



Stacey Bent

Vice Provost for Graduate Education & Postdoctoral Affairs, Jagdeep & Roshni Singh Professor in the School of Engineering, Senior Fellow at Precourt and Professor, by courtesy, of Materials Science & Eng, of Electrical Eng and of 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
- 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)
- Coblenz Award, The Coblenz 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)

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

2020-21

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

2019-20

- Graduate Practical Training: CHEMENG 299 (Aut, Sum)
- Special Topics in Semiconductor Processing: CHEMENG 501 (Aut, Win, Spr, Sum)

2018-19

- Graduate Practical Training: CHEMENG 299 (Sum)
- Kinetics and Reactor Design: CHEMENG 170 (Aut)
- Special Topics in Semiconductor Processing: CHEMENG 501 (Aut, Win, Spr, Sum)

2017-18

- Kinetics and Reactor Design: CHEMENG 170 (Aut)
- Special Topics in Semiconductor Processing: CHEMENG 501 (Aut, Win, Spr, Sum)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Samuel Dull, Jacob Kirsh

Postdoctoral Faculty Sponsor

Amnon Rothman, Andreas Werbrouck

Doctoral Dissertation Advisor (AC)

Maggy Harake, Jacqueline Lewis, Tzu-Ling Liu, Sindhu Nathan, Solomon Oyakhire, Joel Schneider, Alex Shearer, Jingwei Shi, Josiah Yarbrough, Camila de Paula
Teixeira

Postdoctoral Research Mentor

Amnon Rothman, Andreas Werbrouck

Publications

PUBLICATIONS

- **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. 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.
2020
- **Effect of Heteroaromaticity on Adsorption of Pyrazine on the Ge(100)-2x1 Surface** *JOURNAL OF PHYSICAL CHEMISTRY C*
Sandoval, T. E., Pieck, F., Tonner, R., Bent, S. F.
2020; 124 (40): 22055–68
- **Effect of Multilayer versus Monolayer Dodecanethiol on Selectivity and Pattern Integrity in Area-Selective Atomic Layer Deposition** *ACS APPLIED MATERIALS & INTERFACES*
Liu, T., Nardi, K. L., Draeger, N., Hausmann, D. M., Bent, S. F.
2020; 12 (37): 42226–35
- **Overcoming Redox Reactions at Perovskite-Nickel Oxide Interfaces to Boost Voltages in Perovskite Solar Cells** *JOULE*
Boyd, C. C., Shallcross, R., Moot, T., Kerner, R., Bertoluzzi, L., Onno, A., Kavadiya, S., Chosy, C., Wolf, E. J., Werner, J., Raiford, J. A., de Paula, C., Palmstrom, et al
2020; 4 (8): 1759–75
- **The Molybdenum Oxide Interface Limits the High-Temperature Operational Stability of Unencapsulated Perovskite Solar Cells** *ACS ENERGY LETTERS*
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, et al
2020; 5 (7): 2349–60
- **Applications of atomic layer deposition and chemical vapor deposition for perovskite solar cells** *ENERGY & ENVIRONMENTAL SCIENCE*
Raiford, J. A., Oyakhire, S. T., Bent, S. F.
2020; 13 (7): 1997–2023
- **Selective Toolbox for Nanofabrication** *CHEMISTRY OF MATERIALS*
Lee, H., Bent, S. F.
2020; 32 (8): 3323–24
- **The Influence of Ozone: Superstoichiometric Oxygen in Atomic Layer Deposition of Fe₂O₃ Using tert-Butylferrocene and O-3** *ADVANCED MATERIALS INTERFACES*
Schneider, J. R., Baker, J. G., Bent, S. F.
2020
- **Nucleation Effects in the Atomic Layer Deposition of Nickel-Aluminum Oxide Thin Films** *CHEMISTRY OF MATERIALS*
Baker, J. G., Schneider, J. R., Raiford, J. A., de Paula, C., Bent, S. F.
2020; 32 (5): 1925–36
- **Understanding chemical and physical mechanisms in atomic layer deposition.** *The Journal of chemical physics*
Richey, N. E., de Paula, C., Bent, S. F.
2020; 152 (4): 040902
- **Synthesis of a Hybrid Nanostructure of ZnO-Decorated MoS₂ by Atomic Layer Deposition.** *ACS nano*
Oh, I., Kim, W., Zeng, L., Singh, J., Bae, D., Mackus, A. J., Song, J., Seo, S., Shong, B., Kim, H., Bent, S. F.
2020
- **Mechanistic Study of Nucleation Enhancement in Atomic Layer Deposition by Pretreatment with Small Organometallic Molecules** *CHEMISTRY OF MATERIALS*
de Paula, C., Richey, N. E., Zeng, L., Bent, S. F.
2020; 32 (1): 315–25

- **Surface Energy Change of Atomic-Scale Metal Oxide Thin Films by Phase Transformation.** *ACS nano*
Oh, I. K., Zeng, L. n., Kim, J. E., Park, J. S., Kim, K. n., Lee, H. n., Seo, S. n., Khan, M. R., Kim, S. n., Park, C. W., Lee, J. n., Shong, B. n., Lee, et al
2020
- **Modified atomic layer deposition of MoS₂ thin films** *Modified atomic layer deposition of MoS₂ thin films*
Zeng, L., Richey, N. E., Palm, D. W., Oh, I., Shi, J., MacIsaac, C., Jaramillo, T., Bent, S. F.
2020; 38: 060403
- **Substrate-Dependent Study of Chain Orientation and Order in Alkylphosphonic Acid Self-Assembled Monolayers for ALD Blocking.** *Langmuir : the ACS journal of surfaces and colloids*
Bobb-Semple, D. n., Zeng, L. n., Cordova, I. n., Bergsman, D. S., Nordlund, D. n., Bent, S. F.
2020
- **Enhanced Nucleation of Atomic Layer Deposited Contacts Improves Operational Stability of Perovskite Solar Cells in Air** *ADVANCED ENERGY MATERIALS*
Raiford, J. A., Boyd, C. C., Palmstrom, A. F., Wolf, E. J., Fearon, B. A., Berry, J. J., McGehee, M. D., Bent, S. F.
2019
- **Design of low bandgap tin-lead halide perovskite solar cells to achieve thermal, atmospheric and operational stability** *NATURE ENERGY*
Prasanna, R., Leijtens, T., Dunfield, S. P., Raiford, J. A., Wolf, E. J., Swifter, S. A., Werner, J., Eperon, G. E., de Paula, C., Palmstrom, A. F., Boyd, C. C., van Hest, M. M., Bent, et al
2019; 4 (11): 939–47
- **Structurally Stable Manganese Alkoxide Films Grown by Hybrid Molecular Layer Deposition for Electrochemical Applications** *ADVANCED FUNCTIONAL MATERIALS*
Bergsman, D. S., Baker, J. G., Closser, R. G., MacIsaac, C., Lillethorup, M., Strickler, A. L., Azarnouche, L., Godet, L., Bent, S. F.
2019
- **A Versatile Method for Ammonia Detection in a Range of Relevant Electrolytes via Direct Nuclear Magnetic Resonance Techniques** *ACS CATALYSIS*
Nielander, A. C., McEnaney, J. M., Schwalbe, J. A., Baker, J. G., Blair, S. J., Wang, L., Pelton, J. G., Andersen, S. Z., Enemark-Rasmussen, K., Colic, V., Yang, S., Bent, S. F., Cargnello, et al
2019; 9 (7): 5797–5802
- **Growth of a Surface-Tethered, All-Carbon Backboned Fluoropolymer by Photoactivated Molecular Layer Deposition** *ACS APPLIED MATERIALS & INTERFACES*
Closser, R. G., Lillethorup, M., Bergsman, D. S., Bent, S. F.
2019; 11 (24): 21988–97
- **Atomic layer deposition of vanadium oxide to reduce parasitic absorption and improve stability in n-i-p perovskite solar cells for tandems** *SUSTAINABLE ENERGY & FUELS*
Raiford, J. A., Belisle, R. A., Bush, K. A., Prasanna, R., Palmstrom, A. F., McGehee, M. D., Bent, S. F.
2019; 3 (6): 1517–25
- **A rigorous electrochemical ammonia synthesis protocol with quantitative isotope measurements.** *Nature*
Andersen, S. Z., Colic, V., Yang, S., Schwalbe, J. A., Nielander, A. C., McEnaney, J. M., Enemark-Rasmussen, K., Baker, J. G., Singh, A. R., Rohr, B. A., Statt, M. J., Blair, S. J., Mezzavilla, et al
2019
- **The Role of Aluminum in Promoting Ni-Fe-OOH Electrocatalysts for the Oxygen Evolution Reaction** *ACS APPLIED ENERGY MATERIALS*
Baker, J. G., Schneider, J. R., Torres, J., Singh, J. A., Mackus, A. M., Bajdich, M., Bent, S. F.
2019; 2 (5): 3488–99
- **Opportunities for Atomic Layer Deposition in Emerging Energy Technologies** *ACS ENERGY LETTERS*
Asundi, A. S., Raiford, J. A., Bent, S. F.
2019; 4 (4): 908–25
- **Quantitative protocol for the electroreduction of N₂ to NH₃ under ambient conditions**
Stephens, I., Andersen, S., Colic, V., Yang, S., Schwalbe, J., Nielander, A., McEnaney, J., Enemark-Rasmussen, K., Baker, J., Singh, A., Rohr, B., Blair, S., Mezzavilla, et al
AMER CHEMICAL SOC.2019

- **Area-Selective Atomic Layer Deposition Assisted by Self-Assembled Monolayers: A Comparison of Cu, Co, W, and Ru** *CHEMISTRY OF MATERIALS*
Bobb-Semple, D., Nardi, K., Draeger, N., Hausmann, D. M., Bent, S. F.
2019; 31 (5): 1635–45
- **Synthesis of Doped, Ternary, and Quaternary Materials by Atomic Layer Deposition: A Review** *CHEMISTRY OF MATERIALS*
Mackus, A. M., Schneider, J. R., MacIsaac, C., Baker, J. G., Bent, S. F.
2019; 31 (4): 1142–83
- **Role of Co₂C in ZnO-promoted Co Catalysts for Alcohol Synthesis from Syngas** *CHEMCATCHEM*
Singh, J. A., Hoffman, A. S., Schumann, J., Boubnov, A., Asundi, A. S., Nathan, S. S., Norskov, J., Bare, S. R., Bent, S. F.
2019; 11 (2): 799–809
- **Stability of Tin-Lead Halide Perovskite Solar Cells**
Prasanna, R., Leijtens, T., Dunfield, S. P., Raiford, J. A., Wolf, E. J., Swifter, S. A., Eperon, G. E., de Paula, C., Palmstrom, A. F., van Hest, M. M., Bent, S. F., Teeter, G., Berry, et al
IEEE.2019: 2359–61
- **Area-Selective Atomic Layer Deposition of Dielectric-on-Dielectric for Cu/Low-k Dielectric Patterns**
Liu, T., Bent, S. F., Gronheid, R., Sanders, D. P.
SPIE-INT SOC OPTICAL ENGINEERING.2019
- **Understanding Structure-Property Relationships of MoO₃-Promoted Rh Catalysts for Syngas Conversion to Alcohols.** *Journal of the American Chemical Society*
Asundi, A. S., Hoffman, A. S., Bothra, P. n., Boubnov, A. n., Vila, F. D., Yang, N. n., Singh, J. A., Zeng, L. n., Raiford, J. A., Abild-Pedersen, F. n., Bare, S. R., Bent, S. F.
2019
- **Author Correction: A rigorous electrochemical ammonia synthesis protocol with quantitative isotope measurements.** *Nature*
Andersen, S. Z., #oli#, V. n., Yang, S. n., Schwalbe, J. A., Nielander, A. C., McEnaney, J. M., Enemark-Rasmussen, K. n., Baker, J. G., Singh, A. R., Rohr, B. A., Statt, M. J., Blair, S. J., Mezzavilla, et al
2019
- **Nanostructuring Strategies To Increase the Photoelectrochemical Water Splitting Activity of Silicon Photocathodes** *ACS APPLIED NANO MATERIALS*
Hellstern, T. R., Nielander, A. C., Chakhranont, P., King, L. A., Willis, J. J., Xu, S., MacIsaac, C., Hahn, C., Bent, S. F., Prinz, F. B., Jaramillo, T. F.
2019; 2 (1): 6–11
- **Theoretical and Experimental Studies of CoGa Catalysts for the Hydrogenation of CO₂ to Methanol** *CATALYSIS LETTERS*
Singh, J. A., Cao, A., Schumann, J., Wang, T., Norskov, J. K., Abild-Pedersen, F., Bent, S. F.
2018; 148 (12): 3583–91
- **A Highly Active Molybdenum Phosphide Catalyst for Methanol Synthesis from CO and CO₂** *ANGEWANDTE CHEMIE-INTERNATIONAL EDITION*
Duyar, M. S., Tsai, C., Snider, J. L., Singh, J. A., Gallo, A., Yoo, J., Medford, A. J., Abild-Pedersen, F., Studt, F., Kibsgaard, J., Bent, S. F., Norskov, J. K., Jaramillo, et al
2018; 57 (46): 15045–50
- **Encapsulating perovskite solar cells to withstand damp heat and thermal cycling** *SUSTAINABLE ENERGY & FUELS*
Checharoen, R., Boyd, C. C., Burkhard, G. F., Leijtens, T., Raiford, J. A., Bush, K. A., Bent, S. F., McGehee, M. D.
2018; 2 (11): 2398–2406
- **In situ observation of phase changes of a silica-supported cobalt catalyst for the Fischer-Tropsch process by the development of a synchrotron-compatible insitu/operando powder X-ray diffraction cell.** *Journal of synchrotron radiation*
Hoffman, A. S., Singh, J. A., Bent, S. F., Bare, S. R.
2018; 25 (Pt 6): 1673–82
- **Tin-lead halide perovskites with improved thermal and air stability for efficient all-perovskite tandem solar cells** *SUSTAINABLE ENERGY & FUELS*
Leijtens, T., Prasanna, R., Bush, K. A., Eperon, G. E., Raiford, J. A., Gold-Parker, A., Wolf, E. J., Swifter, S. A., Boyd, C. C., Wang, H., Toney, M. F., Bent, S. F., McGehee, et al
2018; 2 (11): 2450–59
- **Optical modeling of wide-bandgap perovskite and perovskite/silicon tandem solar cells using complex refractive indices for arbitrary-bandgap perovskite absorbers** *OPTICS EXPRESS*

- Manzoor, S., Haeusele, J., Bush, K. A., Palmstrom, A. F., Carpenter, J., Yu, Z. J., Bent, S. F., McGehee, M. D., Holman, Z. C.
2018; 26 (21): 27441–60
- **Minimizing Current and Voltage Losses to Reach 25% Efficient Monolithic Two-Termin Perovskite-Silicon Tandem Solar Cells** *ACS ENERGY LETTERS*
Bush, K. A., Manzoor, S., Frohna, K., Yu, Z. J., Raiford, J. A., Palmstrom, A. F., Wang, H., Prasanna, R., Bent, S. F., Holman, Z. C., McGehee, M. D.
2018; 3 (9): 2173–80
 - **Formation and Ripening of Self-Assembled Multilayers from the Vapor-Phase Deposition of Dodecanethiol on Copper Oxide** *CHEMISTRY OF MATERIALS*
Bergsman, D. S., Liu, T., Closser, R. G., Nardi, K. L., Draeger, N., Hausmann, D. M., Bent, S. F.
2018; 30 (16): 5694–5703
 - **Interfacial Effects of Tin Oxide Atomic Layer Deposition in Metal Halide Perovskite Photovoltaics** *ADVANCED ENERGY MATERIALS*
Palmstrom, A. F., Raiford, J. A., Prasanna, R., Bush, K. A., Sponseller, M., Cheacharoen, R., Minichetti, M. C., Bergsman, D. S., Leijtens, T., Wang, H., Bulovic, V., McGehee, M. D., Bent, et al
2018; 8 (23)
 - **Molecular Layer Deposition of a Highly Stable Silicon Oxycarbide Thin Film Using an Organic Chlorosilane and Water** *ACS APPLIED MATERIALS & INTERFACES*
Closser, R. G., Bergsman, D. S., Bent, S. F.
2018; 10 (28): 24266–74
 - **Atomic and Molecular Layer Deposition of Hybrid Mo-Thiolate Thin Films with Enhanced Catalytic Activity** *ADVANCED FUNCTIONAL MATERIALS*
MacIsaac, C., Schneider, J. R., Closser, R. G., Hellstern, T. R., Bergsman, D. S., Park, J., Liu, Y., Sinclair, R., Bent, S. F.
2018; 28 (26)
 - **Copper interstitial recombination centers in Cu₃N** *PHYSICAL REVIEW B*
Yee, Y., Inoue, H., Hultqvist, A., Hanifi, D., Salleo, A., Magyari-Kope, B., Nishi, Y., Bent, S. F., Clemens, B. M.
2018; 97 (24)
 - **Area-Selective Atomic Layer Deposition of Metal Oxides on Noble Metals through Catalytic Oxygen Activation** *CHEMISTRY OF MATERIALS*
Singh, J. A., Thissen, N. W., Kim, W., Johnson, H., Kessels, W. M., Bol, A. A., Bent, S. F., Mackus, A. M.
2018; 30 (3): 663–70
 - **Photoelectrochemical Water Oxidation by GaAs Nanowire Arrays Protected with Atomic Layer Deposited NiO (x) Electrocatalysts**
Zeng, J., Xu, X., Parameshwaran, V., Baker, J., Bent, S., Wong, H., Clemens, B.
SPRINGER.2018: 932–37
 - **Understanding the Active Sites of CO Hydrogenation on Pt-Co Catalysts Prepared Using Atomic Layer Deposition** *JOURNAL OF PHYSICAL CHEMISTRY C*
Singh, J. A., Yang, N., Liu, X., Tsai, C., Stone, K. H., Johnson, B., Koh, A., Bent, S. F.
2018; 122 (4): 2184–94
 - **The Role of Sodium in Tuning Product Distribution in Syngas Conversion by Rh Catalysts** *CATALYSIS LETTERS*
Yang, N., Liu, X., Asundi, A. S., Norskov, J. K., Bent, S. F.
2018; 148 (1): 289–97
 - **Optical and Compositional Engineering of Wide Band Gap Perovskites with Improved Stability to Photoinduced Phase Segregation for Efficient Monolithic Perovskite/Silicon Tandem Solar Cells**
Bush, K. A., Palmstrom, A. F., Yu, Z. J., Frohna, K., Manzoor, S., Ali, A., Ali, W., Prasanna, R., Beal, R. E., Leijtens, T., Bent, S. F., Holman, Z., McGehee, et al
IEEE.2018: 0189–91
 - **Thermal adsorption-enhanced atomic layer etching of Si₃N₄** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY A*
Kim, W., Sung, D., Oh, S., Woo, J., Lim, S., Lee, H., Bent, S. F.
2018; 36 (1)
 - **Photoactivated Molecular Layer Deposition through Iodo-Ene Coupling Chemistry** *CHEMISTRY OF MATERIALS*
Lillethorup, M., Bergsman, D. S., Sandoval, T. E., Bent, S. F.
2017; 29 (23): 9897–9906
 - **Improved light management in planar silicon and perovskite solar cells using PDMS scattering layer**

Manzoor, S., Yu, Z. J., Ali, A., Ali, W., Bush, K. A., Palmstrom, A. F., Bent, S. F., McGehee, M. D., Holman, Z. C.
ELSEVIER SCIENCE BV.2017: 59–65

- **Chemisorption of Organic Triols on Ge(100)-2 x 1 Surface: Effect of Backbone Structure on Adsorption of Trifunctional Molecules** *JOURNAL OF PHYSICAL CHEMISTRY C*
Sandoval, T. E., Bent, S. F.
2017; 121 (46): 25978–85
- **Autocatalytic Dissociative Adsorption of Imidazole on the Ge(100)-2 x 1 Surface** *JOURNAL OF PHYSICAL CHEMISTRY C*
Shong, B., Kachian, J., Bent, S. F.
2017; 121 (38): 20905–10
- **Rh-MnO Interface Sites Formed by Atomic Layer Deposition Promote Syngas Conversion to Higher Oxygenates** *ACS CATALYSIS*
Yang, N., Yoo, J., Schumann, J., Bothra, P., Singh, J. A., Valle, E., Abild-Pedersen, F., Norskov, J. K., Bent, S. F.
2017; 7 (9): 5746–57
- **Investigation of inherent differences between oxide supports in heterogeneous catalysis in the absence of structural variations** *JOURNAL OF CATALYSIS*
Yang, N., Bent, S. F.
2017; 351: 49–58
- **Nanoengineering Heterogeneous Catalysts by Atomic Layer Deposition.** *Annual review of chemical and biomolecular engineering*
Singh, J. A., Yang, N., Bent, S. F.
2017; 8: 41-62
- **Adsorption of Homotrifunctional 1,2,3-Benzenetriol on a Ge(100)-2 x 1 Surface.** *Langmuir*
Sandoval, T. E., Bent, S. F.
2017
- **Formation of Germa-ketenimine on the Ge(100) Surface by Adsorption of tert-Butyl Isocyanide.** *Journal of the American Chemical Society*
Shong, B., Yoo, J. S., Sandoval, T. E., Bent, S. F.
2017
- **Ultrathin light absorbers based on plasmonic nanocomposites** *SPIE Newsroom*
Hägglund, C., Bent, S., F.
- **Correcting defects in area selective molecular layer deposition** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY A*
Closser, R. G., Bergsman, D. S., Ruelas, L., Hashemi, F. S., Bent, S. F.
2017; 35 (3)
- **New strategies for selective deposition of nanoscale materials**
Hashemi, F., Bobb-Semple, D., Bent, S.
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