

Curriculum Vitae

Jung-Kun Lee, Ph. D.

William Kepler Whiteford Professor
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A. Education

- 09/2000 Ph.D. in Materials Science & Engineering, Seoul National University, Korea
Dissertation: Investigation of the ferroelectric property of Pb-base oxides by controlling the domain configuration and the crystal structure
(Advisor: Professor Kug Sun Hong)
- 02/1996 M.S. in Inorganic Materials Engineering, Seoul National University, Korea
Dissertation: Morphotropic phase boundary and dielectric properties of $(\text{Na}_{1/2}\text{Bi}_{1/2})\text{TiO}_3$ - PbZrO_3 solid solutions
(Advisor: Prof. Kug Sun Hong)
- 02/1994 B.S. in Inorganic Materials Engineering, Seoul National University, Korea

B. Professional Experience

- 09/2018-present **Professor**, Department of Mechanical Engineering and Materials Science, University of Pittsburgh, USA
- 05/2022-present **Adjunct Professor**, Department of Materials Science and Engineering, Seoul National University, Korea
- 09/2013-08/2018 **Associate Professor**, Department of Mechanical Engineering and Materials Science, University of Pittsburgh, USA
- 03/2015-08/2020 **Adjunct Professor**, Department of Energy Science, Sungkyunkwan University, Korea
- 09/2007-08/2013 **Assistant Professor**, Department of Mechanical Engineering and Materials Science, University of Pittsburgh, USA
- 03/2013-02/2014 **Adjunct Professor**, Department of Materials Science and Engineering, Seoul National University (WCU-Program), Seoul National University, Korea
- 09/2007-08/2013 **Laboratory Affiliate**, Center for Integrated Nanotechnology, Los Alamos National Laboratory, USA
- 01/2005-08/2007 **Technical Staff Member**, Materials Science and Technology Division, Los Alamos National Laboratory, USA
- 01/2002-12/2004 **Director's Funded Post-doctor**, Materials Science and Technology Division, Los Alamos National Laboratory, USA
- 09/2000-12/2001 **Senior Researcher**, Research Institute of Advanced Materials, Seoul National University, Korea
- 03/1997-02/1998 **Teaching Assistant**, Department of Materials Science and Engineering, Seoul National University, Korea
- 03/1995-02/1996 **Student Researcher**, Materials Science and Engineering division, Korea Institute of Science and Technology (KIST), Korea

C. Awards/Honors

- 1) William Kepler Whiteford Professor, University of Pittsburgh (09/2020-present)

- 2) William Kepler Whiteford Faculty Fellow, University of Pittsburgh (09/2013-08/2020)
- 3) National Science Foundation (NSF) CAREER Award (08/2009)
- 4) Director's Funded Fellowship from Los Alamos National Laboratory, USA (01/2002).

C. Publications

C.1. Non-Refereed Publications

(i) Patents

- 1) J.K. Lee, G.S. Han, M.S. Choi, "Highly Stable Electronic Device Employing Hydrophobic Composite Coating Layer", US Patent 10,892,106.
- 2) J.K. Lee, I. Nettleship, R. Reed, "Apparatus and method for joining of carbide ceramics," US Patent 10,906,203.
- 3) J.K. Lee, G.S. Han, M.S. Choi, "Pervoskite Solar Cell Configurations", US patent filed (under review, 16/630568).
- 4) K. S. Hong, J. K. Lee, D. W. Kim, H. W. Jung, J. R. Kim, S. G. Kang, and D. K. Kwon, "Dielectric Ceramic Composition and Method for Manufacturing the Same," U. S. Patent 6,528,445 (2003).
- 5) K. S. Hong, J. K. Lee, D. W. Kim, H. S. Jung, H. B. Hong, J. Y. Lee, and S. J. Yoon, "Dielectric Ceramic Compositions and Method of Preparation Therefor," U. S. Patent 6,316,376 (2001).
- 6) K. S. Hong, H. J. Youn, S. Y. Cho, J. K. Lee, D. W. Kim, and D. Y. Kim "Low-temperature Cofired Dielectric Ceramic Composition," Japanese Patent 2000-44332 (2000).
- 7) K. S. Hong, S. Y. Cho, D. W. Kim, J. K. Lee, J. R. Kim, "Ceramic Dielectric Compositions for Phase Shifter," Korean Patent, 2001-0038006 (2001).
- 8) K. S. Hong, S. Y. Cho, D. W. Kim, H. S. Jung, J. K. Lee, J. Y. Kim, "Ceramic Compositions for Superhydrophilic Coating and Its Manufacturing Method," Korean Patent, 2001-0016252 (2001).
- 9) K. S. Hong, D. W. Kim, J. K. Lee, H. W. Jung, J. R. Kim, S. G. Kang, and D. K. Kwon, "Dielectric Ceramic Composition and Method for Manufacturing the Same," Korean Patent, 2000-68498 (2000).
- 10) K. S. Hong, D. W. Kim, J. K. Lee, H. S. Jung, H. B. Hong, J. Y. Lee, and S. J. Yoon, "Dielectric Ceramic Compositions and Method of Preparation Therefor," Korean Patent, 2000-68493 (2000).
- 11) K. S. Hong, H. J. Youn, S. Y. Cho, J. K. Lee, D. W. Kim, and D. Y. Kim, "Low-Temperature Cofired Dielectric Ceramic Composition," Korean Patent, 2000-009263 (2000).

C.2. Refereed Publications

(i) Books and Monographs

- 1) P. Fulay and J.-K. Lee, "Electronic, Magnetic, and Optical Properties of Materials" 2nd edition, CRC Press (published in 11/2016).

(ii) Edited Books and Chapters in Edited Books

- 1) J. K. Lee* and K. S. Hong, "Ferroic Phase Transition and Domain Engineering in $(\text{Na}_{1/2}\text{Bi}_{1/2})\text{TiO}_3$ based solid solution," in *Ferroelectric Single Crystals*, edited by Y. Yamashita, L. E. Cross and S. T. McKinstry, University Park, Pennsylvania (2004).

(iii) Refereed Journal Papers (total citation: 7989, h-index: 48, Google Scholar as of April/2023)

- After joining the University of Pittsburgh

- 1) S. Caliskan, L. Jiang, G. S. Han, J.K. Lee, "Panchromatic Coating of Sb Doped SnO_2 Nanowire Photoanode for Minimal Thermalization Loss," *Journal of Power Sources* (accepted).
- 2) Chuyuan Zheng, Jung-Kun Lee, Ian Nettleship, "Three-dimensional characterization of the pore structures in SiC formed by binder jet 3D printing, polymer infiltration and pyrolysis (PIP)" *J Eur Ceram Soc* (accepted).

- 3) Yulin Liu, S Lee, Y. Yin, M. Li, M. Cotlet, C.-Y. Nam, J.-K. Lee, “Near-Band-Edge Enhancement in Perovskite Solar Cells via Tunable Surface Plasmons,” *Advanced Optical Materials* 34, 22011160 (2022).
- 4) Ghazanfar Nazir, Seul-Yi Lee, Jong-Hoon Lee, Adeela Rehman, Jung-Kun Lee, Sang Il Seok, and Soo-Jin Park, “Stabilization of Perovskite Solar Cells: Recent Developments and Future Perspectives,” *Advanced Materials* 34, 2204380 (2022).
- 5) S. Lee, C. Kim, C. U. Kim, S. Bae, Y. Liu, Y. I. Noh, Z. Zhou, P. W. Leu, K. J. Choi, J. K. Lee “Improving light absorption in a perovskite/Si tandem solar cell via light scattering and UV-down shifting by a mixture of SiO₂ nanoparticles and phosphors,” *Advanced Functional Materials* 32, 2204328 (2022).
- 6) S. Caliskan, A. Wang, F. Qin, S.D. House and J.-K. Lee, “Molybdenum Carbide - Graphene Oxide Nanocomposites: Electrocatalyst Hydrogen Evolution Reaction,” *ACS Applied Nano Materials* 5, 3790-3798 (2022).
- 7) T. Yang, A. Wang, S. House, J. Yang, J.K. Lee, W. Saidi, “Computationally Guided Design to Accelerate Discovery of Doped β -Mo₂C Catalysts toward Hydrogen Evolution Reaction,” *ACS Catalysis* 12, 11791-11800 (2022).
- 8) M.V. Suraj, A. Talaat, B.C. Dodrill, Y. Wang, J.K. Lee, P.R. Ohodnicki Jr., “Magnetic Characterization of Self-Assembled Nanostructures in Cobalt Ferrites Using First-Order Reversal Curve (FORC) Analysis,” *AIP Advances* 12, 035031 (2022).
- 9) M. Duff, S. M. Bae, J.K. Lee, “Characterization of Carrier Transport Using a Bifacial Structure for Rational Design of p-n Junction PbS Solar Cells,” *J Power Sources* 518, 230742 (2022).
- 10) S. Lee, G. Han, J. Torres, M. Yun and J.-K. Lee, “Asymmetric Bipolar Resistive Switching of Halide Perovskite Film in Contact with TiO₂ Layer,” *ACS Applied Materials & Interfaces* 13(23), 27209-27216 (2021).
- 11) Basil J. Paudel, Dave Conover, Jung-Kun Lee, Albert C. To, “A Computational Framework for Modeling Distortion During Sintering of Binder Jet Printed Parts,” *Journal of Micromechanics and Molecular Physics* 6(4) 95-102 (2021).
- 12) J. Zhang, D. Song, J.-K. Lee, “Ferroelectric Properties of Anisotropic Grains of Cr doped Bi₅FeTi₃O₁₅ Thin Film,” *J. Am. Ceram. Soc.* 104(11), 5733-5739 (2021).
- 13) A. Talaat, M.V. Suraj, K. Byerly, A. Wang, Y. Wang, J.K. Lee, P.R. Ohodnicki, Jr., “Soft Magnetic Metal and Inorganic Oxide Nanocomposites for Power Applications,” *J. Alloys and Compounds* 870(25), 159500 (2021).
- 14) F. Qin, J. S. Park, A. Wang, S.K. Woo, J.-K. Lee, “(La,Sr)MnO₃-Ni Composites Composite for Solid Oxide Fuel Cell Interconnects: Effect of Ni Size on Microstructural and Electrical Properties,” *J Materials Sci* 56(31), 17721-17731 (2021).
- 15) S. Caliskan, H.S. Han, J.-K. Lee, “Enhancing Solar Water Splitting of Textured-BiVO₄ by Dual Effect of Plasmonic Silver Nanoshell: Plasmon Induced Light Absorption and Enhanced Hole Transport,” *ACS Applied Energy Materials* 3(12), 11886-11892 (2020).
- 16) J. Torres, Y. Liu, S. So, H. Yi, S. Park, J.-K. Lee, S. C. Lim, M. H. Yun, “Effect of surface modifications to single and multilayer graphene temperature coefficient of resistance,” *ACS Applied Materials & Interfaces* 12(43), 48890-48898 (2020).
- 17) L. Jiang, S. Caliskan, H.-S. Roh, F. Qin, and J.-K. Lee, “Pseudocapacitance of Core-shell MnO₂/NiO@SnO₂:Sb Nanowire: Effect of NiO Addition,” *Mater. Sci. & Eng. B* 260, 114637 (2020).
- 18) D. P. Song, J. Yang, J. X. Sun, L. -Y. Chen, Y. Q. Chu, Y. Wang, J. -K. Lee, “Controlling the crystallization of Nd-doped Bi₄Ti₃O₁₂ thin-films for lead-free energy storage capacitors,” *J. Appl. Phys.* 127, 224102 (2020).
- 19) Michael R. Ickes, Joshua McKinley, Jung-Kun Lee, Jean M. Smith, Andrew M. Ruminski and Michael A. Burke, “Irradiation-assisted Stress Corrosion Cracking of Type 347 and Type 316 Steels Irradiated in Commercial Pressurized Water Reactors,” *Journal of Nuclear Materials*, 536, 152182 (2020).
- 20) P.-S. Huang, F. Qin, Z. Poole, K. Chen, J.-K. Lee, “Role of Interface between Ag and ZnO in Electric Conductivity of Ag Nanoparticle Embedded ZnO,” *ACS Applied Interfaces & Materials*, 12, 4715 (2020).

- 21) S. Lee, H.S. Roh, G.S. Han and J.-K. Lee, "Controlled Oxidation of Ni for Stress-free Hole Transport Layer for Large Scale Perovskite Solar Cells," *Nano Research*, 12, 3089 (2019).
- 22) G. S. Han, S. Lee, J.-K. Lee, "Multi-Functional Transparent electrode for Reliable Flexible Perovskite Solar Cell," *J. Power Sources*, 435, 226768 (2019).
- 23) F. Qin, H.S. Roh, S Caliskan, S Lee, S.D. Kim, S.K. Woo, J.-K. Lee, "Enhancement of grain growth and electrical conductivity of $\text{La}_{0.8}\text{Sr}_{0.2}\text{MnO}_3$ ceramics by microwave irradiation," *Journal of the European Ceramic Society* 39 (5), 1854-1859 (2019).
- 24) H. S. Roh, S. Lee, S. Caliskan, C. Yoon, J.-K. Lee, "Luminescence and electric dipole in Eu^{3+} doped strontium phosphate: Effect of SiO_4 ," *Journal of Alloys and Compounds* 772, 573-578 (2019).
- 25) T.A Harriman, J.-K. Lee, G.Y. Sung, D.A. Lucca, "Photoluminescence of Cerium Doped Si Nanocrystals Embedded in Silicon Nitride Films," *physica status solidi (b)*, 1800706 (2019).
- 26) F. Yu, G.S. Han, J.S. Yoo, Y.J. Tu, H.-S. Roh and J.-K. Lee, "Electron Extraction Mechanism in Low Hysteresis Perovskite Solar Cells using Single Crystal TiO_2 Nanorods," *Solar Energy* 167, 251-257 (2018).
- 27) H.-S. Roh, S. Lee, F. Qin, S. Caliskan, C. Yoon, and J.-K. Lee, "Strong Red Light Emission of OH^- added $\text{Sr}_5(\text{PO}_4)_3\text{Cl}:\text{Eu}^{3+}$ phosphor," *ACS Applied Nano Materials* 1 (9), 4483-4490 (2018).
- 28) H.-S. Roh, G. S. Han, S. Lee, S. Kim, S. Choi, C. Yoon, J.-K. Lee, "New Down-Converter for UV-Stable Perovskite Solar Cells: Phosphor-in-Glass," *J. Power Sources*, 389, 135-139 (2018).
- 29) H. S. Han, I. S. Cho, S. Shin, D. H. Kim, I. J. Park, J. S. Kim, P.-S. Huang, J.-K. Lee, and X. Zheng, "Boosting the solar water oxidation performance of a BiVO_4 photoanode by crystallographic orientation control," *Energy Environ. Sci.* 11, 1299-1306 (2018).
- 30) G. S. Han, S. Lee, M. L. Duff, F. Qin, J.-K. Lee, "Highly Bendable Flexible Perovskite Solar Cells on a Nanoscale Surface Oxide Layer of Titanium Metal Plates," *ACS Applied Interfaces & Materials*, 10, 4697-4704 (2018).
- 31) J.S. Yoo, G.S. Han, S. Lee, M.C. Kim, M. Cho, H.S. Jung, and Jung-Kun Lee, "A Dual Function of High Contrast Hydrophobic-Hydrophilic Coating for the Enhanced Stability of Perovskite Solar Cells under Extremely Humid Environment," *Nano Research*, 10, 3885-3895 (2017).
- 32) S. A. Shojaee, T.A. Harriman, G. S. Han, J.-K. Lee, and D.A. Lucca, "Substrate Effects on Photoluminescence and Low Temperature Phase Transition of Methylammonium Lead Iodide Hybrid Perovskite Thin Films," *Applied Physics Letters*, 111, 023902 (2017).
- 33) Y.H. Son, Y. Jung, H.-S. Roh and J.K. Lee, "Enhanced Viscoelastic Property of Iron Oxide Nanoparticle Decorated Organoclay Fluid Under Magnetic Field," *Nano Convergence*, 9, 22 (2017).
- 34) P.-S. Huang, F. Qin, Z. Xiong, H.-W. Shim, T. Gao, P. Leu, J.-K. Lee, "Novel Carrier Doping Mechanism for Transparent Conductor: Electron Donation from Embedded Ag Nanoparticles to the Oxide Matrix," *ACS Applied Interfaces & Materials*, 9, 19973-19979 (2017).
- 35) G. S. Han, J.S. Yoo, F. Yu, M. L. Duff, B.K. Kang, J.-K. Lee, "Highly Stable Perovskite Solar Cells in Humid and Hot Environment," *J. Materials Chemistry A*, 5, 14733-14740 (2017).
- 36) G. S. Han, H.W. Shim, S. Lee, M. L. Duff, J.-K. Lee, "Low Temperature Modification of ZnO Nanoparticle Film for an Electron Transport Layer of Planar Perovskite Solar Cells", *ChemSusChem*, 4, 2425-2430 (2017).
- 37) J. Yu, J. Schuman, J.-K. Lee, S.G. Chang, J.H. Kim, K. Kim, "A light illumination enhancement device for photoacoustic imaging: in vivo animal study", *IEEE on Ultrasonics, Ferroelectrics and Frequency Control*, 64, 1205-1211 (2017).
- 38) H.S. Han, G.S. Han, J.S. Kim, D.H. Kim, J.S. Hong, I.S. Cho*, J.-K. Lee*, "Indium-Tin-Oxide (ITO) Nanowires array based CdSe/CdS/ TiO_2 1-D Heterojunction Photoelectrode for Enhanced Solar Hydrogen Production", *ACS Sustainable Chemistry & Engineering*, 4, 1161-1168 (2016).
- 39) Z. Xiong, F. Qin, P.-S. Huang, I. Nettlehip, J.-K. Lee*, "Effects of Synthesis Techniques on Crystallization and Optical Properties of Ag-Cu Bimetallic Nanoparticles," *JOM*, 68, 1163-1168 (2016).
- 40) T. Xu* and J.K. Lee*, "Functional Nanomaterials: Energy and Sensing," *JOM*, 68, 1143-1144 (2016).

- 41) B.S. Han, S. Caliskan, W. Sohn, M. Kim, J.-K. Lee, and H.W. Jang, "Room Temperature Deposition of Crystalline Nanoporous ZnO Nanostructures for Direct Use as Flexible DSSC Photoanode," *Nanoscale Research Letter*, 11, 221 (2016).
- 42) I.J. Park, D.H. Kim, W.M. Seong, B.S. Han, G.S. Han, H.S. Jung, M. Yang, W. Fan, S. Lee,* J.-K. Lee,* and K.S. Hong, "Observation of anatase nanograins crystallizing from anodic amorphous TiO₂ nanotubes," *CrystEngComm*, 17, 7346-7353 (2015).
- 43) S.H. Wee, P.S. Huang, J.K. Lee, A. Goyal, "Heteroepitaxial Cu₂O on single-crystal-like, metallic substrates: A potential route towards non-toxic, earth-abundant solar cells," *Scientific Reports* 5, 16272 (2015).
- 44) G.S. Han, Y.H. Song, Y.U. Jin, J.-W. Lee, N.-G. Park, B.K. Kang, J.-K. Lee, I.S. Cho, D.H. Yoon*, and H.S. Jung*, "Reduced graphene oxide/mesoporous TiO₂ nanocomposite based perovskite solar cells," *ACS Appl. Mater. Interfaces* 2015, 7, 23521–23526 (2015).
- 45) G.S. Han, H.S. Chung, D.H. Kim, B.J. Kim, J.W. Lee, N.-G. Park, I.S. Cho, J.-K. Lee, S. Lee*, and H.S. Jung*, "Epitaxial 1D Electron Transport Layers for High Performance Perovskite Solar Cells," *Nanoscale* 7, 15284-15290 (2015).
- 46) Y. Jung, B. Ding, S.-D. Kim, S.-K. Woo*, and J.-K. Lee*, "Molybdenum Carbide Nanoparticles Grown Under Microwave Irradiation and Their Application to Electrochemical Cells," *Science of Advanced Materials* 7, 762-768 (2015).
- 47) T. Gao, Z. Li, P.-S. Huang, G.J. Shenoy, D. Parobek, S. Tan, J.-K. Lee, H. Liu, and P. W. Leu*, "Hierarchical Graphene/Metal Grid Structures for Stable, Flexible Transparent Conductors," *ACS Nano* 9, 5440–5446 (2015).
- 48) M.M Barry, Y Jung, JK Lee, TX Phuoc, MK Chyu, "Fluid filtration and rheological properties of nanoparticle additive and intercalated clay hybrid bentonite drilling fluids," *Journal of Petroleum Science and Engineering* 127, 338-346 (2015).
- 49) J.K. Lee* and T.T. Xu*, "Recent Progress in Scalable Nanomanufacturing," *JOM* 67, 27-28 (2015).
- 50) T. Gao, P.-S. Huang, J.-K. Lee and P.W. Leu, "Hierarchical metal nanomesh/microgrid structures for high performance transparent electrodes," *RSC Advances* 5, 70713-70717 (2015).
- 51) M. Shayan, Y. Jung, P.-S. Huang, M. Moradi, A.Y. Plakseychuk, J.-K. Lee, R. Shankar, Y. Chun*, "Improved Osteoblast Response to UV-Irradiated PMMA/TiO₂ Nanocomposites with Controllable Wettability," *J. Mater. Sci.* 25, 2721-2730 (2014).
- 52) B. Ding, Y. Jung, D.H. Kim, W.M. Sung, S.-D. Kim, S.K. Woo*, and J.K. Lee*, "Rheological and Electrochemical Properties of Nanoclay Added Electrolyte for Dye Sensitized Solar Cells," *Electrochimica Acta.* 144, 275-281 (2014).
- 53) M.J. Yang, B. Ding, J.K. Lee*, "Surface Electrochemical Properties of Niobium doped Titanium Dioxide Nanorods and Their Effect on Carrier Collection Efficiency of Dye Sensitized Solar Cells," *Journal of Power Sources* 245, 301-307 (2014).
- 54) T. Gao, B. Wang, B. Ding, J.-K. Lee, P.W. Leu*, "Uniform and Ordered Copper Nanomeshes by Microsphere Lithography for Transparent Electrodes," *Nano Lett.* 14, pp 2105–2110 (2014).
- 55) B. Ding, T. Gao, Y. Wang, D.H. Waldeck, P.W. Leu, J.-K. Lee, "Synergistic effect of surface plasmonic particles in PbS/TiO₂ heterojunction solar cells," *Solar Energy Materials and Solar Cells* 128, 386-393 (2014).
- 56) B. Ding, Y. Wang, P.-S. Huang, D.H. Waldeck, J.-K. Lee*, "Depleted Bulk Heterojunctions in Thermally Annealed PbS Quantum Dot Solar Cells," *Journal of Physical Chemistry C* 118, 14749–14758 (2014).
- 57) P.-S. Huang, D.H. Kim, J.-K. Lee*, "Electron emission of Au nanoparticles embedded in ZnO for highly conductive oxide," *Applied Physics Letters* 104, 142102 (2014).
- 58) T. Gao, E. Stevens, J.-K. Lee, and P.W. Leu*, "Designing metal hemispheres on silicon ultrathin film solar cells for plasmonic light trapping," *Opt. Lett.* 39, 4647-4650 (2014).
- 59) T. Xu* and J.-K. Lee*, "Nanomaterials: Electrical, Magnetic, and Photonic Applications," *JOM* 66, 654 (2014).

- 60) H.H. Park, W.S. Seo, J.S. Kim, C Park, J.K. Lee, Nanomaterials for thermoelectrics, *J. Nanomaterials*, 263080 (2014).
- 61) J.S. Park*, J.K. Lee, "The effects of SiO₂ addition to the BaO-ZnO-B₂O₃ glass for the application to the dielectric layer in the Plasma display panel," *Physics and Chemistry of Glasses - European Journal of Glass Science and Technology Part B* 54, 133-136 (2013).
- 62) B. Ding, B.J. Lee, M.J. Yang, and J.K. Lee*, "Tunable Surface Plasmons of Dielectric Core-Metal Shell Particles for Dye Sensitized Solar Cells," *RSC Advances* 3, 9690-9697 (2013).
- 63) Y.S. Jung, E. Stevens, S.-D. Kim, S.-K. Woo, and J.K. Lee*, "Microstructure and Electrical Property of Shape and Size Controlled Molybdenum Particle Thick Films," *J. Mater. Sci.* 48, 3760-3768 (2013).
- 64) (Invited Perspective) H.S. Jung and J.K. Lee*, "Dye Sensitized Solar Cells for Economically Viable Photovoltaic Systems," *J. Phys. Chem. Lett.* 4, 1682-1693 (2013).
- 65) M.-H. Hong, C.-S. Park, S. Shin, H.H. Cho, W.-S. Seo, Y.S. Lim, J.-K. Lee, and Hyung-Ho Park, "Effect of Surfactant Concentration Variation on the Thermoelectric Properties of Mesoporous ZnO," *Journal of Nanomaterials* 2013, 2 (2013).
- 66) Min-Hee Hong, Chang-Sun Park, Won-Seon Seo, Young Soo Lim, Jung-Kun Lee, Hyung-Ho Park, "Thermoelectric properties of Al-doped mesoporous ZnO thin films," *Journal of Nanomaterials* 2013, 1 (2013).
- 67) Y.S. Jung, Y.H. Son, and J.K. Lee*, "3-D Assembly of Flower-like Iron Oxide Particles Under Microwave Irradiation and Their Application for Water Treatment," *RSC Advances* 2, 5877-5884 (2012).
- 68) Park J.S.*, Jung YS, Lee J.K., "Structural change in polar nanoregion in alkali niobate added Pb(Zn_{1/3}Nb_{2/3})_{0.95}Ti_{0.05}O₃ single crystal and its effect on ferroelectric properties," *J. Appl. Phys.* 112, 074109 (2012).
- 69) J.K. Lee*,* and M. Nastasi, "Ferroelectric Properties of Pb(Zr,Ti)O₃ Films Under Ion-Beam Induced Strain," *Journal of Applied Physics*. 112, 104111 (2012).
- 70) Y.H. Son§, J.K. Lee*, Y. Soong, D. Martello, and M.K. Chyu, "Heterogeneous zero valent iron-montmorillonite nanohybrid and their catalytic efficacy," *Appl. Clay Sci.* 62-63, 21-16 (2012).
- 71) S. Lee, J.-H. Lee, G. Han, J.-K. Lee and H.S. Jung*, "Mesoporous TiO₂ Nanowires as Bi-functional Materials for Dye-sensitized Solar Cells," *Electrochimica Acta* 74, 83-86 (2012).
- 72) M.J. Yang§, Z.F. Di, and J.-K. Lee*, "Facile Control of Ultraphobicity and Superhydrophilicity in TiO₂/Poly(methyl methacrylate) Composite Films," *Journal of Colloid and Interface Science* 368, 603 (2012).
- 73) J.H. Noh, H.S. Han, J.S. Kim, J.H. Park, S.B. Park, B. Ding, H.S. Jung, J.-K. Lee*, and K.S. Hong*, "Tin Doped Indium Oxide Core - TiO₂ Shell Nanowires on Stainless Steel Mesh for Flexible Photoelectrochemical Cells," *Appl. Phys. Lett.* 100, 084104 (2012).
- 74) J.Y. Yi and J.K. Lee*, "Stabilized Antiferroelectric Phase in Lanthanum Doped (Na_{1/2}Bi_{1/2})TiO₃," *J. Phys. D: Appl. Phys.* 44, 415302 (2011).
- 75) Y.S. Jung, Y.H. Son, J.K. Lee*, and M.K. Chyu, "Rheological Behavior of Clay-Nanoparticle Hybrid added Bentonite - Suspensions; the Specific Role of Hybrid Additives on the Gelation of Clay Based Fluids," *ACS Applied Materials and Interfaces*, 3, 3515-3522 (2011).
- 76) B.S. Kang*, L. Stan, I. Usov, J. K. Lee, T. A. Harriman, D. A. Lucca, R. F. DePaula, P. N. Arendt, M. Nastasi, J. L. MacManus-Driscoll, B. H. Park, and Q. X. Jia*, "Strain Mismatch Induced Tilted Heteroepitaxial (0001) Hexagonal ZnO Films on (001) Cubic Substrates," *Advanced Engineering Materials* 13, 1142-1145 (2011).
- 77) M.J. Yang, B. Ding, S.W. Lee, and J.K. Lee*, "Carrier Transport in Dye Sensitized Solar Cells Using Single Crystalline TiO₂ Nanorods Grown by Microwave Assisted Hydrothermal Reaction," *J. Phys. Chem. C* 115, 14534-14541 (2011).
- 78) D.K. Yim, I.-S. Cho, S.W. Lee, C.H. Kwak, D.H. Kim, J.K. Lee, and K.S. Hong,* "Synthesis and Characteristics of Tb-Doped Y₂SiO₅ Nanophosphors and Luminescent Layer for Enhanced Photovoltaic Cell," *J. Nanosci. Nanotechnol.* 11, 8748-8753 (2011).
- 79) J.K. Lee* and M.J. Yang, "Progress in Light Harvesting and Charge Injection of Dye-Sensitized Solar

- Cells,” (invited review article) *Materials Science and Engineering: B* 176, 1142-1160 (2011).
- 80) B. Ding, B.J. Lee, M. Yang, H.S. Jung, and J.-K. Lee*, “Surface-Plasmon Assisted Energy Conversion in Dye Sensitized Solar Cells,” *Advanced Energy Materials* 1, 415-421 (2011).
 - 81) G. Atthipalli, R. Epur, P.H. Jampani, W. Wang, P. Kumta, B. Allen, Y. Tang, A. Star, M. Yang§, J.K. Lee, and J.L. Gray*, “Nickel Catalyst-Assisted Vertical Growth of Dense Carbon Nanotube Forests on Bulk Copper,” *J. Phys. Chem. C* 115, 3534–3538 (2011).
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