

## **CNEEC EFRC Publications (not solely supported by CNEEC, including acknowledgements)**

Castelli, I. E.; Garcia-Lastra, J. M.; Huser, F.; Thygesen, K. S. ; Jacobsen, K. W.; and , STABILITY AND BANDGAPS OF LAYERED PEROVSKITES FOR ONE- AND TWO-PHOTON WATER SPLITTING, *New Journal of Physics*, **15**, 105026 (2013). [[10.1088/1367-2630/15/10/105026](https://doi.org/10.1088/1367-2630/15/10/105026)]

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Castelli, I. E.; Thygesen, K. S. ; and Jacobsen, K. W. CALCULATED POURBAIX DIAGRAMS OF CUBIC PEROVSKITES FOR WATER SPLITTING: STABILITY AGAINST CORROSION, *Topics in Catalysis*, (2013). **Acknowledgements:** IEC, KST, and KWJ acknowledges partial support for computational studies from the Center on Nanostructuring for the Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center founded by the US Department of Energy, Office of Science, Office of Basic Energy Sciences under award number DE-SC0001060.

Heinrickel, Mark L.; and Grossman, Arthur R. THE GREEN CUT: RE-EVALUATION OF PHYSIOLOGICAL ROLE OF PREVIOUSLY STUDIED PROTEINS AND POTENTIAL NOVEL PROTEIN FUNCTIONS (REVIEW), *Photosynth. Res.*, **116**, 427-436 (2013). [[10.1007/s11120-013-9882-6](https://doi.org/10.1007/s11120-013-9882-6)]  
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An, J.; Kim, Young-Beom ; Park, J; Gur, T. M.; and Prinz, F. B. THREE-DIMENSIONAL NANOSTRUCTURED BILAYER SOLID OXIDE FUEL CELL WITH 1.3 W/CM<sup>2</sup> AT 450C, *Nano Lett*, **13**, 4551-4555 (2013). [[10.1021/nl402661p](https://doi.org/10.1021/nl402661p)]  
**Acknowledgements:** Research is primarily supported as part of the Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060.

Bajdich, M.; Garcia-Mota, M.; Vojvodic, A.; Norskov, J. K.; and Bell, A. T. THEORETICAL INVESTIGATION OF THE ACTIVITY OF COBALT OXIDES FOR THE ELECTROCHEMICAL OXIDATION OF WATER, *Journal of the American Chemical Society*, **135**, 13521–13530 (2013). [[10.1021/ja405997s](https://doi.org/10.1021/ja405997s)]  
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Shim, J. H.; Kang, Sangkyun; Cha, S. W.; Lee, Wonyoung; Kim, Young-Beom ; Gur, T. M.; and Prinz, F. B. ATOMIC LAYER DEPOSITION OF THIN-FILM CERAMIC ELECTROLYTES FOR HIGH-PERFORMANCE FUEL CELLS, *J. Mater. Chem. A*, **1**, 12695-12705 (2013). [[10.1039/C3TA11399J](https://doi.org/10.1039/C3TA11399J)]

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Gorlin, Y.; Lassalle-Kaiser, B.; Benck, J. D.; Gul, S.; Webb, S. M.; Yachandra, V.; Yano, Junko; and Jaramillo, T. F. IN-SITU X-RAY ABSORPTION SPECTROSCOPY (XAS) INVESTIGATION OF A BI-FUNCTIONAL MANGANESE OXIDE CATALYST WITH HIGH ACTIVITY FOR ELECTRO-CHEMICAL WATER OXIDATION AND OXYGEN REDUCTION, *Journal of the American Chemical Society*, **135**, 8525–8534 (2013). [[10.1021/ja3104632](https://doi.org/10.1021/ja3104632)] **Acknowledgements:** Catalyst development of the manganese oxides and all electrochemical characterization were supported by the Center on Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060.

Brennan, T. P.; Trejo, O.; Roelofs, K. E.; Xu, J.; Prinz, F. B.; and Bent, S. F. EFFICIENCY ENHANCEMENT OF SOLID-STATE PbS QUANTUM DOT-SENSITIZED SOLAR CELLS WITH AL<sub>2</sub>O<sub>3</sub> BARRIER LAYER, *J. Mater. Chem. A*, **1** (26), 7566-7571 (2013). [[10.1039/c3ta10903h](https://doi.org/10.1039/c3ta10903h)] **Acknowledgements:** This publication was based on work supported by the Center for Advanced Molecular Photovoltaics (Award no. KUS-C1-015-21), made by King Abdullah University of Science and Technology (KAUST). F.B.P. and O.T. gratefully acknowledge support for ALD PbS deposition from the Center on Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060. T.P.B. would like to thank the Albion Walter Hewlett Fellowship for financial support. We would like to thank Professor Michael McGehee for use of lab equipment and Colin Bailie, Dr Eric Hoke, and George Margulis for training on transient photovoltage measurements. We would like to thank the Stanford Nanocharacterization Laboratory (SNL) staff for their support.

Chen, Z.; Forman, A. J.; and Jaramillo, T. F. BRIDGING THE GAP BETWEEN BULK AND NANOSTRUCTURED PHOTOELECTRODES: THE IMPACT OF SURFACE STATES ON THE ELECTROCATALYTIC AND PHOTOELECTROCHEMICAL PROPERTIES OF MoS<sub>2</sub>, *J. Phys. Chem. C*, **117**, 9713-9722 (2013). [[10.1021/jp311375k](https://doi.org/10.1021/jp311375k)] **Acknowledgements:** Partial support for physical and electro- chemical characterization, as conducted by ZC, was provided by the Center on Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of

Basic Energy Sciences under Award Number DE-SC0001060. This includes cyclic voltammetry and electrochemical impedance spectroscopy.

Pinaud, B. A.; Benck, J. D.; Seitz, L. C.; Forman, A. J.; Chen, Z.; Deutsch, T. G.; James, B. D.; Baum, K. N.; Baum, G. N.; Ardo, S.; Wang, H.; Miller, E.; and Jaramillo, T. F. TECHNICAL AND ECONOMIC FEASIBILITY OF CENTRALIZED FACILITIES FOR SOLAR HYDROGEN PRODUCTION VIA PHOTOCATALYSIS AND PHOTOELECTROCHEMISTRY, *Energy & Environmental Science*, **6**, 1983-2002 (2013). [[10.1039/c3ee40831k](https://doi.org/10.1039/c3ee40831k)] **Acknowledgements:** JDB, LCS, and ZC were supported for providing technical insights to the techno-economic analysis by the Center on Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060.

Wu, H.; Kong, D. S.; Ruan, Z. C.; Hsu, P. C.; Wang, S.; Yu, Z. F.; Carney, T. J.; Hu, L. B.; Fan, S. H.; and Cui, Y. A TRANSPARENT ELECTRODE BASED ON A METAL NANOTROUGH NETWORK, *Nature Nanotechnology*, **8(6)**, 421-425 (2013). [[10.1038/NNANO.2013.84](https://doi.org/10.1038/NNANO.2013.84)] **Acknowledgements:** The study is based upon work supported as part of the Center on Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the US Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060, and the National Basic Research of China (grant no. 2013CB632702).

An, J.; Kim, Y. B.; and Prinz, F. B. ULTRA-THIN PLATINUM CATALYTIC ELECTRODE DEPOSITED BY ATOMIC LAYER DEPOSITION, *Phys. Chem. Chem. Phys.*, (2013). [[10.1039/C3CP50996F](https://doi.org/10.1039/C3CP50996F)] **Acknowledgements:** Research is primarily supported as part of the Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060.

Rao, P. M.; Cho, I. S.; and Zheng, X. L. FLAME SYNTHESIS OF WO<sub>3</sub> NANOTUBES AND NANOWIRES FOR EFFICIENT PHOTOELECTROCHEMICAL WATER-SPLITTING, *Proc. Combust. Inst.*, **34**, 2187-2195 (2013). [[10.1016/j.proci.2012.06.122](https://doi.org/10.1016/j.proci.2012.06.122)] **Acknowledgements:** Research is primarily supported as part of the Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060, and by the ONR/PECASE under Award Number N00014-10-1-0291. P.M.R. acknowledges an energy fellowship through Link Foundation. I.S.C acknowledges a fellowship through the National Research Foundation of Korea Grant funded by the Korean Government (Ministry of Education, Science and Technology) [NRF-2010-357-D00126].

Roelofs, K. E.; Brennan, T. P.; Dominguez, J. C.; Bailie, C. D.; Margulis, G. Y.; Hoke, E. T.; McGehee, M. D.; and Bent, S. F. EFFECT OF AL<sub>2</sub>O<sub>3</sub> RECOMBINATION BARRIER LAYERS DEPOSITED BY ATOMIC LAYER DEPOSITION IN SOLID-STATE CdS QUANTUM DOT-SENSITIZED SOLAR CELLS, *Journal of Physical Chemistry C*, **117**, 5584-5592 (2013). [[10.1021/jp311846r](https://doi.org/10.1021/jp311846r)] **Acknowledgements:** This publication was based on work supported by the Center for Advanced Molecular Photovoltaics (Award No. KUS-C1- 015-21), made by King Abdullah University of

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Chao, C. C.; Park, J. S.; Tian, X.; Shim, J. H.; Gur, T. M.; and Prinz, F. B. ENHANCED OXYGEN EXCHANGE ON SURFACE-ENGINEERED YTTRIA-STABILIZED ZIRCONIA, *ACS Nano*, **7(3)**, 2186-2191 (2013). [[10.1021/nm305122f](https://doi.org/10.1021/nm305122f)] **Acknowledgements:** We are grateful to Dr. Yunbin Guan and Prof. John Eiler of the Geology Department at California Institute of Technology (CalTech) for their assistance with and collaboration on the SIMS work. We would like to acknowledge Dr. Stephen P. Smith from Evans Analytical Group for his help with the Phi 6600 SIMS depth profiling, and Swagelok for providing high-temperature ALD valves. We thank Jihwan An for help with TEM experiments. J.S.P acknowledges financial support from Samsung Scholarship. J.H.S. is grateful to the National Research Foundation (NRF) of the Korean Ministry of Education, Science and Technology (MEST) (Grant No. NRF-2010-0005810) for their financial support. T.M.G. and F.B.P. gratefully acknowledge partial support from the Center on Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences, under Award Number DE-SC0001060.

Diankov, G.; Neumann, M.; and Goldhaber-Gordon, D. EXTREME MONO LAYER-SELECTIVITY OF HYDROGEN-PLASMA REACTIONS WITH GRAPHENE, *Acs Nano*, **7**, 1324-1332 (2013). [[10.1021/nm304903m](https://doi.org/10.1021/nm304903m)] **Acknowledgements:** Construction of the furnace and Raman and AFM studies were supported by the Center on Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060.

Garcia-Mota, M.; Vojvodic, A.; Abild-Pedersen, F.; and Norskov, J. K. ELECTRONIC ORIGIN OF THE SURFACE REACTIVITY OF TRANSITION METAL DOPED TiO<sub>2</sub>(110), *J Phys. Chem. C.*, **117**, 460-465 (2013). [[10.1021/jp310667r](https://doi.org/10.1021/jp310667r)] **Acknowledgements:** Research primarily supported as part of the Center of Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Basic Energy Sciences under award number DE-SC0001060. M.G.-M., A.V., and J.K.N. acknowledge support from CNEEC. F.A.B. acknowledges support from the U.S. Department of energy (DOE) under the contract number DE-AC02-76SF00515.

Anderson, K.; Jacobsen, K. W.; and Thygesen, K. S. SPATIALLY RESOLVED QUANTUM PLASMON MODES IN METALLIC NANO-FILMS FROM FIRST-PRINCIPLES, *Phys. Rev. B.*, (2012). [[10.1103/PhysRevB.86.245129](https://doi.org/10.1103/PhysRevB.86.245129)] **Acknowledgements:** K.S.T. acknowledges support from the Danish Research Council's Sapere Aude Program. The Center for Nanostructured Graphene CNG is sponsored by the Danish National Research Foundation. Support from The Catalysis for Sustainable Energy (CASE) initiative and partial support for computational studies from the Center of Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an

Energy Frontier Research Center funded by the US Department of Energy, Office of Science, Office of Basic Energy Sciences under Grant No. DE-SC0001060, is also acknowledged.

Jun, Yan; Jacobsen, K. W.; and Thygesen, K. S. CONVENTIONAL AND ACOUSTIC SURFACE PLASMONS ON NOBLE METAL SURFACES: A TIME-DEPENDENT DENSITY FUNCTIONAL THEORY STUDY, *Physical Review B (Condensed Matter and Materials Physics)*, **86**, (2012).

[[10.1103/PhysRevB.86.241404](https://doi.org/10.1103/PhysRevB.86.241404)] **Acknowledgements:** The computational studies were partially supported as part of the Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the US Department of Energy, Office of Science, Office of Basic Energy Sciences under Award No. DE-SC0001060.

Kibsgaard, J.; Chen, Z. B.; Reinecke, B. N.; and Jaramillo, T. F. ENGINEERING THE SURFACE STRUCTURE OF MoS<sub>2</sub> TO PREFERENTIALLY EXPOSE ACTIVE EDGE SITES FOR ELECTROCATALYSIS, *Nature Materials*, **11**, 963-969 (2012). [[10.1038/nmat3439](https://doi.org/10.1038/nmat3439)] **Acknowledgements:** All physical and electrochemical characterization including TEM imaging, electrochemistry, XPS, and XRD were supported by the by Center of Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Basic Energy Sciences under Award Number DE-SC0001060.

Lee, H. B. R.; Mullings, M. N.; Jiang, X. R.; Clemens, B. M.; and Bent, S. F. NUCLEATION-CONTROLLED GROWTH OF NANOPARTICLES BY ATOMIC LAYER DEPOSITION, *Chemistry of Materials*, **24**, 4051-4059 (2012). [[10.1021/cm3014978](https://doi.org/10.1021/cm3014978)] **Acknowledgements:** The work was supported by the Department of Energy under Award Number DE-SC0004782.

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Castelli, I. E.; Landis, D. D.; Thygesen, K. S. ; Dahl, S.; Chorkendorff, I.; Jaramillo, T. F.; and Jacobsen, K. W. NEW CUBIC PEROVSKITES FOR ONE- AND TWO-PHOTON WATER SPLITTING USING THE COMPUTATIONAL MATERIALS REPOSITORY, *Energy & Environmental Science*, **5**, 9034-9043 (2012). [[10.1039/c2ee22341d](https://doi.org/10.1039/c2ee22341d)] **Acknowledgements:** The authors acknowledge partial support for computational studies from the Center on Nanostructuring for the Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the US Department of Energy, Office of Science, Office of Basic Energy Sciences under award number DE-SC0001060.

Garcia-Mota, M.; Bajdich, M.; Viswanathan, V.; Vojvodic, A.; Bell, A. T.; and Norskov, J. K. IMPORTANCE OF CORRELATION IN DETERMINING ELECTROCATALYTIC OXYGEN EVOLUTION ACTIVITY ON COBALT OXIDES, *Journal of Physical Chemistry C*, **116**, 21077-21082 (2012). [[10.1021/jp306303y](https://doi.org/10.1021/jp306303y)] **Acknowledgements:** The computational work on Hubbard-U correction and OER on Co<sub>3</sub>O<sub>4</sub> by MGM, AV, and JKN was supported by the Center on Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Basic Energy Sciences under Award



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Su, H. Y.; Gorlin, Y.; Man, I. C.; Calle-Vallejo, F.; Norskov, J. K.; Jaramillo, T. F.; and Rossmeisl, J. IDENTIFICATION OF ACTIVE SITES FOR BIFUNCTIONAL NON-PRECIOUS MANGANESE OXIDE CATALYST FOR OXYGEN REDUCTION AND WATER OXIDATION, *Phys. Chem. Chem. Phys.*, **14**, 14010-14022 (2012). [[10.1039/c2cp40841d](https://doi.org/10.1039/c2cp40841d)] **Acknowledgements:** YG, TFJ, and JKN were supported by the Center on Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060. JKN provided guidance on the theory and modeling effort. YG and TFJ were responsible for all experimental portions of the work, including catalyst synthesis and electrochemical characterization.

Galic, M.; Jeong, S.; Tsai, F. C.; Joubert, L. M.; Wu, Y. I.; Hahn, K. M.; Cui, Y.; and Meyer, T. EXTERNAL PUSH AND INTERNAL PULL FORCES RECRUIT CURVATURE-SENSING N-BAR DOMAIN PROTEINS TO THE PLASMA MEMBRANE, *Nature Cell Biology*, **14**, 874-U212 (2012). [[10.1038/ncb2533](https://doi.org/10.1038/ncb2533)] **Acknowledgements:** The authors thank the members of the Meyer laboratory for comments and discussion. M.G. was supported by the Swiss National Science Foundation (No. PBBSP3-123159), and a Novartis Jubilaeumsstiftung and Stanford Deans Postdoctoral Fellowship. S.J. was supported by a Korea Foundation for Advanced Studies graduate fellowship. Y.C. acknowledges the partial support from a DOE- EFRC at Stanford: Center on Nanostructuring for Efficient Energy Conversion (No. DE-SC0001060). T.M. acknowledges financial support from the National Institutes of Health, MH064801, MH095087 and GM063702. S.J. and Y.C. designed the nanocones.

An, J. W.; Kim, Y. B.; Jung, H. J.; Park, J. S.; Cha, S. W.; Gur, T. M.; and Prinz, F. B. STRUCTURAL AND COMPOSITIONAL ANALYSIS OF SOLID OXIDE FUEL CELL ELECTROLYTES USING TRANSMISSION ELECTRON MICROSCOPY, *International Journal of Precision Engineering and Manufacturing*, **13**, 1273-1279 (2012). [[10.1007/s12541-012-0170-8](https://doi.org/10.1007/s12541-012-0170-8)] **Acknowledgements:** Research is primarily supported as part of the Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060.

Yan, J.; Jacobsen, K. W.; and Thygesen, K. S. OPTICAL PROPERTIES OF BULK SEMICONDUCTORS AND GRAPHENE/BORON NITRIDE: THE BETHE-SALPETER EQUATION WITH DERIVATIVE DISCONTINUITY-CORRECTED DENSITY FUNCTIONAL ENERGIES, *Physical Review B*, **86**, (2012). [[10.1103/PhysRevB.86.045208](https://doi.org/10.1103/PhysRevB.86.045208)] **Acknowledgements:** The authors acknowledge partial support for computational studies from the Center on Nanostructuring for the Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the US Department of Energy, Office of Science, Office of Basic Energy Sciences under award number DE-SC0001060

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Hsu, C. M.; Battaglia, C.; Pahud, C.; Ruan, Z. C.; Haug, F. J.; Fan, S. H.; Ballif, C.; and Cui, Y. HIGH-EFFICIENCY AMORPHOUS SILICON SOLAR CELL ON A PERIODIC NANOCONE BACK REFLECTOR, *Advanced Energy Materials*, **2**, 628-633 (2012). [[10.1002/aem.201100514](https://doi.org/10.1002/aem.201100514)] **Acknowledgements:** This work is based upon work supported as part of the Center on Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the US Department of Energy, Office of Science, Office of Basic Energy Sciences under award number DE-SC0001060. A portion of this work is also supported by the US Department of Energy under the award number DE-FG36-08GOI8004 and DE-FG-ER46426. The EPFL team acknowledges the Swiss Federal Energy Office and the Swiss National Science Foundation for funding under project number 101191 and grant number 200021 12577/1.

Jeong, S.; Garnett, E. C.; Wang, S.; Yu, Z. G.; Fan, S. H.; Brongersma, M. L.; McGehee, M. D.; and Cui, Y. HYBRID SILICON NANOCONE-POLYMER SOLAR CELLS, *Nano Letters*, **12**, 2971-2976 (2012). [[10.1021/nl300713x](https://doi.org/10.1021/nl300713x)] **Acknowledgements:** This work is based upon work supported as part of the Center on Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences, under Award DE-SC0001060. This work was partially supported by the Center for Advanced Molecular Photovoltaics (CAMP) under Award KVS-C1-015- 21, made by King Abdullah University of Science and Technology. S.J. acknowledges support from the Korea Foundation for Advanced Studies (KFAS) for graduate fellowship. S.J. thanks Dr. Theodore I. Kamins and Dr. Jonathan D. Servaites for helpful discussions concerning the device fabrication and data analysis.

Parameshwaran, Vijay; Gallinat, Chad; Enck, Ryan W.; Sampath, Anand V.; Shen, Paul H.; Kuykendall, Tevye; Aloni, Shaul; Wraback, Michael; and Clemens, B. M. III-V NITRIDE SEMICONDUCTORS FOR SOLAR HYDROGEN PRODUCTION, *Proc. of SPIE*, **8377**, 720 (2012). [[10.1117/12.925200](https://doi.org/10.1117/12.925200)] **Acknowledgements:** The growth and materials characterization of GaP and the PEC testing of the p-GaN material were supported as a part of the Center on Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under award number DE-SC0001060.

Battaglia, C.; Hsu, C. M.; Soderstrom, K.; Escarre, J.; Haug, F. J.; Charriere, M.; Boccard, M.; Despeisse, M.; Alexander, D. T. L.; Cantoni, M.; Cui, Y.; and Ballif, C. LIGHT TRAPPING IN SOLAR CELLS: CAN PERIODIC BEAT RANDOM?, *Acs Nano*, **6**, 2790-2797 (2012). [[10.1021/nm300287i](https://doi.org/10.1021/nm300287i)] **Acknowledgements:** We thank D. Dominé for stimulating discussions on

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Kaasbjerg, K.; Thygesen, K. S.; and Jacobsen, K. W. PHONON-LIMITED MOBILITY IN N-TYPE SINGLE-LAYER MOS<sub>2</sub>, *Physical Review B*, **85**, 115317 (2012). [[10.1103/PhysRevB.85.115317](https://doi.org/10.1103/PhysRevB.85.115317)]

**Acknowledgements:** The authors acknowledge partial support for computational studies from the Center on Nanostructuring for the Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center founded by the US Department of Energy, Office of Science, Office of Basic Energy Sciences under award number DE-SC0001060.

Kronawitter, C. X.; Kapilashrami, M.; Bakke, J. R.; Bent, S. F.; Chuang, C. H.; Pong, W. F.; Guo, J. H.; Vayssieres, L.; and Mao, S. S. TiO<sub>2</sub>-SnO<sub>2</sub>:F INTERFACIAL ELECTRONIC STRUCTURE INVESTIGATED BY SOFT X-RAY ABSORPTION SPECTROSCOPY, *Physical Review B*, **85**, 125109 (2012). [[10.1103/PhysRevB.85.125109](https://doi.org/10.1103/PhysRevB.85.125109)] **Acknowledgements:** This research has been supported by the US Department of Energy, Office of Energy Efficiency and Renewable Energy and Office of Basic Science under Contract No. DE-AC02-05CH11231. M.K. acknowledges support from both the Swedish Research Council (VR) and Axel Hultgren's memorial fund. The ALD was carried out within the Center on Nanostructuring for Efficient Energy Conversion at Stanford University, an Energy Frontier Research Center funded by the US Department of Energy, Office of Science, Office of Basic Energy Sciences under Award No. DE-SC0001060. J.R.B. acknowledges funding from the Department of Defense through the National Defense Science and Engineering Graduate Fellowship and from the National Science Foundation Graduate Fellowship.

Castelli, Ivano E.; Olsen, Thomas; Datta, Soumendu; Landis, David D.; Dahl, Soren; Thygesen, Kristian S.; and Jacobsen, Karsten W. COMPUTATIONAL SCREENING OF PEROVSKITE METAL OXIDES FOR OPTIMAL SOLAR LIGHT CAPTURE, *Energy & Environmental Science*, **5**, 5814 (2012). [[10.1039/c1ee02717d](https://doi.org/10.1039/c1ee02717d)] **Acknowledgements:** The authors acknowledge partial support for computational studies from the Center on Nanostructuring for the Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center founded by the US Department of Energy, Office of Science, Office of Basic Energy Sciences under award number DE-SC0001060.

Yao, Y.; Yao, J.; Narasimhan, V. K.; Ruan, Z. C.; Xie, C.; Fan, S. H.; and Cui, Y. BROADBAND LIGHT MANAGEMENT USING LOW-Q WHISPERING GALLERY MODES IN SPHERICAL NANOSHELLS, *Nature Communications*, **3**, 664 (2012). [[10.1038/ncomms1664](https://doi.org/10.1038/ncomms1664)] **Acknowledgements:** We thank Ching-Mei Hsu for providing the silica spheres and acknowledge discussions with Erik Garnett, Jia Zhu and Zongfu Yu. This work is based upon the work supported as part of the Center on Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy



Frontier Research Center funded by the U.S. Department of Energy, Office of Science and Office of Basic Energy Sciences under Award Number DE-SC0001060. A portion of this work is also supported by the U.S. Department of Energy under the Award Number DE-FG36-08GOI8004 and DE-FG02-07ER46426.

An, J.; Kim, Y. B.; Park, J. S.; Shim, J. H.; Gur, T. M.; and Prinz, F. B. FLUORINE CONTAMINATION IN YTTRIUM-DOPED BARIUM ZIRCONATE FILM DEPOSITED BY ATOMIC LAYER DEPOSITION, *Journal of Vacuum Science & Technology A*, **30**, 01a161 (2012).

[[10.1116/1.3670750](https://doi.org/10.1116/1.3670750)] **Acknowledgements:** Research is primarily supported as part of the Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060.

Brennan, T. P.; Bakke, J. R.; Ding, I. K.; Hardin, B. E.; Nguyen, W. H.; Mondal, R.; Bailie, C. D.; Margulis, G. Y.; Hoke, E. T.; Sellinger, A.; McGehee, M. D.; and Bent, S. F. THE IMPORTANCE OF DYE CHEMISTRY AND  $\text{TiCl}_4$  SURFACE TREATMENT IN THE BEHAVIOR OF  $\text{Al}_2\text{O}_3$  RECOMBINATION BARRIER LAYERS DEPOSITED BY ATOMIC LAYER DEPOSITION IN SOLID-STATE DYE-SENSITIZED SOLAR CELLS, *Physical Chemistry Chemical Physics*, **14**, 12130-12140 (2012).

[[10.1039/c2cp42388j](https://doi.org/10.1039/c2cp42388j)] **Acknowledgements:** This publication was based on work supported by the Center for Advanced Molecular Photovoltaics (Award No. KUS-C1-015-21), made by King Abdullah University of Science and Technology (KAUST). The development of the ALD reactor was funded as part of the Center on Nanostructuring for Efficient Energy Conversion at Stanford University, an Energy Frontier Research Center funded by the US Department of Energy, Office of Science, Office of Basic Energy Sciences under Award No. DE-SC0001060. T.P.B. would like to thank the Albion Walter Hewlett Fellowship for financial support. The authors would like to thank Zhenan Bao for support in the synthesis of YE05. We would like to thank the Stanford Nanocharacterization Laboratory (SNL) staff for their support.

Kaasbjerg, K. ; Thygesen, K. S. ; and Jacobsen, K. W. UNRAVELING THE ACOUSTIC ELECTRON-PHONON INTERACTION IN GRAPHENE, *Phys. Rev. B*, **85**, 165440 (2012).

[[10.1103/PhysRevB.85.165440](https://doi.org/10.1103/PhysRevB.85.165440)] **Acknowledgements:** The authors acknowledge partial support for computational studies from the Center on Nanostructuring for the Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center founded by the US Department of Energy, Office of Science, Office of Basic Energy Sciences under award number DE-SC0001060.

Shim, J. H.; Park, J. S.; Holme, T. P.; Crabb, K.; Lee, W. J.; Kim, Y. B.; Tian, X.; Gur, T. M.; and Prinz, F. B. ENHANCED OXYGEN EXCHANGE AND INCORPORATION AT SURFACE GRAIN BOUNDARIES ON AN OXIDE ION CONDUCTOR, *Acta Materialia*, **60**, 1-7 (2012).

[[10.1016/j.actamat.2011.09.050](https://doi.org/10.1016/j.actamat.2011.09.050)] **Acknowledgements:** Research is primarily supported as part of the Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060.

Kim, Y. B.; Holme, T. P.; Gur, T. M.; and Prinz, F. B. SURFACE-MODIFIED LOW-TEMPERATURE SOLID OXIDE FUEL CELL, *Advanced Functional Materials*, **21**, 4684-4690 (2011).

[[10.1002/adfm.201101058](https://doi.org/10.1002/adfm.201101058)] **Acknowledgements:** Research is primarily supported as part of the Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060. This research used resources of the National Energy Research Scientific Computing Center, which is supported by the Office of Science of the U.S. Department of Energy under Contract No. DE-AC02-05CH11231.

Lee, M.; Williams, J. R.; Zhang, S. P.; Frisbie, C. D.; and Goldhaber-Gordon, D. ELECTROLYTE GATE-CONTROLLED KONDO EFFECT IN  $\text{SrTiO}_3$ , *Physical Review Letters*, **107**, 256601 (2011). [[10.1103/PhysRevLett.107.256601](https://doi.org/10.1103/PhysRevLett.107.256601)] **Acknowledgements:** The development of ionic gating technique was supported by the Center on Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060.

Yan, J.; Jacobsen, K. W.; and Thygesen, K. S. FIRST-PRINCIPLES STUDY OF SURFACE PLASMONS ON  $\text{Ag}(111)$  AND  $\text{H}/\text{Ag}(111)$ , *Physical Review B*, **84**, 235430 (2011). [[10.1103/PhysRevB.84.235430](https://doi.org/10.1103/PhysRevB.84.235430)] **Acknowledgements:** The authors acknowledge partial support for computational studies from the Center on Nanostructuring for the Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the US Department of Energy, Office of Science, Office of Basic Energy Sciences under award number DE-SC0001060.

Brennan, T. P.; Ardalan, P.; Lee, H. B. R.; Bakke, J. R.; Ding, I. K.; McGehee, M. D.; and Bent, S. F. ATOMIC LAYER DEPOSITION OF  $\text{CdS}$  QUANTUM DOTS FOR SOLID-STATE QUANTUM DOT SENSITIZED SOLAR CELLS, *Advanced Energy Materials*, **1**, 1169-1175 (2011). [[10.1002/aenm.201100363](https://doi.org/10.1002/aenm.201100363)] **Acknowledgements:** This publication was based on work supported by the Center for Advanced Molecular Photovoltaics (Award No. KUS-C1-015-21), made by King Abdullah University of Science and Technology (KAUST). The development of the  $\text{CdS}$  ALD process was supported as part of the Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award No. DE-SC0001060. T.P.B. is supported by an Albion Walter Hewlett Fellowship. We would like to thank the Stanford Nanocharacterization Laboratory (SNL) staff and the staff of the Center for Polymer Interfaces and Macromolecular Assemblies (CPIMA) for their support.

Chen, Z. B.; Cummins, D.; Reinecke, B. N.; Clark, E.; Sunkara, M. K.; and Jaramillo, T. F. CORE-SHELL  $\text{MoO}_3$ - $\text{MoS}_2$  NANOWIRES FOR HYDROGEN EVOLUTION: A FUNCTIONAL DESIGN FOR ELECTROCATALYTIC MATERIALS, *Nano Letters*, **11**, 4168-4175 (2011). [[10.1021/nl2020476](https://doi.org/10.1021/nl2020476)] **Acknowledgements:** All physical and electrochemical characterization including TEM imaging, electrochemistry, XPS, and XRD were supported by the Center of Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Basic Energy Sciences under Award Number DE-SC0001060.

Garcia-Mota, M.; Vojvodic, A.; Metiu, H.; Man, I. C.; Su, H. Y.; Rossmeisl, J.; and Norskov, J. K. TAILORING THE ACTIVITY FOR OXYGEN EVOLUTION ELECTROCATALYSIS ON RUTILE TiO<sub>2</sub>(110) BY TRANSITION-METAL SUBSTITUTION, *Chemcatchem*, **3**, 1607-1611 (2011). [[10.1002/cctc.201100160](https://doi.org/10.1002/cctc.201100160)] **Acknowledgements:** M.G.M. and J.K.N. acknowledge support for OER calculations from the Center of Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Basic Energy Sciences under award number DE-SC0001060. A.V. and J.K.N. acknowledge support from the Center for Interface Science and Catalysis (SUNCAT) through the U.S. Department of Energy, Office of Basic Energy Sciences for general scaling relations for oxides. J.R., I.C.M., and H.-Y.S. acknowledge the Catalysis for Sustainable Energy (CASE) initiative, the Danish Strategic Research Council's HyCycle program, and the Danish Council for Technology and Innovation's FTP program for OER calculations.

Butler, Leslie G. ; Schillinger, Burkhard ; Ham, Kyungmin; Dobbins, Tabbetha A. ; Liu , Ping; and Vajo, John J. NEUTRON IMAGING OF A COMMERCIAL LI-ION BATTERY DURING DISCHARGE: APPLICATION OF MONOCHROMATIC IMAGING AND POLYCHROMATIC DYNAMIC TOMOGRAPHY, *Nuclear Instruments and Methods in Physics Research A*, **651**, 320-328 (2011). [[10.1016/j.nima.2011.03.023](https://doi.org/10.1016/j.nima.2011.03.023)] **Acknowledgements:** L.G.B. thanks the support of the National Science Foundation (CHE-0910937) for support of materials science tomography. The authors especially thank Dr. Adel Faridani for assistance with the reconstruction algorithm for the irregularly spaced projections and Dr. Michael Schulz for allowing them to modify the instrument acquisition software for use with the Greek golden ratio angle sequence. P.L. and J.J.V. acknowledge support from the Center on Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE- SC0001060.

Kim, Y. B.; Gur, T. M.; Jung, H. J.; Kang, S.; Sinclair, R.; and Prinz, F. B. EFFECT OF CRYSTALLINITY ON PROTON CONDUCTIVITY IN YTTRIUM-DOPED BARIUM ZIRCONATE THIN FILMS, *Solid State Ionics*, **198**, 39-46 (2011). [[10.1016/j.ssi.2011.07.004](https://doi.org/10.1016/j.ssi.2011.07.004)] **Acknowledgements:** The authors gratefully acknowledge financial support from Office of Naval Research-Multidisciplinary University Initiative (ONR-MURI) and Samsung Advanced Institute of Technology (SAIT). Research is primarily supported as part of the Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060.

Kim, Y. B.; Gur, T. M.; Jung, H. J.; Kang, Sangkyun; Sinclair, Robert; and Prinz, F. B. EFFECT OF CRYSTALLINITY ON IONIC CONDUCTIVITY OF Y-DOPED BARIUM ZIRCONATE THIN FILMS, *Solid State Ionics*, **198**, 39-46 (2011). [[10.1016/j.ssi.2011.07.004](https://doi.org/10.1016/j.ssi.2011.07.004)] **Acknowledgements:** The authors gratefully acknowledge financial support from Office of Naval Research-Multidisciplinary University Initiative (ONR-MURI) and Samsung Advanced Institute of Technology (SAIT). Research is primarily supported as part of the Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060.

Kronawitter, C. X.; Bakke, J. R.; Wheeler, D. A.; Wang, W. C.; Chang, C. L.; Antoun, B. R.; Zhang, J. Z.; Guo, J. H.; Bent, S. F.; Mao, S. S.; and Vayssieres, L. ELECTRON ENRICHMENT IN 3D TRANSITION METAL OXIDE HETERO-NANOSTRUCTURES, *Nano Letters*, **11**, 3855-3861 (2011). [[10.1021/nl201944h](https://doi.org/10.1021/nl201944h)] **Acknowledgements:** This research has been partially supported by the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. C.X.K. and B.R.A. were supported by Sandia National Laboratories. Sandia National Laboratories is a multiprogram laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under Contract DE-AC04-94AL85000. J.Z.Z. is grateful to the Basic Energy Sciences Division of the U.S. Department of Energy (DEFG02-ER46232) for support. D.A.W. was supported in part by the W.M. Keck Center for Nanoscale Optofluidics at UCSC. J.R.B. acknowledges funding from the Department of Defense (DoD) through the National Defense Science and Engineering Graduate Fellowship (NDSEG) and from the National Science Foundation (NSF) Graduate Fellowship. The TEM studies, which were conducted by Hee Joon Jung, were supported as part of the Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060. The Advanced Light Source is supported by the Director, Office of Science, Office of Basic Energy Sciences, of the U.S. Department of Energy under Contract No. DE-AC02-05CH11231 at Lawrence Berkeley National Laboratory. L.V. was supported by MEXT, Japan.

McDowell, M. T.; Lee, S. W.; Ryu, I.; Wu, H.; Nix, W. D.; Choi, J. W.; and Cui, Y. NOVEL SIZE AND SURFACE OXIDE EFFECTS IN SILICON NANOWIRES AS LITHIUM BATTERY ANODES, *Nano Letters*, **11**, 4018-4025 (2011). [[10.1021/nl202630n](https://doi.org/10.1021/nl202630n)] **Acknowledgements:** J.W.C. acknowledges the National Research Foundation of Korea Grant funded by the Korean Government (MEST) for financial support through the Secondary Battery Program (NRT- 2010-0029031) and the World Class University Program for financial support (R-31-2008-000-10055-0). Y.C. acknowledges support from the King Abdullah University of Science and Technology (KAUST) Investigator Award (No. KUS-11-001- 12). A portion of this work is supported by the Assistant Secretary for Energy Efficiency and Renewable Energy, Office of Vehicle Technologies of the U.S. Department of Energy under Contract No. DE-AC02-05CH11231, Subcontract No. 6951379 under the Batteries for Advanced Transportation Technologies (BATT) Program. Additionally, a portion of this work is supported by the Department of Energy, Office of Basic Energy Sciences, Division of Materials Sciences and Engineering under contract DE-AC02-76SF0051 through the SLAC National Accelerator Laboratory LDRD project. S.W.L. acknowledges support from KAUST (Award No. KUK-F1-038-02). M.T.M. acknowledges support from the Chevron Stanford Graduate Fellowship, the National Defense Science and Engineering Graduate Fellowship, and the National Science Foundation Graduate Fellowship. I.R. and W.D.N. gratefully acknowledge support the Office of Science, Office of Basic Energy Sciences, of the U.S. Department of Energy (DE-FG02-04ER46163). A portion of this work is supported by the Center on Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060.

Thomann, I.; Pinaud, B. A.; Chen, Z. B.; Clemens, B. M.; Jaramillo, T. F.; and Brongersma, M. L. PLASMON ENHANCED SOLAR-TO-FUEL ENERGY CONVERSION, *Nano Letters*, **11**, 3440-3446 (2011). [[10.1021/nl201908s](https://doi.org/10.1021/nl201908s)] **Acknowledgements:** We acknowledge fruitful collaborations and discussions with Stacey Bent's and Bruce Clemens' groups and thank Jonathan Bakke for ALD work. We gratefully acknowledge Wenshan Cai for help with simulations and Tom Carver for e-beam evaporations. This work was supported by the Center on Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060. I. Thomann and M. L. Brongersma also acknowledge support from Samsung. I. Thomann gratefully acknowledges a postdoctoral fellowship from the Deutsche Forschungsgemeinschaft (DFG). B. Pinaud gratefully acknowledges a graduate fellowship from the Natural Sciences and Engineering Research Council of Canada.

Chao, C. C.; Hsu, C. M.; Cui, Y.; and Prinz, F. B. IMPROVED SOLID OXIDE FUEL CELL PERFORMANCE WITH NANOSTRUCTURED ELECTROLYTES, *Acs Nano*, **5**, 5692-5696 (2011). [[10.1021/nm201354p](https://doi.org/10.1021/nm201354p)] **Acknowledgements:** C.-C.C. and F.B.P. acknowledge support from Honda. T. M. Gü r, J. Schoonman, J. H. Shim, and P.-C. Su contributed to this research through discussions. Y.C. acknowledges support from the DOE-EFRC: CNEEC (Award No. DE-SC0001060). ALD reactors in our laboratory were built with support from the Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the US Department of Energy, Office of Science, Office of Basic Energy Sciences under award number DE-SC0001060.

Jeong, S.; McDowell, M. T.; and Cui, Y. LOW-TEMPERATURE SELF-CATALYTIC GROWTH OF TIN OXIDE NANOCONES OVER LARGE AREAS, *Acs Nano*, **5**, 5800-5807 (2011). [[10.1021/nm2015216](https://doi.org/10.1021/nm2015216)] **Acknowledgements:** This work is based upon work supported as part of the Center on Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060. A portion of this work is also supported by the U.S. Department of Energy under the Award Number DE- FG36-08GOI8004. S.J. acknowledges support from the Korea Foundation for Advanced Studies (KFAS) for graduate fellow- ship. M.T.M. acknowledges support from the National Defense Science and Engineering Graduate Fellowship and the National Science Foundation Graduate Fellowship.

Wangperawong, A.; and Bent, S. F. THREE-DIMENSIONAL NANOJUNCTION DEVICE MODELS FOR PHOTOVOLTAICS, *Applied Physics Letters*, **98**, 233106 (2011). [[10.1063/1.3595411](https://doi.org/10.1063/1.3595411)] **Acknowledgements:** Studies were carried out as part of the Center on Nanostructuring for Efficient Energy Conversion, an EFRC funded by the U.S. Department of Energy, Office of Basic Energy Sciences under Award No. DE-SC0001060. A.W. acknowledges financial support from the DOE, Office of Science Graduate Fellowship Program, made possible in part by the American Recovery and Reinvestment Act of 2009, administered by ORISE-ORAU under Contract No. DE-AC05- 06OR23100, and support from National Science Foundation under Grant No. CBET 0930098.

Yan, J.; Mortensen, J. J.; Jacobsen, K. W.; and Thygesen, K. S. LINEAR DENSITY RESPONSE FUNCTION IN THE PROJECTOR AUGMENTED WAVE METHOD: APPLICATIONS TO SOLIDS, SURFACES,



AND INTERFACES, *Physical Review B*, **83**, 245122 (2011). [[10.1103/PhysRevB.83.245122](https://doi.org/10.1103/PhysRevB.83.245122)]

**Acknowledgements:** The authors acknowledge partial support for computational studies from the Center on Nanostructuring for the Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center founded by the US Department of Energy, Office of Science, Office of Basic Energy Sciences under award number DE-SC0001060.

Kim, Y. B.; Gur, T. M.; Kang, S.; Jung, H. J.; Sinclair, R.; and Prinz, F. B. CRATER PATTERNED 3-D PROTON CONDUCTING CERAMIC FUEL CELL ARCHITECTURE WITH ULTRA THIN Y:BAZRO(3) ELECTROLYTE, *Electrochemistry Communications*, **13**, 403-406 (2011).

[[10.1016/j.elecom.2011.02.004](https://doi.org/10.1016/j.elecom.2011.02.004)] **Acknowledgements:** Research is primarily supported as part of the Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060.

Lee, E.; Prinz, F. B.; and Cai, W. ENHANCING IONIC CONDUCTIVITY OF BULK SINGLE-CRYSTAL YTTRIA-STABILIZED ZIRCONIA BY TAILORING DOPANT DISTRIBUTION, *Physical Review B*, **83**, 052301 (2011). [[10.1103/PhysRevB.83.052301](https://doi.org/10.1103/PhysRevB.83.052301)] **Acknowledgements:** This work is partly supported by the DOE/SciDAC project on Quantum Simulations of Materials and Nanostructures. E. Lee acknowledges support from the Samsung Scholarship Foundation. F. B. Prinz acknowledges support from the Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the US Department of Energy, Office of Science, Office of Basic Energy Sciences under award number DE-SC0001060.

Bakke, J. R.; Tanskanen, J. T.; Jung, H. J.; Sinclair, R.; and Bent, S. F. ATOMIC LAYER DEPOSITION OF CD(X)ZN(1-X)S FILMS, *Journal of Materials Chemistry*, **21**, 743-751 (2011). [[10.1039/c0jm02786c](https://doi.org/10.1039/c0jm02786c)] **Acknowledgements:** J.R.B. acknowledges funding from the Department of Defense (DoD) through the National Defense Science and Engineering Graduate Fellowship (NDSEG) and from the National Science Foundation (NSF) Graduate Fellowship. J.T.T. acknowledges financial support from the University of Eastern Finland. We also recognize the use of the Stanford Nanocharacterization Laboratory (SNL) and of the Center for Polymer Interfaces and Macromolecular Assemblies (CPIMA). The authors gratefully appreciate support from Varian Semiconductor Equipment Associates. The TEM and SAD studies were supported as part of the Center on Nanostructuring for Efficient Energy Conversion (CNEEC), an Energy Frontier Research Center funded by the US Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060.

Bakke, J. R.; Pickrahn, K. L.; Brennan, T. P.; and Bent, S. F. NANOENGINEERING AND INTERFACIAL ENGINEERING OF PHOTOVOLTAICS BY ATOMIC LAYER DEPOSITION, *Nanoscale*, **3**, 3482-3508 (2011). [[10.1039/c1nr10349k](https://doi.org/10.1039/c1nr10349k)] **Acknowledgements:** This review was carried out as part of the Center on Nanostructuring for Efficient Energy Conversion, an EFRC funded by the U.S. Department of Energy, Office of Basic Energy Sciences under Award Number DE-SC0001060. Varian Semiconductor Equipment Associates is gratefully acknowledged for initial funding of research on ALD buffer layers. J.R.B. acknowledges funding from the Department of Defense (DoD) through the National Defense Science and Engineering Graduate Fellowship (NDSEG) and from the National Science Foundation (NSF) Graduate Fellowship. K.L.P. is

supported by an NSF Graduate Fellowship. T.P.B. acknowledges the support of the Albion Walter Hewlett Graduate Fellowship.

Feng, Y. Z.; Rao, P. M.; Kim, D. R.; and Zheng, X. L. METHANE OXIDATION OVER CATALYTIC COPPER OXIDES NANOWIRES, *Proceedings of the Combustion Institute*, **33**, 3169-3175 (2011). [[10.1016/j.proci.2010.05.017](https://doi.org/10.1016/j.proci.2010.05.017)] **Acknowledgements:** Research is primarily supported as part of the Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060, and by the ONR/YIP under Award Number N00014-08-1-0878. P.M.R. and D. R. K. acknowledge energy fellowships through Link Foundation.

Rao, P. M.; and Zheng, X. L. FLAME SYNTHESIS OF TUNGSTEN OXIDE NANOSTRUCTURES ON DIVERSE SUBSTRATES, *Proceedings of the Combustion Institute*, **33**, 1891-1898 (2011). [[10.1016/j.proci.2010.06.071](https://doi.org/10.1016/j.proci.2010.06.071)] **Acknowledgements:** Research is primarily supported as part of the Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060, and by the ONR/YIP under Award Number N00014-08-1-0878. P.M.R. acknowledges an energy fellowship through Link Foundation.

Wangperawong, A.; King, J. S.; Herron, S. M.; Tran, B. P.; Pangan-Okimoto, K.; and Bent, S. F. AQUEOUS BATH PROCESS FOR DEPOSITION OF  $\text{Cu}_2\text{ZnSnS}_4$  PHOTOVOLTAIC ABSORBERS, *Thin Solid Films*, **519**, 2488-2492 (2011). [[10.1016/j.tsf.2010.11.040](https://doi.org/10.1016/j.tsf.2010.11.040)] **Acknowledgements:** We thank Justin Opatkiewicz for help with Raman spectroscopy and Dan Chawla for assistance with XRD and device preparation. The Global Climate and Energy Project is gratefully acknowledged for the Initial funding of this research. Studies were carried out as part of the Center on Nanostructuring for Efficient Energy Conversion, an EFRC funded by the U.S. Department of Energy, Office of Basic Energy Sciences under Award Number DE-SC0001060. AW received support under the National Science Foundation Grant CBET 0930098.

Yan, J.; Thygesen, K. S. ; and Jacobsen, K. W. NONLOCAL SCREENING OF PLASMONS IN GRAPHENE BY SEMICONDUCTING AND METALLIC SUBSTRATES: FIRST-PRINCIPLES CALCULATIONS, *Physical Review Letters*, **106**, 146803 (2011). [[10.1103/PhysRevLett.106.146803](https://doi.org/10.1103/PhysRevLett.106.146803)] **Acknowledgements:** The authors acknowledge partial support for computational studies from the Center on Nanostructuring for the Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the US Department of Energy, Office of Science, Office of Basic Energy Sciences under award number DE-SC0001060.

Lee, W. J.; Dasgupta, N. P.; Jung, H. J.; Lee, J. R.; Sinclair, R.; and Prinz, F. B. SCANNING TUNNELING SPECTROSCOPY OF LEAD SULFIDE QUANTUM WELLS FABRICATED BY ATOMIC LAYER DEPOSITION, *Nanotechnology*, **21**, 485402 (2010). [[10.1088/0957-4484/21/48/485402](https://doi.org/10.1088/0957-4484/21/48/485402)] **Acknowledgements:** The authors thank the members of the Rapid Prototyping Laboratory for their support and lively discussion. The authors are also grateful to Swagelok Co., Sunnyvale, CA for providing H<sub>2</sub>S compatible valves, as well as helpful advice. H. J. J., R. S., and F. B. P. acknowledge partial support from the Center on Nanostructuring for Efficient Energy

Conversion, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DESC0001060.

Feng, Y. Z.; and Zheng, X. L. PLASMA-ENHANCED CATALYTIC CUO NANOWIRES FOR CO OXIDATION, *Nano Letters*, **10**, 4762-4766 (2010). [[10.1021/nl1034545](https://doi.org/10.1021/nl1034545)] **Acknowledgements:** X.L.Z. sincerely thanks the ONR/YIP program and Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060 for support of this work.

Peterson, A. A.; Abild-Pedersen, F.; Studt, F.; Rossmeisl, J.; and Norskov, J. K. HOW COPPER CATALYZES THE ELECTROREDUCTION OF CARBON DIOXIDE INTO HYDROCARBON FUELS, *Energy & Environmental Science*, **3**, 1311-1315 (2010). [[10.1039/c0ee00071j](https://doi.org/10.1039/c0ee00071j)] **Acknowledgements:** This work was performed as part of the Catalysis for Sustainable Energy initiative, which is funded by the Danish Ministry of Science, Technology and Innovation. This material is also based upon work performed as part of the Center on Nanostructuring for Efficient Energy Conversion (CNEEC) at Stanford University, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001060. The Center for Atomic-scale Materials Design is funded by the Lundbeck Foundation. A.A.P. acknowledges funding from the Hans Christian Ørsted Postdoc Programme.

Bakke, J. R.; Jung, H. J.; Tanskanen, J. T.; Sinclair, R.; and Bent, S. F. ATOMIC LAYER DEPOSITION OF CDS FILMS, *Chemistry of Materials*, **22**, 4669-4678 (2010). [[10.1021/cm100874f](https://doi.org/10.1021/cm100874f)] **Acknowledgements:** J.R.B. acknowledges funding from the Department of Defense (DoD) through the National Defense Science and Engineering Graduate Fellowship (NDSEG) and from the National Science Foundation (NSF) Graduate Fellowship. J.T.T. acknowledges financial support from the University of Eastern Finland. We also recognize use of the Stanford Nanocharacterization Laboratory (SNL) and of the Center for Polymer Interfaces and Macromolecular Assemblies (CPIMA). The authors gratefully appreciate support from Varian Semiconductor Equipment Associates. The TEM and SAD studies were supported as part of the Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award No. DE-SC0001060.

Bakke, J. R.; King, J. S.; Jung, H. J.; Sinclair, R.; and Bent, S. F. ATOMIC LAYER DEPOSITION OF ZNS VIA IN SITU PRODUCTION OF H(2)S, *Thin Solid Films*, **518**, 5400-5408 (2010). [[10.1016/j.tsf.2010.03.074](https://doi.org/10.1016/j.tsf.2010.03.074)] **Acknowledgements:** J.R.B. would like to acknowledge funding from the National Defense Science and Engineering Graduate Fellowship (NDSEG) and from the National Science Foundation (NSF) Graduate Fellowship. We also acknowledge use of the Stanford Nanocharacterization Laboratory (SNL) and of the Center for Polymer Interfaces and Macromolecular Assemblies (CPIMA). The authors gratefully appreciate support from Varian Semiconductor Equipment Associates. The TEM and SAD studies were supported as part of the Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DESC0001060.

Choi, J. W.; McDonough, J.; Jeong, S.; Yoo, J. S.; Chan, C. K.; and Cui, Y. STEPWISE NANOPORE EVOLUTION IN ONE-DIMENSIONAL NANOSTRUCTURES, *Nano Letters*, **10**, 1409-1413 (2010). [[10.1021/nl100258p](https://doi.org/10.1021/nl100258p)] **Acknowledgements:** We thank Brian J. Smith for help in the porosity measurements. J.M. acknowledges support from National Science Foundation and National Defense Science and Engineering Graduate Fellowships. C.K.C. acknowledges support from National Science Foundation and Stanford Graduate Fellowships. This work was partially supported by the King Abdullah University of Science and Technology (KAUST) Investigator Award (No. KUS-11-001-12) and partially supported by a DOE-EFRC at Stanford: Center on Nanostructuring for Efficient Energy Conversion (CNEEC) (NO. DE-SC0001060).

Schuller, J. A.; Barnard, E. S.; Cai, W. S.; Jun, Y. C.; White, J. S.; and Brongersma, M. L. PLASMONICS FOR EXTREME LIGHT CONCENTRATION AND MANIPULATION, *Nature Materials*, **9**, 193-204 (2010). [[10.1038/nmat2630](https://doi.org/10.1038/nmat2630)] **Acknowledgements:** The authors of this article would like to acknowledge support from a US Department of Defense Multidisciplinary University Research Initiative sponsored by the Air Force Office of Scientific Research (F495500410437). The authors also thank the Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the US Department of Energy, Office of Science, Office of Basic Energy Sciences under award number DESC0001060.

Cao, L. Y.; Fan, P. Y.; Vasudev, A. P.; White, J. S.; Yu, Z. F.; Cai, W. S.; Schuller, J. A.; Fan, S. H.; and Brongersma, M. L. SEMICONDUCTOR NANOWIRE OPTICAL ANTENNA SOLAR ABSORBERS, *Nano Letters*, **10**, 439-445 (2010). [[10.1021/nl9036627](https://doi.org/10.1021/nl9036627)] **Acknowledgements:** We gratefully acknowledge support from a Si-based laser initiative of the Multidisciplinary University Research Initiative (MURI) under the Air Force Aerospace Research under award FA9550-06-1-0470. Justin White and Jon A. Schuller's work on the nanostructured Si solar cells was performed with support from the Center on Nanostructuring for Efficient Energy Conversion (CNEEC), an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under award no. DE-SC0001060.

Gorlin, Yelena; and Jaramillo, Thomas F. A BIFUNCTIONAL NONPRECIOUS METAL CATALYST FOR OXYGEN REDUCTION AND WATER OXIDATION, *J. Am. Chem. Soc.*, 13612-13614 (2010). [[10.1021/ja104587v](https://doi.org/10.1021/ja104587v)] **Acknowledgements:** Material synthesis, characterization, and electrochemical measurements for the nonprecious catalyst was supported by the Center on Nanostructuring for Efficient Energy Conversion, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award No. DE-SC0001060. GCEP funded the initial work on manganese oxides, which served as a basis for the work reported herein.