

Sang Ho Oh, Ph.D.

PRESENT AFFILIATION

Professor
Department of Energy Engineering
Korea Institute of Energy Technology

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PROFESSIONAL PREPARATION

PhD in Materials Science (Mar. 1998 – Feb. 2002)

POSTECH, Pohang, Korea

Dissertation: "Interfacial Structure Analysis of Perovskite SrRuO₃ Thin Film Growth by Transmission Electron Microscopy"

Advisor: Prof. Chan-Gyung Park

MS in Materials Science (Mar. 1996 - Feb. 1998)

POSTECH, Pohang, Korea

Thesis: "Thermal Stability of RuO₂ and RuO₂/Ru Thin Films Annealed at High Temperature in Oxygen Temperature"

Advisor: Prof. Chan-Gyung Park

BS in Materials Science (Mar. 1992 - Feb. 1996)

Han Yang University, Seoul, Korea

PAST APPOINTMENTS

Professor (March 2019 – February 2022)

Department of Energy Science, Sungkyunkwan University, Suwon, Korea

Associate Professor (January 2016 – February 2019)

Department of Energy Science, Sungkyunkwan University, Suwon, Korea

Associate Professor (March 2013 – December 2015)

Department of Materials Science & Engineering, Pohang University of Science and Technology (POSTECH), Pohang, Korea

Assistant Professor (Jul. 2009 – Feb. 2013)

Department of Materials Science & Engineering, Pohang University of Science and

Technology (POSTECH), Pohang, Korea

Senior Researcher (Nov. 2007 – Jul. 2009)

Division of Electron Microscopic Research, Korea Basic Science Institute, Daejeon, Korea

Researcher (June 2006 – Oct. 2007)

Electron Microscopy Group, Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, TN, USA

Advisor: Prof. Stephan J. Pennycook

Researcher (Sep. 2005 – April 2006)

Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria

Advisor: Prof. Gerhard Dehm

Visiting Scientist (Mar. 2005 – Aug. 2005)

Max-Planck-Institut für Metallforschung, Stuttgart, Germany

Advisor: Prof. Manfred Rühle

Senior Researcher (Dec. 2003 – Mar. 2005)

Materials Evaluation Group, Korea Research Institute of Standards and Science (KRISS), Daejeon, Korea

Postdoctoral Researcher (May 2002 – Nov. 2003)

Max-Planck-Institut für Metallforschung, Stuttgart, Germany

Advisor: Prof. Manfred Rühle

RESEARCH INTERESTS

- Fundamental materials science on phase transformations of nanomaterials through time-resolved atomic-scale imaging and quantitative analysis
- In-situ (operando) electron microscopy research of size (and/or dimension, surface) effects on materials' properties at working environments
- Beyond the linear elastic theory – Distribution of lattice misfit strain in semiconductor, oxide and nitride heterostructures or nanostructures and associated emergent strain-induced phenomena
- Dislocation-based plasticity of micron-to-nanometer sized materials
- Unique mechanical properties (toughening mechanisms) of biological materials with nano-composite structure and/or hierarchical structures
- Atomic and electronic structures, dynamic atomic motions and emergent properties at interfaces and surfaces and their imaging through advanced electron microscopy techniques (electron holography, differential phase contrast and ptychography)

HONOR AND AWARDS

- Daejeon Metropolitan Mayor's Prize for Excellent Scientist 2009

- 21st Samsung Human Tech Paper Award Bronze prize
- 22nd Samsung Human Tech Paper Award Silver prize
- 15th Samsung Electromechanics Paper Award Gold prize
- 26th Samsung Human Tech Paper Award Bronze prize

PROFESSIONAL ACTIVITIES

- Symposium organizer of “Surfaces, interfaces and grain boundaries” in 9th Asia Pacific Microscopy Conference (APMC9), Jeju, Korea, November 3-7, 2008.
- Organizing committee and symposium organizer of "5th Congress of the International Union of Microbeam Analysis Society" (IUMAS5), Seoul, Korea, May 22-27, 2011.
- Symposium organizer of “Nanomechanical Testing in Materials Research and Development”, Lanzarote, Spain, October 9-14, 2011.
- Symposium organizer of 2015 MRS Fall Meeting & Exhibition, “Symposium VV: In situ study of synthesis and transformation of materials”
- Symposium organizer of 2016 MRS Fall Meeting & Exhibition, “Symposium: Cyclic Deformation and Fracture at the Nanoscale”
- Symposium organizer of 2019 MRS Fall Meeting & Exhibition, “Symposium: In-situ/operando studies of dynamic processes in ferroelectric, magnetic and multiferroic materials”
- Symposium organizer of 2021 MRS Spring Meeting & Exhibition, “Symposium: In-situ mechanical testing of materials at small length scales, modelling and data analysis”
- Applied Microscopy, Editorial board
- Nano Convergence, Editorial board
- MRS Advances, Editor

PUBLICATIONS

- Book Chapter

1. S. J. Pennycook, M. Varela, M. F. Chisholm, A. Y. Borisevich, A. R. Lupini, K. van Benthem, M. P. Oxley, W. Luo, J. M. McBride, S. J. Rosenthal, S. H. Oh, D. L. Sales, S. I. Molina, K. Sohlberg and S. T. Pantelides, “Scanning Transmission Electron Microscopy of Nanostructures”, in *Frontiers in Nanoscience and Nanotechnology*, Oxford University Press.

- Journal Paper

2. S. H. Oh, C. G. Park and H. K. Baik, “Thermal stability of RuO₂ thin film annealed at high temperature in oxygen atmosphere”, *Kor. J. Mat. Res.* **8**, 1090 (1998).
3. Sang Ho Oh*, Chan-Gyung Park, and Chanro Park, “Thermal stability of RuO₂/Ru bilayer thin film in oxygen atmosphere”, *Thin Solid Films* **359**, 118 (2000).
4. Sang Ho Oh* and Chan-Gyung Park, “Domain structure and magnetic properties of epitaxial SrRuO₃ films grown on SrTiO₃ (100) substrates by ion beam sputtering”, *J. Kor. Phys. Soc.* **37**, 961 (2000).
5. Gi Bum Kim, Joon Seop Kwak, Hong Koo Baik, Sung Man Lee, Sang Ho Oh, and Chan-

- Gyung Park, "Reaction of Co and capping layers and its effect on CoSi_2 formation on Si/SiO_x/Co system", *Appl. Phys. Lett.* **77**, 1443 (2000).
6. J. H. Yoo, S. W. Nam, D. H. Ko, S. H. Oh, and C. G. Park, "A study on the microstructures and electrical properties of ZrO₂ thin film on Si (100)", *J. Kor. Vac. Soc.* **9**, 341 (2000).
 7. S. K. Kang, D. H. Ko, S. H. Oh, C. G. Park, K. C. Lee, D. Y. Yang, T. H. Ahn, and M. S. Joo, "Study on the oxidation behavior of poly Si_{1-x}Ge_x films", *J. Kor. Vac. Soc.* **9**, 346 (2000).
 8. Sang Ho Oh* and Chan-Gyung Park, "Growth behavior and defects in conductive SrRuO₃ thin films grown on a Si (100) substrate by sputtering", *J. Mat. Res.* **16**, 1998 (2001).
 9. Sang Ho Oh* and Chan-Gyung Park, "Nanoscale characterization of interfacial reactions in SrRuO₃ thin film on Si substrate", *Surf. Interface Anal.* **31**, 796 (2001).
 10. Deok-Hyung Lee, Dae-Hong Ko, Ja-Hum Ku, Siyoung Choi, Kazuyuki Fujihara, Ho-Kyu Kang, Sang Ho Oh, Chan-Gyung Park, and Hoo-Jeong Lee, "Formation of high-temperature stable Co-silicide from Co_{0.92}Ta_{0.08}/Si system", *Jpn. J. Appl. Phys. B* **40**, 2712 (2001).
 11. S.-K. Kang, and D.-H. Ko, K. C. Lee, T. W. Lee, Y. H. Lee, T. H. Ahn, I. S. Yeo, S. H. Oh, and C. G. Park, "Wet oxidation behavior of polycrystalline Si_{1-x}Ge_x films", *J. Vac. Sci. Technol. A* **19**, 1617 (2001).
 12. Chung Yi, Hyo Uk Kim, Shi Woo Rhee, Sang Ho Oh, and Chan-Gyung Park, "Improvement of the SiO₂/Si interface characteristics by two-step deposition with intermediate plasma treatment using O₂/He gas", *J. Vac. Sci. Technol. B* **19**, 2067 (2001).
 13. S. Yi, W. T. Kim, D. H. Kim, S. H. Oh, and C. G. Park, "Development of nanocrystals in an amorphous Zr₄₇Ni₃₀Ti₂₃", *J. Mater. Sci.* **36**, 5101 (2001).
 14. J. H. Suh, S. H. Oh, and C. G. Park, "Effects of grain orientation on the remanent polarization and leakage current characteristics of BLT (Bi_{3.25}La_{0.75}Ti₃O₁₂) thin film capacitors", *J. Kor. Inst. Met. & Mater.* **39**, 1303 (2001).
 15. Eun Hwa Hong, Kun-Hong Lee, Sang Ho Oh, and Chan-Gyung Park, "In-situ synthesis of carbon nanotubes on organic polymer substrates at atmospheric pressure", *Adv. Mater.* **14**, 676 (2002).
 16. Won Il Park, Suk Woo Jung, Gyu-Chul Yi, Sang Ho Oh, Chan Gyung Park, Miyoung Kim, "Metal-ZnO heterostructure nanorods with an abrupt interface", *Jpn. J. Appl. Phys. A* **41**, L1206 (2002).
 17. Soo-Hwan Jeong, Ok-Joo Lee, Kun-Hong Lee, Sang Ho Oh, and Chan-Gyung Park, "Preparation of aligned carbon nanotubes with prescribed dimensions: Templates synthesis and sonication and cutting approach", *Chem. Mater.* **14**, 1859 (2002).
 18. Soo-Hwan Jeong, Ok-Joo Lee, Kun-Hong Lee, Sang Ho Oh, and Chan-Gyung Park, "Packing density control of aligned carbon nanotubes", *Chem. Mater.* **14**, 4003 (2002).
 19. Ki Hong Kim, Chang Min Jeon, Sang Ho Oh, Chan Gyung Park, "Microstructural analysis of Au/Ni/Al/Ti/Ta ohmic contact on AlGaIn/GaN heterostructure", *Phys. stat. sol. (c)* **0**, 223 (2002).
 20. Sang Ho Oh* and Chan-Gyung Park, "Microstructural accommodation of excess Ru in epitaxial SrRuO₃ films", *Phil. Mag.* **83**, 1307 (2003).
 21. Gi Bum Kim, Do-Joon Yoo, Hong Koo Baik, Jae-Min Myoung, Sung Man Lee, Sang Ho Oh, Chan Gyung Park, "Improved thermal stability of Ni silicide on Si (100) through reactive deposition of Ni", *J. Vac. Sci. Technol. B* **21**, 319 (2003).

22. Eun Hwa Hong, Kun-Hong Lee, Sang Ho Oh, and Chan-Gyung Park, "Synthesis of carbon nanotubes using microwave radiation", *Adv. Funct. Mater.* **13**, 961 (2003).
23. Sang Ho Oh* and Chan-Gyung Park, "Misfit strain relaxation by dislocations in SrRuO₃/SrTiO₃ (001) heteroepitaxy", *J. Appl. Phys.* **95**, 4691 (2004).
24. Ju Hyung Suh, Sang Ho Oh, Hyung Seok Kim, Se-Young Choi, Chan Gyung Park, "Effects of neutralizers on the crystal orientation of YSZ films grown by using ion beam sputtering", *Vacuum* **74**, 423 (2004).
25. Hwack Joo Lee, Jin Ok Son, Sang Ho Oh, Yang Koo Cho, Sahn Nahm, "Microstructural changes in (1-x)Nd_{2/3}TiO₃-xNd AlO₃ System", *Jpn. J. Appl. Phys. A* **43**, 7587-7591 (2004).
26. Hwack Joo Lee, Hyun Min Park, Sang Ho Oh, Yang Koo Cho, Jin Ok Son, Sahn Nahm, "Microstructures in complex perovskite Li_{1/2}Ln_{1/2}TiO₃ (Ln = Pr, Nd, Sm)", *Jpn. J. Appl. Phys. A* **43**, 7592-7595 (2004).
27. M. S. Bae, S. H. Oh, Y. K. Cho, H. J. Lee, "A study on the stability of the accelerating voltages in scanning electron microscopy", *Kor. J. Electron Microscopy* **34**, 51 (2004).
28. Ki Hong Kim, Chan Min Jeon, Sang Ho Oh, Jong-Lam Lee, Chan Gyung Park, Jung Hee Lee, Kyu Seok Lee, Yang Mo Koo, "Investigation of Ta/Ti/Al/Ni/Au ohmic contact to AlGaN/GaN heterostructure field-effect transistor", *J. Vac. Sci. Technol. B* **23**, 322 (2005).
29. G. Dehm, H. Edongué, T. Wagner, S. H. Oh, E. Arzt, "Obtaining different orientation relationships for Cu films grown on (0001) α-Al₂O₃ substrate by magnetron sputtering", *Z. Metallkd.* **96**, 249 (2005).
30. Sang Ho Oh, Yaron Kauffmann, Christina Scheu, Wayne D. Kaplan, Manfred Rühle, "Ordered liquid aluminum at the interface with sapphire", *Science* **310**, 661 (2005).
31. Sang Ho Oh*, Christina Scheu, Thomas Wagner, Elena Tchernychova, Manfred Rühle, "Epitaxy and bonding of Cu films on oxygen terminated α-Al₂O₃ (0001) surfaces", *Acta Mater.* **54**, 2685 (2006).
32. Sang Ho Oh*, Chan-Gyung Park, "Surface evolution of strained SrRuO₃ films deposited at various temperatures on SrTiO₃ (001) substrates", *J. Mat. Res.* **21**, 1550 (2006).
33. C. Scheu, M. Gao, S. H. Oh, G. Dehm, S. Klein, A. P. Tomsia, M. Rühle, "Bonding at copper-alumina interfaces established by different surface treatment: a critical review", *J. Mat. Sic.* **41**, 5161 (2006).
34. C. Scheu, J. Liu, S. H. Oh, D. Brunner, M. Rühle, "Interface structure and strain development during compression test of Al₂O₃/Nb/Al₂O₃ tricrystals", *J. Mat. Sic.* **41**, 7798 (2006).
35. Sang Ho Oh*, Christina Scheu, Manfred Rühle, "In-situ HRTEM of alumina-aluminum solid-liquid interfaces, *Kor. J. Electron Microscopy Special issue* **1**, 19 (2006).
36. Sang Ho Oh*, M. Legros, D. Kiener, P. Gruber, G. Dehm, "In-situ TEM straining of single crystal Au films on polyimide: Change of deformation mechanisms at the nanoscale", *Acta Mater.* **55**, 5558 (2007).
37. Sang Ho Oh*, J. H. Suh, C. G. Park "Defects in Strained Epitaxial SrRuO₃ Films on SrTiO₃ Substrates", *Materials Transactions* **48**, 2556 (2007).
38. Sang Ho Oh*, Christina Scheu, Thomas Wagner, Manfred Rühle, "Control of bonding and epitaxy of copper/sapphire interface" *Appl. Phys. Lett.* **91**, 141912 (2007).
39. G. Dehm, S. H. Oh, P. Gruber, M. Legros, F. D. Fischer, "Strain Compensation by Twinning in Au Thin Films: Experiment and Model", *Acta Mater.* **55**, 6659 (2007).
40. Sang Ho Oh*, M. Legros, D. Kiener, P. Gruber, G. Dehm, "Size-Induced Transition from

- Perfect to Partial Dislocation Plasticity in Single Crystal Au Films on Polyimide”, *Microscopy and Microanalysis* **13**, 278 (2007).
41. Sang Ho Oh*, Klaus van Benthem, Sergio I. Molina, Albina Y. Borisevich, Weidong Luo, Peter Werner, Nikolai D. Zakharov, Dhananjay Kumar, Sokrates T. Pantelides, Stephen J. Pennycook, “Point Defect Configurations of Supersaturated Au Atoms inside Si Nanowires”, *Nano Letters* **8**, 1016 (2008).
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 44. Jeremiah T. Abiade, Sang Ho Oh, Dhananjay Kumar, Maria Varela, Stephen Pennycook, Haizhong Guo, Arunava Gupta, Jagannathan Sankar, “The effect of matrix and substrate on the coercivity and blocking temperature of self-assembled Ni nanoparticles”, *J. Appl. Phys.* **104**, 073910 (2008).
 45. Dhananjay Kumar, Sang Ho Oh, Stephen J. Pennycook, A. K. Majumdar, “Scaling Exponent within the Side-jump Mechanism of Hall Effect Size Dependence in Ni Nanocrystals” *Appl. Phys. Lett.* **93**, 133105 (2008).
 46. R. Das, A. Gupta, D. Kumar, S. H. Oh, S. J. Pennycook, A. F. Hebard, “Dipolar interactions and their influence on the critical single domain grain size of Ni in layered Ni/Al₂O₃ composites”, *J. Phys.: Condens. Matter* **20**, 385213 (2008).
 47. Talisha Haywood, Sang Ho Oh, Abebe Kebede, Devdas M. Pai, Jag Sankar, David K. Christen, Stephen J. Pennycook, Dhananjay Kumar, “Structural and flux-pinning properties of laser ablated YBa₂Cu₃O_{7-δ} thin films: Effects of self-assembled CeO₂ nanodots on LaAlO₃ substrates”, *Physica C* **468**, 2313 (2008).
 48. Sang Ho Oh*, Marc Legros, Daniel Kiener, Gerhard Dehm, “In situ Observation of Dislocation Nucleation and Escape in a Submicron Single-Crystal Al Wire”, *Nature Materials* **8**, 95-100 (2009).
 49. S. J. Pennycook, M. F. Chisholm, A. R. Lupini, M. Varela, A. Y. Borisevich, M. P. Oxley, W. D. Luo, K. van Benthem, S.-H. Oh, D. L. Sales, S. I. Molina, J. García-Barriocanal, C. Leon, J. Santamaría, S. N. Rashkeev and S. T. Pantelides, “Aberration-corrected scanning transmission electron microscopy: from atomic imaging and analysis to solving energy problems”, *Phil. Trans. R. Soc. A* **367**, 3709-3733 (2009).
 50. Sang Ho Oh*, Youn-Joong Kim, Hwang Su Kim, “Experiment of Usefulness of IWFR Analysis for High Voltage HRTEM Images with A Series of Defocus Steps Obtained from A Relatively Thick Crystal”, *Applied Electron Microscopy* **38**, 363 (2009).
 51. Sang Ho Oh*, Joo-Hyung Choi, Kyung Song, Jong-Man Jeung, Jin-Gyu Kim, In Keun Yu Suk Jae Yoo, Young-Min Kim, “Cross-sectional TEM Specimen Preparation of GaN-based Thin Film Materials Using Alumina Dummy Filler”, *Applied Electron Microscopy* **39**, 277-281 (2009).
 52. Young-Min Kim, Jin-Gyu Kim, Yang-Soo Kim, Sang Ho Oh*, Youn-Joong Kim, “Practical Issues on the In-situ Heating Experiments in Transmission Electron Microscope” *Applied Microscopy* **38**, 383 (2009).
 53. Jin-Gyu Kim, Young-Min Kim, Youn-Joong Kim, Sang-Hee Lee, Kimin Hong, Sang Ho Oh*, “Estimation of Electron Dose Rate using CCD Camera”, *Applied Microscopy* **39**, 79 (2009).
 54. A. A. Taylor, S. H. Oh, G. Dehm, “Microplasticity phenomena in thermomechanically

- strained nickel thin films”, *J. Mat. Sic.* **45**, 3874 (2010).
55. Sang Ho Oh*, Matthew F. Chisholm, Yaron Kauffman, Wayne D. Kaplan, Weidong Luo, Manfred Ruehle, Christina Scheu, “Oscillatory Mass Transport in Vapor-Liquid-Solid Growth of Sapphire Nanowires”, *Science* **330**, 489 (2010).
 56. Junho In, Youngdong Yoo, Jin-Gyu Kim, Kwanyong Seo, Hyunju Kim, Hyotchel Ihee, Sang Ho Oh*, Bongsoo Kim*, “In-situ TEM Observation of Heterogeneous Phase Transition of a Constrained Single-Crystalline Ag₂Te Nanowire”, *Nano Letters* **10**, 4501 (2010).
 57. Jin-Gyu Kim, Sang Ho Oh, Kyung Song, Seung Jo Yoo, Young-Min Kim, “VirtualDub as a Useful Program for Vide Recording in Real-time TEM Analysis”, *Applied Microscopy* **40**, 47 (2010).
 58. S. J. Pennycook, K. van Benthem, A. G. Marinopoulos, Sang Ho Oh, S. I. Molina, A. Y. Borisevich, W. Luo, S. T. Pantelides, “Seeing inside materials by aberration-corrected electron microscopy”, *International Journal of Nanotechnology* **8**, 935-947 (2011).
 59. Y. Kauffman, S. H. Oh, C. T. Koch, A. Hashibon, C. Scheu, M. Ruehle, W. D. Kaplan, “Quantitative Analysis of Layering and In-Plane Structural Ordering at an Alumina-Aluminum Solid-Liquid Interface”, *Acta Mater.* **59**, 4378 (2011).
 60. Sun-Jung Byun, Hyunseob Lim, Ga-Young Shin, Tae-Hee Han, Sang Ho Oh, Jon-Hyun Ahn, Hee Cheul Choi, Tae-Woo Lee, “Graphene Converted from Polymers”, *J. Phys. Chem. Lett.* **2**, 493-497 (2011).
 61. Sang Ho Oh*, Christian Rentenberger, Jiaseong Im, Christian Motz, Daniel Kiener, Hans-Peter Karnthaler, Gerhard Dehm, “Dislocation Plasticity of Al Film on Polyimide Investigated by Cross-sectional In-situ TEM”, *Scripta Mater.* **65**, 456 (2011).
 62. Kyung Song, Ga-Young Shin, Jong Kyu Kim, Sang Ho Oh*, “Image Processing of Defocus Series TEM Images for Extracting Reliable Phase Information”, *Applied Microscopy* **41**, 215-222 (2011).
 63. Sung-Yoon Chung, Young-Min Kim, Seongsu Lee, Sang Ho Oh, Jin-Gyu Kim, Si-Young Choi, Youn-Joong Kim, Suk-Joong L. Kang, “Cation disordering by rapid crystal growth in olivine-phosphate nanocrystals”, *Nano Letters* **12**, 3068 (2012).
 64. Kyun Taek Cho, Kyung Song, Sang Ho Oh, Young-Kook Lee, Kyoung Mook Lim, Won Beom Lee, “Surface hardening of aluminum alloy by shot peening treatment with Zn based ball”, *Mater. Sci. Eng. A* **543**, 44 (2012).
 65. Jun Hyun Han, Kyung Song, Shankar Radhakrishnan, Sang Ho Oh, Chung Hoon Lee, “A Suspended Nanogap Formed by Field-induced Atomically Sharp Tips”, *Appl. Phys. Lett.* **101**, 183106 (2012).
 66. Sunyong Hwang, Hyunah Kwon, Sameer Chhajed, Ji Won Byon, Jeong Min Baik, Jiaseong Im, Sang Ho Oh, Ho Won Jang, Seok Jin Yoon and Jong Kyu Kim, “Near Single Crystalline TiO₂ Nanohelices Array: Enhanced Gas Sensing Performances and its Application as Monolithically Integrated Electronic Noses”, *Analyst* **138**, 443 (2013).
 67. Kyung Song, Ga-Young Shin, Jong Kyu Kim, Sang Ho Oh*, Christoph T. Koch, “Strain mapping of LED devices by dark-field inline electron holography: Comparison between deterministic and iterative phase retrieval approaches”, *Ultramicroscopy* **127**, 119 (2013).
 68. Jiwon Jeong, Jiaseong Im, Kyung Song, Minhyuk Kwon, Shae Kwang Kim, Youn-Bae Kang, Sang Ho Oh*, “TEM and Thermodynamic Studies of CaO-added AZ31 Mg Alloys”, *Acta Mater.* **61**, 3267 (2013).
 69. Ara Jo, Gil Ho Gu, Hong Chul Moon, Sung Hyun Han, Sang Ho Oh, Chan Gyung Park, and Jin Kon Kim, “In-situ TEM observation of phase transition of the nanoscopic

- patterns on baroplastic block copolymer film during nanoindentation”, *Nanoscale* **5**, 4351 (2013).
70. Ja Kyung Lee, Ga-Young Shin, Kyung Song, Woo Seok Choi, Yoon Ah Shin, Seong Young Park, Jason Britson, Ye Cao, Long-Qing Chen, Ho Nyung Lee, Sang Ho Oh*, “Direct Observation of Asymmetric Domain Wall Motion in A Ferroelectric Capacitor”, *Acta Mater.* **61**, 6765 (2013).
 71. Son, S. K., Jeon, S. J., Oh, J. W., Kim, W., Kim, H. J., Lee, J. H., Woo, S. H., Do, G. S., Lee, S. Y., Kyungjoon Baek and Sang Ho Oh*, “In-situ characterization of switching mechanisms in phase change random access memory (PRAM) using transmission electron microscopy (TEM)”, *Proceedings from the 39th International Symposium for Testing and Failure Analysis (ISTFA)*, 236-238 (2013).
 72. Kyung Song, Sang Ho Oh*, “나노재료의 격자 변형 분석”, *Ceramist* **16**, 27 (2013).
 73. Kyun Yaek Cho, Kyung Song, Sang Ho Oh, Young-Kook Lee, and Won Beom Lee, “Surface hardening of shot peened H13 steel by enhanced nitrogen diffusion”, *Surf. Coatings Tech.* **232**, 912-919 (2013).
 74. Subin Lee, Jiseong Im, Youngdong Yoo, Erik Bitzek, Daniel Kiener, Bongsoo Kim, Sang Ho Oh*, “Reversible cyclic deformation mechanism of Au nanowires by twinning-detwinning transition as evidenced from in-situ TEM”, *Nature Communications* **5**, 3033 (2014).
 75. Hyunah Kwon, Juyoung Ham, Dong Yeong Kim, Seung Jae Oh, Subin Lee, Sang Ho Oh, E. Fred Schubert, Kyung-Geun Lim, Tae-Woo Lee, Sungjun Kim, Jong-Lam Lee, Jong Kyu Kim, “Three-Dimensional nanostructured Indium-Tin-Oxide electrodes for enhanced performance of bulk heterojunction organic solar cells”, *Adv. Energy Mater.* **4** 1301566 (2014).
 76. Fatemeh Sadat Torknik, Amir Maghsoudipour, Mansoor Keyanpour-Rad, Gyeong Man Choi, Sang Ho Oh, Ga-Young Shin, “Microstructural refinement of Ni/Ce_{0.8}Gd_{0.2}O₂- δ anodes for low-temperature solid oxide fuel cell by wet infiltration loading of PdCl₂”, *Ceramics International* **40**, 12299-12312 (2014).
 77. Byounggab Lee, Taekyung Lee, Yongmoon Lee, Dong Jun Lee, Jiwon Jeong, Junhan Yuh, Sang Ho Oh, Hyoung Seop Kim, Chong Soo Lee, “Space-Holder Effect on Designing Pore Structure and Determining Mechanical Properties in Porous Titanium”, *Materials and Design* **57**, 712-718 (2014).
 78. Seung Hee Lee, Ho Jin, Dong-Yeong Kim, Kyung Song, Sang Ho Oh, Sungjee Kim, E. Fred Schubert, Jong Kyu Kim, “Enhanced power conversion efficiency of quantum dot sensitized solar cells with near single-crystalline TiO₂ nanohelices used as photoanodes”, *Optics Express* **22**, A867-A879 (2014).
 79. Youn-Bae Kang, Jiwon Jeong, Sang Ho Oh*, “Critical evaluation and thermodynamic optimization of Mg-Ga system and effect of low pressure on phase equilibria”, *CALPHAD* **46**, 168-175 (2014).
 80. Kyun Taek Cho, Kyung Song, Sang Ho Oh, Yong-Kook Lee, Won Beom Lee, “Enhanced surface hardening of AISI D2 steel by atomic attrition during ion nitriding”, *Surf. Coatings Tech.* **251**, 115-121 (2014).
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Communications **5**, 4775 (2014).

83. Kyung Song, Christoph T. Koch, Dong-Yeoung Kim, Jong Kyu Kim, Woo Young Jeong, Chan Gyung Park, Ye Cao, Tiannan Yang, Long-Qing Chen and Sang Ho Oh*, “Quantitative strain and charge density mapping of InGaN/GaN multi-quantum well structure using inline electron holography”, *Adv. Materials Interfaces*. **2**, 1400281 (2014) [Back cover].
84. Byung Hoon Jo, Jeong Hyun Seo, Kyungjoon Baek, Yoo Seong Choi, Seung Pil Pack, Sang Ho Oh, Hyung Joon Cha, “Bioinspired silica nanocomposite with auto-encapsulated carbonic anhydrase as a robust biocatalyst for CO₂ sequestration”, *ACS Catalysis* **4**, 4332-4340 (2014).
85. Dong Jun Lee, Jai Myun Jung, Marat I. Latypov, Byounggab Lee, Jiwon Jeong, Sang Ho Oh, Chong Soo Lee, Hyoung Seop Kim, “Three-dimensional real structure-based finite element analysis of mechanical behavior for porous titanium manufactured by a space holder method”, *Computational Materials Science* **100**, 2-7 (2015).
86. Taekyung Lee, Kyung-Tae Park, Dong Jun Lee, Jiwon Jeong, Sang Ho Oh, Hyoung Seop Kim, Chan Hee Park, Chong Soo Lee, “Microstructural evolution and strain-hardening behavior of multi-pass caliber-rolled Ti-13Nb-13Zr”, *Materials Science and Engineering A* **648**, 359-366 (2015).
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