced nucleation mechanism in ruthenium atomic layer deposition: Exploring surface termination and precursor ligand effects with RuCpEt(CO)₂** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY A*
  Rothman, A., Seo, S., Woodruff, J., Kim, H., Bent, S. F.
  2024; 42 (5)
- **Unveiling the Stability of Encapsulated Pt Catalysts Using Nanocrystals and Atomic Layer Deposition.** *Journal of the American Chemical Society*
  Liccardo, G., Cendejas, M. C., Mandal, S. C., Stone, M. L., Porter, S., Nhan, B. T., Kumar, A., Smith, J., Plessow, P. N., Cegelski, L., Osio-Norgaard, J., Abild-Pedersen, F., Chi, et al
  2024
- **HfO₂ Area-Selective Atomic Layer Deposition with a Carbon-Free Inhibition Layer** *CHEMISTRY OF MATERIALS*
  Lee, Y., Seo, S., Shearer, A. B., Werbrouck, A., Kim, H., Bent, S. F.
  2024
- **Erratum: "Understanding chemical and physical mechanisms in atomic layer deposition" [J. Chem. Phys. 152, 040902 (2020)].** *The Journal of chemical physics*
  Richey, N. E., de Paula, C., Bent, S. F.
  2024; 160 (8)
- **Recovery of isolated lithium through discharged state calendar ageing.** *Nature*
  Zhang, W., Sayavong, P., Xiao, X., Oyakhire, S. T., Shuchi, S. B., Vilá, R. A., Boyle, D. T., Kim, S. C., Kim, M. S., Holmes, S. E., Ye, Y., Li, D., Bent, et al
  2024; 626 (7998): 306-312
- **Enhanced Growth in Atomic Layer Deposition of Ruthenium Metal: The Role of Surface Diffusion and Nucleation Sites** *CHEMISTRY OF MATERIALS*
  Rothman, A., Werbrouck, A., Bent, S. F.
  2023; 36 (1): 541-550
- **Interfacial engineering of lithium metal anodes: what is left to uncover?** *ENERGY ADVANCES*
  Oyakhire, S. T., Bent, S. F.
  2023
- **Area-Selective Deposition by Cyclic Adsorption and Removal of 1-Nitropropane.** *The journal of physical chemistry. A*
  Yarbrough, J., Bent, S. F.
  2023
- **Area-Selective Atomic Layer Deposition for Resistive Random-Access Memory Devices.** *ACS applied materials & interfaces*
  Oh, I. K., Khan, A. I., Qin, S., Lee, Y., Wong, H. P., Pop, E., Bent, S. F.
  2023
- **Proximity Matters: Interfacial Solvation Dictates Solid Electrolyte Interphase Composition.** *Nano letters*
  Oyakhire, S. T., Liao, S., Shuchi, S. B., Kim, M. S., Kim, S. C., Yu, Z., Vila, R. A., Rudnicki, P. E., Cui, Y., Bent, S. F.
  2023
- **Area-Selective Atomic Layer Deposition of Al2O3 with a Methanesulfonic Acid Inhibitor** *CHEMISTRY OF MATERIALS*
  Yarbrough, J., Pieck, F., Shearer, A. B., Maue, P., Tonner-Zech, R., Bent, S. F.
  2023
- **Dissolution of the Solid Electrolyte Interphase and Its Effects on Lithium Metal Anode Cyclability.** *Journal of the American Chemical Society*

Sayavong, P., Zhang, W., Oyakhire, S. T., Boyle, D. T., Chen, Y., Kim, S. C., Vilá, R. A., Holmes, S. E., Kim, M. S., Bent, S. F., Bao, Z., Cui, Y.
2023

- **Molecular Layer Deposition of Organic-Inorganic Hafnium Oxynitride Hybrid Films for Electrochemical Applications** *ACS APPLIED ENERGY MATERIALS*
  Ablat, H., Oh, I., Richey, N. E., Oyakhire, S. T., Yang, Y., Zhang, W., Huang, W., Cui, Y., Bent, S. F.
  2023; 6 (11): 5806-5816
- **Data-driven electrolyte design for lithium metal anodes.** *Proceedings of the National Academy of Sciences of the United States of America*
  Kim, S. C., Oyakhire, S. T., Athanitis, C., Wang, J., Zhang, Z., Zhang, W., Boyle, D. T., Kim, M. S., Yu, Z., Gao, X., Sogade, T., Wu, E., Qin, et al
  2023; 120 (10): e2214357120
- **Revealing the Multifunctions of Li3N in the Suspension Electrolyte for Lithium Metal Batteries.** *ACS nano*
  Kim, M. S., Zhang, Z., Wang, J., Oyakhire, S. T., Kim, S. C., Yu, Z., Chen, Y., Boyle, D. T., Ye, Y., Huang, Z., Zhang, W., Xu, R., Sayavong, et al
  2023
- **Correlating the Formation Protocols of Solid Electrolyte Interphases with Practical Performance Metrics in Lithium Metal Batteries** *ACS ENERGY LETTERS*
  Oyakhire, S. T., Zhang, W., Yu, Z., Holmes, S. E., Sayavong, P., Kim, S., Boyle, D. T., Kim, M., Zhang, Z., Cui, Y., Bent, S. F.
  2023: 869-877
- **Molecular layer deposition of an Al-based hybrid resist for electron-beam and EUV lithography**
  Ravi, A., Shi, J., Lewis, J., Bent, S. F.
  edited by Guerrero, D., Amblard, G. R.
  SPIE-INT SOC OPTICAL ENGINEERING.2023
- **Sequential Use of Orthogonal Self-Assembled Monolayers for Area-Selective Atomic Layer Deposition of Dielectric on Metal** *ADVANCED MATERIALS INTERFACES*
  Liu, T., Harake, M., Bent, S. F.
  2022
- **Ionic Liquid-Mediated Route to Atomic Layer Deposition of Tin(II) Oxide via a C-C Bond Cleavage Ligand Modification Mechanism.** *Journal of the American Chemical Society*
  Shi, J., Seo, S., Schuster, N. J., Kim, H., Bent, S. F.
  2022
- **Surface Fe clusters promote syngas reaction to oxygenates on Rh catalysts modified by atomic layer deposition** *JOURNAL OF CATALYSIS*
  Nathan, S. S., Asundi, A. S., Hoffman, A. S., Hong, J., Zhou, C., Vila, F. D., Cargnello, M., Bare, S. R., Bent, S. F.
  2022; 414: 125-136
- **An X-ray Photoelectron Spectroscopy Primer for Solid Electrolyte Interphase Characterization in Lithium Metal Anodes** *ACS ENERGY LETTERS*
  Oyakhire, S. T., Gong, H., Cui, Y., Bao, Z., Bent, S. F.
  2022; 7 (8)
- **Electrical resistance of the current collector controls lithium morphology.** *Nature communications*
  Oyakhire, S. T., Zhang, W., Shin, A., Xu, R., Boyle, D. T., Yu, Z., Ye, Y., Yang, Y., Raiford, J. A., Huang, W., Schneider, J. R., Cui, Y., Bent, et al
  2022; 13 (1): 3986
- **Understanding and Utilizing Reactive Oxygen Reservoirs in Atomic Layer Deposition of Metal Oxides with Ozone** *CHEMISTRY OF MATERIALS*
  Schneider, J. R., de Paula, C., Richey, N. E., Baker, J. G., Oyakhire, S. T., Bent, S. F.
  2022
- **Elucidating the Reaction Mechanism of Atomic Layer Deposition of Al2O3 with a Series of Al(CH3)xCl3-x and Al(CyH2y+1)3 Precursors.** *Journal of the American Chemical Society*
  Oh, I., Sandoval, T. E., Liu, T., Richey, N. E., Nguyen, C. T., Gu, B., Lee, H., Tonner-Zech, R., Bent, S. F.
  2022
- **Molecular Layer Deposition of a Hafnium-Based Hybrid Thin Film as an Electron Beam Resist.** *ACS applied materials & interfaces*
  Shi, J., Ravi, A., Richey, N. E., Gong, H., Bent, S. F.

2022

- **Copper Oxidation Improves Dodecanethiol Blocking Ability in Area-Selective Atomic Layer Deposition** *ADVANCED MATERIALS INTERFACES*
  Liu, T., Bent, S. F.
  2022
- **Tuning Molecular Inhibitors and Aluminum Precursors for the AreaSelective Atomic Layer Deposition of Al2O3 br** *CHEMISTRY OF MATERIALS*
  Yarbrough, J., Pieck, F., Grigjanis, D., Oh, I., Maue, P., Tonner-Zech, R., Bent, S. F.
  2022; 34 (10): 4646-4659
- **Methyl-methacrylate based aluminum hybrid film grown via three-precursor molecular layer deposition** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY A*
  Oyakhire, S. T., Ablat, H., Richey, N. E., Bent, S. F.
  2022; 40 (2)
- **Steering CO2 hydrogenation toward C-C coupling to hydrocarbons using porous organic polymer/metal interfaces.** *Proceedings of the National Academy of Sciences of the United States of America*
  Zhou, C., Asundi, A. S., Goodman, E. D., Hong, J., Werghi, B., Hoffman, A. S., Nathan, S. S., Bent, S. F., Bare, S. R., Cargnello, M.
  2022; 119 (7)
- **Suspension electrolyte with modified Li+ solvation environment for lithium metal batteries.** *Nature materials*
  Kim, M. S., Zhang, Z., Rudnicki, P. E., Yu, Z., Wang, J., Wang, H., Oyakhire, S. T., Chen, Y., Kim, S. C., Zhang, W., Boyle, D. T., Kong, X., Xu, et al
  1800
- **Rational solvent molecule tuning for high-performance lithium metal battery electrolytes** *NATURE ENERGY*
  Yu, Z., Rudnicki, P. E., Zhang, Z., Huang, Z., Celik, H., Oyakhire, S. T., Chen, Y., Kong, X., Kim, S., Xiao, X., Wang, H., Zheng, Y., Kamat, et al
  2022
- **The Importance of Decarbonylation Mechanisms in the Atomic Layer Deposition of High-Quality Ru Films by Zero-Oxidation State Ru(DMBD)(CO)3.** *Small (Weinheim an der Bergstrasse, Germany)*
  Schneider, J. R., de Paula, C., Lewis, J., Woodruff, J., Raiford, J. A., Bent, S. F.
  1800: e2105513
- **Modulating the optoelectronic properties of hybrid Mo-thiolate thin films** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY A*
  Shi, J., Zeng, L., Nikzad, S., Koshy, D. M., Asundi, A. S., MacIsaac, C., Bent, S. F.
  2022; 40 (1)
- **Identifying higher oxygenate synthesis sites in Cu catalysts promoted and stabilized by atomic layer deposited Fe2O3** *JOURNAL OF CATALYSIS*
  Asundi, A. S., Nathan, S. S., Hong, J., Hoffman, A. S., Pennel, M., Bare, S. R., Bent, S. F.
  2021; 404: 210-223
- **Tailoring the Surface of Metal Halide Perovskites to Enable the Atomic Layer Deposition of Metal Oxide Contacts** *ACS APPLIED ENERGY MATERIALS*
  Raiford, J. A., Chosy, C., Reeves, B. A., Bent, S. F.
  2021; 4 (9): 9871-9880
- **Characterizing Self-Assembled Monolayer Breakdown in Area-Selective Atomic Layer Deposition.** *Langmuir : the ACS journal of surfaces and colloids*
  Liu, T., Zeng, L., Nardi, K. L., Hausmann, D. M., Bent, S. F.
  2021
- **Monolayer Support Control and Precise Colloidal Nanocrystals Demonstrate Metal-Support Interactions in Heterogeneous Catalysts.** *Advanced materials (Deerfield Beach, Fla.)*
  Goodman, E. D., Asundi, A. S., Hoffman, A. S., Bustillo, K. C., Stebbins, J. F., Bare, S. R., Bent, S. F., Cargnello, M.
  2021: e2104533
- **Resilient Women and the Resiliency of Science** *CHEMISTRY OF MATERIALS*
  Khashab, N. M., Skrabalak, S. E., Adler-Abramovich, L., Bent, S. F., El-Mellouhi, F., Kumacheva, E., Milliron, D. J., Neu, J., Rezasoltani, E., Shen, Q., Sicolo, S.

2021; 33 (17): 6585-6588

- **Role of Precursor Choice on Area-Selective Atomic Layer Deposition** *CHEMISTRY OF MATERIALS*
  Oh, I., Sandoval, T. E., Liu, T., Richey, N. E., Bent, S. F.
  2021; 33 (11): 3926-3935
- **Bridging thermal catalysis and electrocatalysis: Catalyzing CO2 conversion with carbon-based materials.** *Angewandte Chemie (International ed. in English)*
  Koshy, D., Nathan, S., Asundi, A., Abdellah, A., Dull, S., Cullen, D., Higgins, D., Bao, Z., Bent, S., Jaramillo, T.
  2021
- **Multi-metal coordination polymers grown through hybrid molecular layer deposition.** *Dalton transactions (Cambridge, England : 2003)*
  Richey, N. E., Borhan, S., Bent, S. F.
  2021
- **Next generation nanopatterning using small molecule inhibitors for area-selective atomic layer deposition** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY A*
  Yarbrough, J., Shearer, A. B., Bent, S. F.
  2021; 39 (2)
- **Area-Selective Molecular Layer Deposition of a Silicon Oxycarbide Low-k Dielectric** *CHEMISTRY OF MATERIALS*
  Yu, X., Bobb-Semple, D., Oh, I., Liu, T., Closser, R. G., Trevillyan, W., Bent, S. F.
  2021; 33 (3): 902–9
- **Bridging the Synthesis Gap: Ionic Liquids Enable Solvent-Mediated Reaction in Vapor-Phase Deposition.** *ACS nano*
  Shi, J., Bent, S. F.
  2021
- **Identification of highly active surface iron sites on Ni(OOH) for the oxygen evolution reaction by atomic layer deposition** *JOURNAL OF CATALYSIS*
  Baker, J. G., Schneider, J. R., Paula, C., Mackus, A. J. M., Bent, S. F.
  2021; 394: 476–85
- **Area-Selective Atomic Layer Deposition on Chemically Similar Materials: Achieving Selectivity on Oxide/Oxide Patterns** *CHEMISTRY OF MATERIALS*
  Liu, T., Bent, S. F.
  2021; 33 (2): 513–23
- **Increased selectivity in area-selective ALD by combining nucleation enhancement and SAM-based inhibition** *JOURNAL OF MATERIALS RESEARCH*
  de Paula, C., Bobb-Semple, D., Bent, S. F.
  2021
- **Impurity Control in Catalyst Design: The Role of Sodium in Promoting and Stabilizing Co and Co2C for Syngas Conversion** *CHEMCATCHEM*
  Asundi, A. S., Hoffman, A. S., Nathan, S. S., Boubnov, A., Bare, S. R., Bent, S. F.
  2021
- **Understanding Selectivity in CO2 Hydrogenation to Methanol for MoP Nanoparticle Catalysts Using In Situ Techniques** *CATALYSTS*
  Duyar, M. S., Gallo, A., Regli, S. K., Snider, J. L., Singh, J. A., Valle, E., McEnaney, J., Bent, S. F., Ronning, M., Jaramillo, T. F.
  2021; 11 (1)
- **Understanding Support Effects of ZnO-Promoted Co Catalysts for Syngas Conversion to Alcohols Using Atomic Layer Deposition** *CHEMCATCHEM*
  Nathan, S. S., Asundi, A. S., Singh, J. A., Hoffman, A. S., Boubnov, A., Hong, J., Bare, S. R., Bent, S. F.
  2020
- **Atomic Layer Deposition of Pt on the Surface Deactivated by Fluorocarbon Implantation: Investigation of the Growth Mechanism** *CHEMISTRY OF MATERIALS*
  Kim, W., Shin, K., Shong, B., Godet, L., Bent, S. F.
  2020; 32 (22): 9696–9703

- **Enhanced alcohol production over binary Mo/Co carbide catalysts in syngas conversion** *JOURNAL OF CATALYSIS*
  Asundi, A. S., Hoffman, A. S., Chi, M., Nathan, S. S., Boubnov, A., Hong, J., Bare, S. R., Bent, S. F.
  2020; 391: 446–58
- **Thermally Activated Reactions of Phenol at the Ge(100)-2 x 1 Surface** *JOURNAL OF PHYSICAL CHEMISTRY C*
  Shong, B., Ansari, A., Bent, S. F.
  2020; 124 (43): 23657–60
- **Revealing and Elucidating ALD-Derived Control of Lithium Plating Microstructure** *ADVANCED ENERGY MATERIALS*
  Oyakhire, S. T., Huang, W., Wang, H., Boyle, D. T., Schneider, J. R., de Paula, C., Wu, Y., Cui, Y., Bent, S. F.
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