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Academic Qualifications

Stanford University, Stanford, California, USA

Ph.D. in Mechanical Engineering (2011)

Ph.D. minor in Materials Science and Engineering (2011)

Stanford University, Stanford, California, USA

M.S. in Biomechanical Engineering (2007)

Hanyang University, Seoul, KOREA

B.S. in Mechanical Engineering (2004)

Field of Expertise

1. Oxide/composite film fabrication and electrochemical characterizations
2. Energy conversion and storage devices
3. Thin film deposition techniques
4. Nanomaterial synthesis/characterization
5. Energy harvesting devices/systems

Work Experience

2019 ~ current *Vice president*, Hanyang Industry-University Corporation Foundation
2018 ~ current *Associate Professor*, Department of Mechanical Engineering, Hanyang University
2018 ~ 2019 *Visiting Assistant Professor*, Department of Mechanical Engineering, Stanford Univ.
2012 ~ 2018 *Assistant Professor*, Department of Mechanical Engineering, Hanyang University
2011 ~ 2012 *Postdoctoral fellow*, Department of Mechanical Engineering, Stanford University
2006 ~ 2011 *Research Assistant*, Department of Mechanical Engineering, Stanford University
2006 *Graduate Researcher*, Vertebral Technologies Inc., Minnetonka, MN, USA

Memberships

- Chairman – Korean Society of Precision Engineering, Green technology division
- Editorial board member, International Journal of Precision Engineering and Manufacturing – Green Technology
- Board member – The Korean Society of Mechanical Engineers, Thermal engineering division

Selected Journal Publications (recent 5 years)

- M. Christy, A. Arul, Y. -B. Kim, "Carbide composite nanowire as bifunctional electrocatalyst for lithium oxygen batteries", *Electrochimica Acta*, 300 (2019) 186-192
- Y. Lim, H. Lee, S. Hong, Y.B. Kim, Co-sputtered nanocomposite nickel cermet anode for high-performance low-temperature solid oxide fuel cells, *Journal of Power Sources* 412 (2019) 160-169
- S. Hong, H. Yang, Y. Lim, F. B. Prinz, Y. B. Kim, "Grain-controlled Gadolinia-doped Ceria (GDC) Functional Layer for Interface Reaction Enhanced Low-Temperature Solid Oxide Fuel Cells", *ACS Applied Materials Interfaces*, 11 (2019) 41338-41346
- S. Kong, Y. Lim, J.H. Park, H. Lee, Y.B. Kim, "Ultra-fast fabrication of lanthanum strontium manganese thin films using intense pulsed light irradiation", *Ceramics International* (2019)
- J. Son, S. Hwang, S. Hong, S. Heo, Y. -B. Kim, "Parameter Study on Solid Oxide Fuel Cell Heat-Up Process to Reaction Starting Temperature", *International Journal of Precision Engineering and Manufacturing-Green Technology*, (2019)
- J.H. Park, Y.H. Lim, S.W. Kong, H.J. Lee, Y.B. Kim, "Rapid Fabrication of chemical-Deposited Lanthanum Nickelate Thin Films via Intense Pulsed-Light Process", *Coatings*, 9 (2019) 372
- H. Yang, H. Lee, Y. Lim, M. Christy, Y. -B. Kim, "Laminated Structure of Al₂O₃ and TiO₂ for Enhancing Performance of Reverse Electrowetting-On-Dielectric Energy Harvesting", *International Journal of Precision Engineering and Manufacturing-Green Technology*, (2019)
- S. Hong, Y. Lim, H. Lee, W. Chung, H. Hwang, H.-S. Kim, Y. B. Kim, "Rapid surface kinetics enhancement via flash light sintering for low-temperature solid oxide fuel cells", *Journal of Alloys and Compounds*, 778 (2018) 337-344
- S. Hong, Y. Lim, F.B. Prinz, Y.B. Kim*, "Thermally Stable Current-collecting Silver Grid Coated with Ceramic-capping Layer for Low-temperature Solid Oxide Fuel Cells", *Ceramics International*, 44 (2018) 22212-22218
- S. Hong, J. Son, Y. Lim, H. Yang, F.B. Prinz, Y.B. Kim*, "Homogeneous Grain-Controlled ScSZ Functional Layer for High Performance Low-Temperature Solid Oxide Fuel Cells", *Journal of Materials Chemistry A*, 6 (2018) 16506-16514

- S. Hong, S. Oh, H. J. Kim, Y. H. Lim, J. An, Y. B. Kim, "Enhanced Thermal stability of a gadolinia-doped ceria capped metal electrode for durable low-temperature solid oxide fuel cells", *Journal of The Electrochemical Society* (2017).
- J. S. Park, D. J. Kim, W. H. Chung, Y. H. Lim, H. S. Kim, Y. B. Kim, "Rapid, cool sintering of wet processed yttria-stabilized zirconia ceramic electrolyte thin films", *Scientific Reports*, (2017).
- H. J. Kim, J. G. Yu, S.W. Hong, C. H. Park, Y. B. Kim, and J. An, "Ridge-Valley Nanostructured SDC Interlayer for Thermally Stable Cathode Interface in Low-Temperature SOFC", *Phys. Status Solidi A*, (2017).
- J. Koo, Y. Lim, Y.B Kim, D. Byun, W. Lee, "Electrospun yttria-stabilized zirconia nanofibers for low-temperature solid oxide fuel cells", *International Journal of Hydrogen Energy*, (2017) 15903-15907.
- Y. Lim, S. Hong, J. Hae, H. Yang, Y.B. Kim, "Influence of Deposition Temperature on the Microstructure of Thin-film Electrolyte for SOFCs with a Nanoporous AAO Support Structure", *International Journal of Hydrogen Energy* 42, (2017) 10199-10207.
- J. Park, J. Bae, S. Hong, Y. B. Kim, "Superior $\text{La}_{1-x}\text{Sr}_x\text{CoO}_{3-\delta}$ ceramic electrode fabrication by MOCSD for low-temperature SOFC application", *Surface and coating technology* 311, (2017) 157-163.
- S. Oh, S. Hong, H. J. Kim, Y. B. Kim, J. An, "Enhancing thermal stability of metal electrodes with a sputtered gadolinia-doped ceria over-layer for low-temperature solid oxide fuel cells", *Ceramics International* 43, 7, (2017) 5781-5788.
- S. Hong, Y. Lim, H. Yang, J. Bae, Y.B. Kim, "Single-Chamber Fabrication of High-Performance Low-Temperature Solid Oxide Fuel Cells with a Grain Controlled Functional Layer", *Journal of Materials Chemistry A*, 5 (2017) 2029-2036.
- J. S. Park, W. H. Chung, H. S. Kim, Y. B. Kim, "Rapid fabrication of chemical-solution-deposited $\text{La}_{0.6}\text{Sr}_{0.4}\text{CoO}_{3-\delta}$ thin films via flashlight sintering", *Journal of Alloys and Compounds* (2016) 102-108.
- H. Yang, S. Hong, B. Koo, D. Lee, Y. B. Kim, "High-performance reverse electrowetting energy harvesting using atomic-layer-deposited dielectric film", *Nano Energy*, (2016) 450-455.
- W. Yu, G. Cho, S. Hong, Y. Lee, Y. B. Kim, J. An, S. Cha, "PEALD YSZ-based bilayer electrolyte for thin film-solid oxide fuel cells", *Nanotechnology*, 27, (2016) 415402.

- J. Bae, H. Yang, J. Son, B. Koo, Y. B. Kim, "Enhanced Oxygen Reduction Reaction in Nanocrystalline Surface of Samaria-Doped Ceria via Randomly Distributed Dopants", *Journal of American Ceramic Society* (2016) 4050–4056.
- S. Hong, D. Lee, Y. Lim, J. Bae, Y. B. Kim, "Yttria-stabilized zirconia thin films with restrained columnar grains for oxygen ion conducting electrolytes", *Ceramics International* (2016) 16703-16709.
- E. Zalnezhad, E. Maleki, S. M. Banihashemian, J. W. Park, Y. B. Kim, M. Sarraf, A. A. D. M. Sarhan, S. Ramesh. "Wettability, structural and optical properties investigation of TiO₂ nanotubular arrays", *Materials Research Bulletin* 78 (2016) 179-185.
- S. Hong, H. Yang, Y. Lim, Y. B. Kim, "Microstructure-controlled Deposition of Yttria-stabilized Zirconia Electrolyte for Low Temperature Solid Oxide Fuel Cell Performance Stability Enhancement", *Thin Solid Films* 618 (2016) 207-212.
- J. Bae, Y. Lim, J. S. Park, D. Lee, S. Hong, J. An, Y. B. Kim, "Thermally-Induced Dopant Segregation Effects on the Space Charge Layer and Ionic Conductivity of Nanocrystalline Gadolinia-Doped Ceria", *Journal of The Electrochemical Society* 163 (2016) F919-F926.
- I. Chang, J. Bae, J. Park, S. Lee, M. Ban, T. Park, Y. H. Lee, H. H. Song, Y. B. Kim, S. W. Cha, "A thermally self-sustaining solid oxide fuel cell system at ultra-low operating temperature (319°C)", *Energy* 104 (2016) 107-113.
- J. S. Park, J. Bae, Y. B. Kim, "Performance stability of strontium-doped lanthanum cobaltite ceramic cathode synthesized by a wet chemical method", *Ceramics International* (2016) 12853-12859.
- G. Y. Cho, S. Noh, Y. H. Lee, S. Ji, S. Hong, B. Koo, J. Ahn, Y. B. Kim, S. W. Cha "Properties of nanostructured undoped ZrO₂ thin film electrolytes by plasma enhanced atomic layer deposition for thin film solid oxide fuel cells", *Journal of Vacuum Science & Technology A* 34 (2016) 01A151.
- D. Lee, J. Bae, S. Hong, H. Yang, Y. B. Kim, "Optimized antireflective silicon nanostructure arrays using nanosphere lithography", *Nanotechnology* 27 (2016) 215302.
- Y.H. Lee, G.Y. Cho, I.W. Chang, S.H. Ji, Y. B. Kim, S.W. Cha "Platinum-based nanocomposite electrodes for low-temperature solid oxide fuel cells with extended lifetime", *Journal of Power Sources* (2016) 289-296.

- S. Ji, J. Ha, T. Park, Y. Kim, B. Koo, Y. B. Kim, J. An, S. W. Cha "Substrate-dependent growth of nanothin film solid oxide fuel cells toward cost-effective nanostructuring", *International Journal of Precision Engineering and Manufacturing-Green Technology* (2016) 35-39.
- J.S. Park, Y. B. Kim, "Synthesis and characterization of nanoporous strontium-doped lanthanum cobaltite thin film using metal organic chemical solution deposition", *Thin Solid Films* (2015) 174-178.
- G.Y. Cho, Y.H. Lee, S.W. Hong, J. Bae, J. An, Y. B. Kim, S.W. Cha, "High-performance thin film solid oxide fuel cells with scandia-stabilized zirconia (ScSZ) thin film electrolyte", *Int. J. Hydrogen Energy* 40 (2015) 15704-15708.
- J. Bae, D. Lee, S. Hong, H. Yang, Y. B. Kim, "Three-dimensional hexagonal GDC interlayer for area enhancement of low-temperature solid oxide fuel cells", *Surf. Coat. Tech.* 279 (2015) 54-59.
- S. Kang, I. Chang, Y. B. Kim, S. W. Cha "Influence of a platinum functional layer on a Ni-Ce_{0.9}Gd_{0.1}O_{1.95} anode for thin-film solid oxide fuel cells", *J. Vac. Sci. Technol. A* 33 (2015) 05E120.
- J. An, J. Bae, S. Hong, B. Koo, Y. B. Kim, T. M. Gür, F. B. Prinz "Grain Boundary Blocking of Ionic Conductivity in Nanocrystalline Ytria-doped Ceria Thin Films", *Scripta Materialia* 104 (2015) 45-48.