Stanford

Friedrich Prinz

Leonardo Professor, Professor of Mechanical Engineering, of Materials Science and Engineering and Senior Fellow at the Precourt Institute for Energy

CONTACT INFORMATION

- **Alternate Contact**

  Kelly Chu - NPL Affiliate Program Manager, NPL Administrator

  Email Kchu22@stanford.edu

  Tel 650-497-0411

Bio

BIO

Fritz Prinz is the Leonardo Professor in the School of Engineering at Stanford University, Professor of Materials Science and Engineering, Professor of Mechanical Engineering, and Senior Fellow at the Precourt Institute for Energy. He also serves as the Director of the Nanoscale Prototyping Laboratory and Faculty Co-director of the NPL-Affiliate Program. A solid-state physicist by training, Prinz leads a group of doctoral students, postdoctoral scholars, and visiting scholars who are addressing fundamental issues on energy conversion and storage at the nanoscale. In his Laboratory, a wide range of nano-fabrication technologies are employed to build prototype fuel cells and capacitors with induced topological electronic states. We are testing these concepts and novel material structures through atomic layer deposition, scanning tunneling microscopy, impedance spectroscopy and other technologies. In addition, the Prinz group group uses atomic scale modeling to gain insights into the nature of charge separation and recombination processes. Before coming to Stanford in 1994, he was on the faculty at Carnegie Mellon University. Prinz earned a PhD in Physics at the University of Vienna.

ACADEMIC APPOINTMENTS

- Professor, Mechanical Engineering
- Professor, Materials Science and Engineering
- Senior Fellow, Precourt Institute for Energy
- Affiliate, Stanford Woods Institute for the Environment

HONORS AND AWARDS

- Sir Christopher Hinton Lecture, Royal Academy of Engineering (1991)
- Engineer of the Year, American Society of Mechanical Engineers, Pittsburgh, PA Section (1991 - 1992)
- Corresponding member, Austrian Academy of Science, Vienna, Austria (1996)
- Award for Excellence, Literati Club (2002)
- Most Outstanding Paper in the 2001 volume, Rapid Prototyping Journal (2002)
- The AM Strickland Prize for Best Paper in 2005, The Institution of Mechanical Engineers, London, UK (2005)
- Tedori-Callinan Lecture, University of Pennsylvania (2006)
- Fellow, American Association for the Advancement of Science (AAAS) (2007)

- Woodruff Colloquium in the Theme of Energy, Georgia Institute of Technology, Atlanta, GA (2008)
- Munushian Lecture, University of Southern California (2009)

PROFESSIONAL EDUCATION

- PhD, University of Vienna , Physics (1975)

LINKS

- Nanoscale Prototyping Laboratory: https://nplab.stanford.edu

Teaching

COURSES

2026-27

- Manufacturing Processes and Design: ME 129 (Win)

2025-26

- Manufacturing Processes and Design: ME 129 (Win)
- Quantum Field Theory (QFT) for Engineering Applications: MATSCI 405, ME 403 (Aut)

2024-25

- Manufacturing Processes and Design: ME 129 (Win)

2023-24

- Manufacturing Processes and Design: ME 129 (Win)
- Quantum Field Theory (QFT) for Engineering Applications: MATSCI 405, ME 403 (Aut)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Xintong Xu

Postdoctoral Faculty Sponsor

Yunha Jung, Hojae Lee

Doctoral Dissertation Advisor (AC)

Alex Boulton-McKeehan, Jiaxuan Guo, SeoYoung Kim, Tejus Rohatgi, Xiting Zhang

Master's Program Advisor

Nallely Lomeli Rubio

Doctoral Dissertation Co-Advisor (AC)

Zhennan Ru, Sreya Vangara

Doctoral (Program)

Jun Lee

Publications

PUBLICATIONS

- **Plasma-enhanced atomic layer deposition of tungsten nitride** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY A*
  Sowa, M. J., Yemane, Y., Prinz, F. B., Provine, J.

2016; 34 (5)

- **Plasma-Enhanced Atomic Layer Deposition of SiN-AlN Composites for Ultra Low Wet Etch Rates in Hydrofluoric Acid** *ACS APPLIED MATERIALS & INTERFACES*
  Kim, Y., Provine, J., Waich, S. P., Park, J., Phuthong, W., Dadlani, A. L., Kim, H., Schindler, P., Kim, K., Prinz, F. B.
  2016; 8 (27): 17599-17605
- **Correlation of film density and wet etch rate in hydrofluoric acid of plasma enhanced atomic layer deposited silicon nitride** *AIP ADVANCES*
  Provine, J., Schindler, P., Kim, Y., Walch, S. P., Kim, H. J., Kim, K., Prinz, F. B.
  2016; 6 (6)
- **Atomically Flat Silicon Oxide Monolayer Generated by Remote Plasma** *JOURNAL OF PHYSICAL CHEMISTRY C*
  Thian, D., Yemane, Y. T., Logar, M., Xu, S., Schindler, P., Winterkorn, M. M., Provine, J., Prinz, F. B.
  2016; 120 (15): 8148-8156
- **Relating Electronic and Geometric Structure of Atomic Layer Deposited BaTiO3 to its Electrical Properties** *JOURNAL OF PHYSICAL CHEMISTRY LETTERS*
  Torgersen, J., Acharya, S., Dadlani, A. L., Petousis, I., Kim, Y., Trejo, O., Nordlund, D., Prinz, F. B.
  2016; 7 (8): 1428-1433
- **Oscillatory barrier-assisted Langmuir-Blodgett deposition of large-scale quantum dot monolayers** *APPLIED SURFACE SCIENCE*
  Xu, S., Dadlani, A. L., Acharya, S., Schindler, P., Prinz, F. B.
  2016; 367: 500-506
- **Plasma-enhanced atomic layer deposition of BaTiO3** *SCRIPTA MATERIALIA*
  Schindler, P., Kim, Y., Thian, D., An, J., Prinz, F. B.
  2016; 111: 106-109
- **Self-limiting atomic layer deposition of barium oxide and barium titanate thin films using a novel pyrrole based precursor** *JOURNAL OF MATERIALS CHEMISTRY C*
  Acharya, S., Torgersen, J., Kim, Y., Park, J., Schindler, P., Dadlani, A. L., Winterkorn, M., Xu, S., Walch, S. P., Usui, T., Schildknecht, C., Prinz, F. B.
  2016; 4 (10): 1945-1952
- **Atomic layer deposition by reaction of molecular oxygen with tetrakisdimethylamido-metal precursors** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY A*
  Provine, J., Schindler, P., Torgersen, J., Kim, H. J., Karnthaler, H., Prinz, F. B.
  2016; 34 (1)
- **Quantifying Geometric Strain at the PbS QD-TiO2 Anode Interface and Its Effect on Electronic Structures** *NANO LETTERS*
  Trejo, O., Roelofs, K. E., Xu, S., Logar, M., Sarangi, R., Nordlund, D., Dadlani, A. L., Kravec, R., Dasgupta, N. P., Bent, S. F., Prinz, F. B.
  2015; 15 (12): 7829-7836
- **Effects of surface chemistry and microstructure of electrolyte on oxygen reduction kinetics of solid oxide fuel cells** *JOURNAL OF POWER SOURCES*
  Park, J. S., An, J., Lee, M. H., Prinz, F. B., Lee, W.
  2015; 295: 74-78
- **The Use of Contact Mode Atomic Force Microscopy in Aqueous Medium for Structural Analysis of Spinach Photosynthetic Complexes.** *Plant physiology*
  Phuthong, W., Huang, Z., Wittkopp, T. M., Sznee, K., Heinnickel, M. L., Dekker, J. P., Frese, R. N., Prinz, F. B., Grossman, A. R.
  2015; 169 (2): 1318-1332
- **Grain boundary blocking of ionic conductivity in nanocrystalline yttria-doped ceria thin films** *SCRIPTA MATERIALIA*
  An, J., Bae, J., Hong, S., Koo, B., Kim, Y., Guer, T. M., Prinz, F. B.
  2015; 104: 45-48
- **Enhanced Step Coverage of TiO2 Deposited on High Aspect Ratio Surfaces by Plasma-Enhanced Atomic Layer Deposition** *LANGMUIR*
  Schindler, P., Logar, M., Provine, J., Prinz, F. B.
  2015; 31 (18): 5057-5062
- **Atomic Layer Deposition of Undoped TiO2 Exhibiting p-Type Conductivity.** *ACS applied materials & interfaces*

Iancu, A. T., Logar, M., Park, J., Prinz, F. B.
2015; 7 (9): 5134-5140

- **Variation of Energy Density of States in Quantum Dot Arrays due to Interparticle Electronic Coupling.** *Nano letters*
  Logar, M., Xu, S., Acharya, S., Prinz, F. B.
  2015; 15 (3): 1855-1860
- **Exploring the local electronic structure and geometric arrangement of ALD Zn(O,S) buffer layers using X-ray absorption spectroscopy** *JOURNAL OF MATERIALS CHEMISTRY C*
  Dadlani, A. L., Trejo, O., Acharya, S., Torgersen, J., Petousis, I., Nordlund, D., Sarangi, R., Schindler, P., Prinz, F. B.
  2015; 3 (47): 12192-12198
- **Influence of the grain size of samaria-doped ceria cathodic interlayer for enhanced surface oxygen kinetics of low-temperature solid oxide fuel cell** *JOURNAL OF THE EUROPEAN CERAMIC SOCIETY*
  Bae, J., Hong, S., Koo, B., An, J., Prinz, F. B., Kim, Y.
  2014; 34 (15): 3763-3768
- **Energy States of Ligand Capped Ag Nanoparticles: Relating Surface Plasmon Resonance to Work Function** *JOURNAL OF PHYSICAL CHEMISTRY C*
  Dadlani, A. L., Schindler, P., Logar, M., Walch, S. P., Prinz, F. B.
  2014; 118 (43): 24827-24832
- **Effects of size polydispersity on electron mobility in a two-dimensional quantum-dot superlattice** *PHYSICAL REVIEW B*
  Xu, S., Thian, D., Wang, S., Wang, Y., Prinz, F. B.
  2014; 90 (14)
- **Nanostructuring Materials for Solar-to-Hydrogen Conversion** *JOURNAL OF PHYSICAL CHEMISTRY C*
  Guer, T. M., Bent, S. F., Prinz, F. B.
  2014; 118 (37): 21301-21315
- **MEMS-based thin-film solid-oxide fuel cells** *MRS BULLETIN*
  An, J., Shim, J. H., Kim, Y., Park, J. S., Lee, W., Guer, T. M., Prinz, F. B.
  2014; 39 (9): 798-804
- **Plasma Processing for Crystallization and Densification of Atomic Layer Deposition BaTiO3 Thin Films.** *ACS applied materials & interfaces*
  An, J., Usui, T., Logar, M., Park, J., Thian, D., Kim, S., Kim, K., Prinz, F. B.
  2014; 6 (13): 10656-10660
- **Localized Charge Transfer Reactions near the Pt-YSZ Interfaces using Kelvin Probe Microscopy** *INTERNATIONAL JOURNAL OF PRECISION ENGINEERING AND MANUFACTURING-GREEN TECHNOLOGY*
  Lee, W., Prinz, F. B.
  2014; 1 (3): 201-205
- **Sol-flame synthesis of cobalt-doped TiO2 nanowires with enhanced electrocatalytic activity for oxygen evolution reaction.** *Physical chemistry chemical physics*
  Cai, L., Cho, I. S., Logar, M., Mehta, A., He, J., Lee, C. H., Rao, P. M., Feng, Y., Wilcox, J., Prinz, F. B., Zheng, X.
  2014; 16 (24): 12299-12306
- **High performance Bi-layered electrolytes via atomic layer deposition for solid oxide fuel cells** *JOURNAL OF POWER SOURCES*
  Jee, Y., Cho, G. Y., An, J., Kim, H., Son, J., Lee, J., Prinz, F. B., Lee, M. H., Cha, S. W.
  2014; 253: 114-122
- **Electrodeposition and Behavior of Single Metal Nanowire Probes** *ACS NANO*
  Motoyama, M., Prinz, F. B.
  2014; 8 (4): 3556-3566
- **Proton incorporation in yttria-stabilized zirconia during atomic layer deposition** *INTERNATIONAL JOURNAL OF HYDROGEN ENERGY*
  Bae, K., Son, K. S., Kim, J. W., Park, S. W., An, J., Prinz, F. B., Shim, J. H.
  2014; 39 (6): 2621-2627
- **Nanotubular array solid oxide fuel cell.** *ACS nano*

Motoyama, M., Chao, C., An, J., Jung, H. J., Gür, T. M., Prinz, F. B.
2014; 8 (1): 340-351

- **Rapid and Controllable Flame Reduction of TiO2 Nanowires for Enhanced Solar Water-Splitting** *NANO LETTERS*
  Cho, I. S., Logar, M., Lee, C. H., Cai, L., Prinz, F. B., Zheng, X.
  2014; 14 (1): 24-31
- **Digitally-patterned nanoprobe arrays for single cell insertion enabled by wet tapping** *RSC ADVANCES*
  Seo, Y. H., Kim, L. H., Prinz, F. B., Ryu, W.
  2014; 4 (32): 16655-16661
- **Nanostructuring Methods for Enhancing Light Absorption Rate of Si-Based Photovoltaic Devices: A Review** *INTERNATIONAL JOURNAL OF PRECISION ENGINEERING AND MANUFACTURING-GREEN TECHNOLOGY*
  Hong, S., Bae, J., Koo, B., Chang, I., Cho, G. Y., Kim, Y., Cha, S. W., Prinz, F. B.
  2014; 1 (1): 67-74
- **Electrochemical tuning of vertically aligned MoS2 nanofilms and its application in improving hydrogen evolution reaction** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Wang, H., Lu, Z., Xu, S., Kong, D., Cha, J. J., Zheng, G., Hsu, P., Yan, K., Bradshaw, D., Prinz, F. B., Cui, Y.
  2013; 110 (49): 19701-19706
- **Approaching the limits of dielectric breakdown for SiO2 films deposited by plasma-enhanced atomic layer deposition** *ACTA MATERIALIA*
  Usui, T., Donnelly, C. A., Logar, M., Sinclair, R., Schoonman, J., Prinz, F. B.
  2013; 61 (20): 7660-7670
- **Atomic Scale Verification of Oxide-Ion Vacancy Distribution near a Single Grain Boundary in YSZ.** *Scientific reports*
  An, J., Park, J. S., Koh, A. L., Lee, H. B., Jung, H. J., Schoonman, J., Sinclair, R., Gür, T. M., Prinz, F. B.
  2013; 3: 2680-?
- **Three-Dimensional Nanostructured Bilayer Solid Oxide Fuel Cell with 1.3 W/cm(2) at 450 °C.** *Nano letters*
  An, J., Kim, Y., Park, J., Gür, T. M., Prinz, F. B.
  2013; 13 (9): 4551-4555
- **Atomic Layer Deposition of Platinum Catalysts on Nanowire Surfaces for Photoelectrochemical Water Reduction** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Dasgupta, N. P., Liu, C., Andrews, S., Prinz, F. B., Yang, P.
  2013; 135 (35): 12932-12935
- **Three-Dimensional Nanostructured Bilayer Solid Oxide Fuel Cell with 1.3 W/cm(2) at 450 degrees C** *NANO LETTERS*
  An, J., Kim, Y., Park, J., Guer, T. M., Prinz, F. B.
  2013; 13 (9): 4551-4555
- **Effect of cation non-stoichiometry and crystallinity on the ionic conductivity of atomic layer deposited Y:BaZrO3 films** *THIN SOLID FILMS*
  Park, J. S., Kim, Y., An, J., Shim, J. H., Guer, T. M., Prinz, F. B.
  2013; 539: 166-169
- **Atomistic simulations of grain boundary segregation in nanocrystalline yttria-stabilized zirconia and gadolinia-doped ceria solid oxide electrolytes** *ACTA MATERIALIA*
  Lee, H. B., Prinz, F. B., Cai, W.
  2013; 61 (10): 3872-3887
- **Ultra-thin platinum catalytic electrodes fabricated by atomic layer deposition.** *Physical chemistry chemical physics*
  An, J., Kim, Y., Prinz, F. B.
  2013; 15 (20): 7520-7525
- **Aberration-Corrected TEM Imaging of Oxygen Occupancy in YSZ** *JOURNAL OF PHYSICAL CHEMISTRY LETTERS*
  An, J., Koh, A. L., Park, J. S., Sinclair, R., Guer, T. M., Prinz, F. B.
  2013; 4 (7): 1156-1160
- **Enhanced oxygen exchange on surface-engineered yttria-stabilized zirconia.** *ACS nano*
  Chao, C., Park, J. S., Tian, X., Shim, J. H., Gür, T. M., Prinz, F. B.

2013; 7 (3): 2186-2191

- **Enhanced Oxygen Exchange on Surface-Engineered Yttria-Stabilized Zirconia** *ACS NANO*
  Chao, C., Park, J. S., Tian, X., Shim, J. H., Guer, T. M., Prinz, F. B.
  2013; 7 (3): 2186-2191
- **Spatial Variation of Available Electronic Excitations within Individual Quantum Dots** *NANO LETTERS*
  Jung, H. J., Dasgupta, N. P., Van Stockum, P. B., Koh, A. L., Sinclair, R., Prinz, F. B.
  2013; 13 (2): 716-721
- **Atomic Scale Verification of Oxide-Ion Vacancy Distribution near a Single Grain Boundary in YSZ** *Scientific Reports*
  An, J., Park, J. S., Koh, A. L., Lee, Hark, B., Jung, H. J., Schoonman, J., Prinz, F. B.
  2013
- **Three-Dimensional Nanostructured Bilayer Solid Oxide Fuel Cell with 1.3 W/cm2 at 450C** *Nano Letters*
  An, J., Kim, Y., Park, J., Gur, Turgut, M., Prinz, Fritz, B.
  2013
- **STANFORD ENGINEERS DEVELOP FUEL CELL THAT CAN DELIVER RECORD POWER-PER-SQUARE INCH AT RECORD-LOW TEMPERATURES (http://engineering.stanford.edu/research-profile/stanford-engineers-develop-fuel-cell-can-deliver-record-power-square-inch-record-lo)** *Stanford Engineering News*
  Prinz, F., B., Davenport, M.
  2013
- **Nanotubular Array Solid Oxide Fuel Cell** *ACS Nano*
  Motoyama, M., Chao, C., An, J., Jung, H. J., Gür, Turgut, M., Prinz, F. (.
  2013
- **Atomic layer deposition of thin-film ceramic electrolytes for high-performance fuel cells** *J. Mater. Chem. A (feature article)*
  Shim, J. H., Kang, S., Cha, S., Lee, W., Kim, Y. B., Park, J. S., Prinz, F. B.
  2013
- **Ultra-Thin Catalytic Electrodes for LT-SOFC** *Phys. Chem. Chem. Phys.*
  An, J., Kim, Y., B., Prinz, F., B.
  2013; 15: 7520
- **Editor's Choice (Materials Science: 3D Lowers T)** *Science*
  Prinz, F., B., Lavine, Marc, S.
  2013; 342: 15
- **Three-Dimensional Nanostructured Bilayer Solid Oxide Fuel Cell with 1.3 W/cm2 at 450C** *Nano Letters*
  An, J., Kim, Y., Park, J., Gur, Turgut, M., Prinz, Fritz, B.
  2013
- **STANFORD ENGINEERS DEVELOP FUEL CELL THAT CAN DELIVER RECORD POWER-PER-SQUARE INCH AT RECORD-LOW TEMPERATURES (http://engineering.stanford.edu/research-profile/stanford-engineers-develop-fuel-cell-can-deliver-record-power-square-inch-record-lo)** *Stanford Engineering News*
  Prinz, F., B., Davenport, M.
  2013
- **Nanotubular Array Solid Oxide Fuel Cell** *ACS Nano*
  Motoyama, M., Chao, C., An, J., Jung, H. J., Gür, Turgut, M., Prinz, F. (.
  2013
- **Atomic layer deposition of thin-film ceramic electrolytes for high-performance fuel cells** *J. Mater. Chem. A (feature article)*
  Shim, J. H., Kang, S., Cha, S., Lee, W., Kim, Y. B., Park, J. S., Prinz, F. B.
  2013
- **Enhancing Charge Transfer Kinetics by Nanoscale Catalytic Cermet Interlayer** *ACS APPLIED MATERIALS & INTERFACES*
  An, J., Kim, Y., Guer, T. M., Prinz, F. B.
  2012; 4 (12): 6789-6794

- **Enhancing charge transfer kinetics by nanoscale catalytic cermet interlayer.** *ACS applied materials & interfaces*
  An, J., Kim, Y., Gür, T. M., Prinz, F. B.
  2012; 4 (12): 6790-6795
- **Oxygen diffusion across the grain boundary in bicrystal yttria stabilized zirconia** *SOLID STATE COMMUNICATIONS*
  Park, J. S., Kim, Y., An, J., Prinz, F. B.
  2012; 152 (24): 2169-2171
- **Observing the Nucleation Phase of Atomic Layer Deposition In Situ** *CHEMISTRY OF MATERIALS*
  Mack, J. F., Van Stockum, P. B., Yemane, Y. T., Logar, M., Iwadate, H., Prinz, F. B.
  2012; 24 (22): 4357-4362
- **In Situ Cycle-by-Cycle Flash Annealing of Atomic Layer Deposited Materials** *JOURNAL OF PHYSICAL CHEMISTRY C*
  Langston, M. C., Dasgupta, N. P., Jung, H. J., Logar, M., Huang, Y., Sinclair, R., Prinz, F. B.
  2012; 116 (45): 24177-24183
- **Thickness effects of yttria-doped ceria interlayers on solid oxide fuel cells** *JOURNAL OF POWER SOURCES*
  Fan, Z., An, J., Iancu, A., Prinz, F. B.
  2012; 218: 187-191
- **Nickel Silicide Nanowire Arrays for Anti-Reflective Electrodes in Photovoltaics** *ADVANCED FUNCTIONAL MATERIALS*
  Dasgupta, N. P., Xu, S., Jung, H. J., Iancu, A., Fasching, R., Sinclair, R., Prinz, F. B.
  2012; 22 (17): 3650-3657
- **Ab initio kinetic Monte Carlo model of ionic conduction in bulk yttria-stabilized zirconia** *MODELLING AND SIMULATION IN MATERIALS SCIENCE AND ENGINEERING*
  Lee, E., Prinz, F. B., Cai, W.
  2012; 20 (6)
- **Improved oxygen surface exchange kinetics at grain boundaries in nanocrystalline yttria-stabilized zirconia** *MRS COMMUNICATIONS*
  Park, J. S., Holme, T. P., Shim, J. H., Prinz, F. B.
  2012; 2 (3): 107-111
- **High aspect ratio and high breakdown strength metal-oxide capacitors** *APPLIED PHYSICS LETTERS*
  Usui, T., Mollinger, S. A., IANCU, A. T., Reis, R. M., Prinz, F. B.
  2012; 101 (3)
- **Structural and compositional analysis of solid oxide fuel cell electrolytes using transmission electron microscopy** *INTERNATIONAL JOURNAL OF PRECISION ENGINEERING AND MANUFACTURING*
  An, J., Kim, Y. B., Jung, H. J., Park, J. S., Cha, S. W., Guer, T. M., Prinz, F. B.
  2012; 13 (7): 1273-1279
- **Nanoscale impedance and complex properties in energy-related systems** *MRS BULLETIN*
  Lee, W., Prinz, F. B., Chen, X., Nonnenmann, S., Bonnell, D. A., O'Hayre, R. P.
  2012; 37 (7): 659-667
- **Nanostructured Platinum Catalysts by Atomic-Layer Deposition for Solid-Oxide Fuel Cells** *ADVANCED ENERGY MATERIALS*
  Chao, C., Motoyama, M., Prinz, F. B.
  2012; 2 (6): 651-654
- **Oxygen Surface Exchange at Grain Boundaries of Oxide Ion Conductors** *ADVANCED FUNCTIONAL MATERIALS*
  Lee, W., Jung, H. J., Lee, M. H., Kim, Y., Park, J. S., Sinclair, R., Prinz, F. B.
  2012; 22 (5): 965-971
- **Nanoscale membrane electrolyte array for solid oxide fuel cells** *ELECTROCHEMISTRY COMMUNICATIONS*
  Su, P., Prinz, F. B.
  2012; 16 (1): 77-79
- **Enhanced oxygen exchange and incorporation at surface grain boundaries on an oxide ion conductor** *ACTA MATERIALIA*
  Shim, J. H., Park, J. S., Holme, T. P., Crabb, K., Lee, W., Kim, Y. B., Tian, X., Guer, T. M., Prinz, F. B.

2012; 60 (1): 1-7

- **Effect of High Surface Area Pd Electrodes on SOFC Performance at 350 degrees C** *A4 Symposium on Grand Challenges in Energy Conversion and Storage / 220th Meeting of the Electrochemical-Society (ECS)*
  Komadina, J., Motoyama, M., Kim, Y. B., Prinz, F. B.
  ELECTROCHEMICAL SOC INC.2012: 35–41
- **Fluorine contamination in yttrium-doped barium zirconate film deposited by atomic layer deposition** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY A*
  An, J., Kim, Y. B., Park, J. S., Shim, J. H., Guer, T. M., Prinz, F. B.
  2012; 30 (1)
- **Use of a high-flow diaphragm valve in the exhaust line of atomic layer deposition reactors** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY A*
  Dasgupta, N. P., Trejo, O., Prinz, F. B.
  2012; 30 (1)
- **Patterned Silver Nanomesh Cathode for Low-Temperature Solid Oxide Fuel Cells** *JOURNAL OF THE ELECTROCHEMICAL SOCIETY*
  Shim, J. H., Kim, Y. B., Park, J. S., An, J., Guer, T. M., Prinz, F. B.
  2012; 159 (5): B541-B545
- **Mechanical masking of films deposited by atomic layer deposition** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY A*
  Langston, M. C., Usui, T., Prinz, F. B.
  2012; 30 (1)
- **Surface-Modified Low-Temperature Solid Oxide Fuel Cell** *ADVANCED FUNCTIONAL MATERIALS*
  Kim, Y. B., Holme, T. P., Guer, T. M., Prinz, F. B.
  2011; 21 (24): 4684-4690
- **Oxygen activation over engineered surface grains on YDC/YSZ interlayered composite electrolyte for LT-SOFC** *JOURNAL OF POWER SOURCES*
  Kim, Y. B., Park, J. S., Guer, T. M., Prinz, F. B.
  2011; 196 (24): 10550-10555
- **A combined scanning tunneling microscope-atomic layer deposition tool** *REVIEW OF SCIENTIFIC INSTRUMENTS*
  Mack, J. F., Van Stockum, P. B., Iwadate, H., Prinz, F. B.
  2011; 82 (12)
- **ALD for clean energy conversion, utilization, and storage** *MRS BULLETIN*
  Elam, J. W., Dasgupta, N. P., Prinz, F. B.
  2011; 36 (11): 899-906
- **In vivo electrochemical impedance measurement on single cell membrane** *MICROELECTRONIC ENGINEERING*
  Bai, S., Prinz, F. B.
  2011; 88 (10): 3094-3100
- **Effect of crystallinity on proton conductivity in yttrium-doped barium zirconate thin films** *SOLID STATE IONICS*
  Kim, Y. B., Guer, T. M., Jung, H., Kang, S., Sinclair, R., Prinz, F. B.
  2011; 198 (1): 39-46
- **Three-dimensional biodegradable microscaffolding: Scaffold characterization and cell population at single cell resolution** *ACTA BIOMATERIALIA*
  Ryu, W., Hammerick, K. E., Kim, Y. B., Kim, J. B., Fasching, R., Prinz, F. B.
  2011; 7 (9): 3325-3335
- **Cup-shaped yttria-doped barium zirconate membrane fuel cell array** *MICROELECTRONIC ENGINEERING*
  Su, P., Prinz, F. B.
  2011; 88 (8): 2405-2407
- **In vivo O-2 measurement inside single photosynthetic cells** *BIOTECHNOLOGY LETTERS*
  Bai, S., Ryu, W., Fasching, R. J., Grossman, A. R., Prinz, F. B.

2011; 33 (8): 1675-1681

- **Improved Solid Oxide Fuel Cell Performance with Nanostructured Electrolytes** *ACS NANO*
  Chao, C., Hsu, C., Cui, Y., Prinz, F. B.
  2011; 5 (7): 5692-5696
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