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Education

B.S. in Physics, Kyungpook National University, Daegu, Korea (Graduation in Feb., 1989)
Ph.D. in Physics, University of Missouri-Columbia (Graduation in Dec., 1999)

Academic Experiences

1994. June – 1999. Dec., Research Assistant in Department of Physics at University of Missouri-Columbia,
1999. Dec. – 2001. Dec., Research associate in Department of Physics at University of Washington
2002. Jan. – 2003. Aug., Postdoctoral physicist in Chemical Science Division at Lawrence Berkeley National Laboratory
2011. Feb. – 2012. Feb., Visiting scholar at X-ray Science Division of APS
2013. July – 2013 Dec., Visiting scholar at X-ray Science Division of APS

Position Careers

2003 – Current, professor in Department of Physics Education, Jeonbuk National University
2014 – Current, Chair of the Korean XAFS Society
2012 – Current, Director, Institute of Fusion Science, Jeonbuk National University
2015 – Current, Chair, Division of Science Education, Jeonbuk National University
2014 – Current, Vice-chair, Korea Proton Acceleration Users Association
2006 – 2006, Guest editor, International Journal of Nanoscience and Nanotechnology
2005 – 2008, Head of Physics Education Department, Jeonbuk National University
2008 – 2013, Representative of XAFS division in Korean Synchrotron Radiation User Association
2012 – Current, A board member of Korean Synchrotron Radiation User Association

Books

1. Nanoscience and Technology, Semiconductor Nanostructures for Optoelectronic Devices, Chapter 7, pp 197 - 223 (Microstructural Properties of Nanostructures) (2012).
2. Fundamentals of XAFS (Theory, Experiment, and Analysis) (Oct. 2016) written in Korean.

Publications

I have published approximately 100 research papers on condensed matter physics, nanoscience, and nanotechnology and given over 30 invited lectures. My major research field has been focused on micro-structural properties of various nanomaterials including, semiconductors, magnetic materials, superconductors, metal-insulator-transition materials, spintronics, catalysts, sensors, and others, using XAFS and diffraction techniques.

1. Dynamic inhomogeneities in the La_2CuO_4 based superconductors, E. A. Stern, D. Haskel, S.-W. Han, J. of Superconductivity **17**, 97 (2004).
2. Disorder-induced Kondo behavior in nanoparticle CeAl_2 , S.-W. Han, C. H. Booth, E. D. Bauer, P. H. Huang, Y. Y. Chen, J. M. Lawrence, J. of Magnetism and Magnetic materials **272-276**, e101 (2004).
3. Local lattice symmetry of spin-glass and antiferromagnetic URh_2Ge_2 , C. H. Booth, S.-W. Han, S. Sullo, J. A. Mydosh, J. Magn. Mater. **272-276**, 41 (2004).
4. Structural properties of geometrically frustrated pyrochlore $\text{Tb}_2\text{Ti}_2\text{O}_7$, S.-W. Han, J. S. Gardner, and C. H. Booth, Phys. Rev. B **69**, 24416 (2004).
5. Local structural properties in terahertz semiconductor $\text{Zn}_{1-x}\text{Cd}_x\text{Te}$, Sang-Wook Han, Jpn. J. Appl. Phys. **42**, 6303 (2003).
6. Flux-lattice and surface barrier in a Nb/Al multilayer, S.-W. Han, J. Korean Phys. Soc. **42**, 394 (2003).
7. Distribution of vortices in Nb/Al multilayers studied by spin-polarized neutron reflectivity and magnetization, S.-W. Han, J. Farmer, P. F. Miceli, G. Felcher, R. Goyette, G. T. Kiehne, and J. B. Ketterson, Physica B **336**, 162 (2003).
8. Temperature-dependent x-ray diffraction study of Pd/Cu site interchange in non-Fermi liquid UCu_4Pd , S.-W. Han, C. H. Booth, E. D. Bauer, M. B. Maple, Acta Phys. Pol. B. **34**, 403 (2003).

9. X-ray reflectivity study of interdiffusion at YBa(2)Cu(3)O(7-x) and metal interfaces S.-W. Han, S. Tripathy, P. F. Miceli, M. Covington, L. H. Greene, M. Aprili, Jpn. J. Appl. Phys. **42**, 1395 (2003).
10. Local structure in the stripe phase of La(1.6-x)Sr(x)Nd(0.4)CuO(4), S.-W. Han, E. A. Stern, D. Haskel, A. D. Moodenbaugh, Phys. Rev. B **66**, 94101 (2002).
11. Observation of the superconducting proximity effect in Nb/InAs and NbN(x)/InAs by Raman scattering, I. V. Roshchin, A. C. Abeyta, L. H. Greene, T. A. Tanzer, J. F. Dorsten, P. W. Bohn, S.-W. Han, P. F. Miceli, J. F. Klem, Phys. Rev. B. **66**, 134530 (2002).
12. Structure of cathodically deposited nickel hexacyanoferrate thin films using XRD and XAFS, W. A. Steen, S.-W. Han, Q. Yu, R. A. Gordon, J. O. Cross, E. A. Stern, G. R. Seidler, K. M. Jeerage, and D. T. Schwartz, Langmuir **18**, 7714 - 7721 (2002).
13. Short-range compositional randomness of hydrogenated amorphous silicon-germanium films, B. D. Chapman, S.-W. Han, G. T. Seidler, E. A. Stern, J. D. Cohen, S. Guha, and J. Yang, J. of Appl. Phys. **92**, 801 (2002).
14. Controlled coordination and oxidation states of copper and manganese cations in complex nickel-copper-cobalt-manganese oxide thin film, D. A. Kukuruznyak, S.-W. Han, M.-H. Lee, K. A. Omland, M. C. Gregg, E. A. Stern, and F. S. Ohuchi, J. Vac. Sci. Technol. A **19**, 1923 (2001).
15. Orientation of vortices in a superconducting thin-film: quantitative comparison of spin-polarized neutron reflectivity and Magnetization, S.-W. Han, J. Farmer, H. Kaiser, P. F. Miceli, I. V. Roshchin, and L. H. Greene, Phys. Rev. B **62**, 9784 (2000).
16. Spin-polarized neutron reflectivity: a probe of vortices in thin film superconductors, S.-W. Han, J. F. Ankner, H. Kaiser, P. F. Miceli, E. Paraoanu, L. H. Greene, Phys. Rev. B **59**, 14692 (1999).
17. ZnSe and ZnO Film Growth by Pulsed-Laser Deposition, Y. R. Ryu, S. Zhu, S.-W. Han, H. W. White, P. F. Miceli, and H. R. Chandrasekhar, Appl. Surface Science **127**, 496 (1998).
18. Application of pulsed-laser deposition technique for cleaning a GaAs surface and for epitaxial ZnSe film growth, Y. R. Ryu, S. Zhu, S.-W. Han, H. W. White, J. Vac. Sci. Technol. A **16**, 3058 (1998).
19. X-ray Reflectivity Studies of thin film Oxide Superconductors, S.-W. Han, J. A. Pitney, P. F. Miceli, M. Covington, L. H. Greene, M. J. Godbole, and D. H. Lowndes, Physica B **221**, 235 (1996).
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24. Local structure around Sn in $\text{CeCoIn}(5-x)\text{Sn}(x)$, M. Daniel, S.-W. Han, C. H. Booth, A. L. Cornelius, E. D. Bauer, J. L. Sarrao, *Physica B: Cond. Matt.*, 359-361, 401 (2005).
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26. Orientation-dependent x-ray absorption fine structure of ZnO nanorods, S.-W. Han, H.-J. Yoo, Sung Jin An, Jinkyung Yoo, Gyu-Chul Yi, *Appl. Phys. Lett.* **86**, 21917 (2005).
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42. Charge influence and growth mechanism of ZnO nanorods, Sun-Hong Park and Sang-Wook Han, J. Nanosci Nanotechn. **7**, 2526 (2007).
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57. Training Programs of Advanced Sciences for High School Physics Teachers, Sang-Wook Han, Jong-Sul Jeon, and Byoung-Joon Ahn, J. Mater. Edu. **31**, 045 (2009).
58. Structural Orderings of Zn_{1-x}Cd_xTe with Enhanced Sensitivity to Terahertz Signals, J.-J. Park, H.-S. Kang, and S.-W. Han, J. Korean Phys. Soc. **54**, 2082 (2009).
59. Phase contrast x-ray microscopy study of rabbit primo-vessels, M.-S. Kim, S.-W. Oh, J.-H. Lim, and S.-W. Han, Appl. Phys. Lett. **97**, 213703 (2010).
60. Local structural, magnetic, and optical properties of Zn_(1-x)Fe_(x)O thin films, S.-Y. Seo, C.-H. Kwak, S.-H. Kim, B.-H. Kim, C.-I. Park, S.-H. Park, and S.-W. Han, J. Crystal Growth **312**, 2093 (2010).
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62. In-situ X-ray Absorption Fine Structure Study of TiO₂ Nanoparticles under Ultraviolet Light, Jong-Sul Jeon, Byung-Hyuk Kim, Chang-In Park, Soo-Young Seo, Changha Kwak, Seon-Hyo Kim, and Sang-Wook Han, Jpn. J. Appl. Phys. **49**, 031105 (2010).

63. Two-site behavior of chlorine atoms in $\text{Ca}(2-x)\text{Na}(x)\text{CuO}(2)\text{Cl}(2)$ single crystals, Kyung-Hee Kim, H.-G. Lee, Sung-Ik Lee, and S.-W. Han, *J. Supercon. Novel Magn.* **23**, p 391 (2010).
64. Microstructural properties at the interfaces of ZnO nanorods and ZnO homo-buffer layers, Changha Kwak, Byung-Hyuk Kim, Chang-In Park, Sun-Hong Park, Soo-Young Seo, Seon-Hyo Kim, and Sang-Wook Han, *J. Nanosci. Nanotechnol.* **10**, 912 (2010).
65. Local Structural and Optical Properties of ZnO Nanoparticles, E.-S. Jeong, H.-J. Yu, Y.-J. Kim, Gyu-Chul Yi, Yong-Dae Choi, and S.-W. Han, *J. Nanosci. Nanotechnol.* **10**, 3562 (2010).
66. Structural and Optical Properties of Hydrogen-ion-implanted ZnO Nanorods, Y.-B. Lee, C.-H. Kwak, S.-Y. Seo, and S.-H. Kim, C.-I. Park, B.-H. Kim, S.-H. Park, Yong-Dae Choi, and S.-W. Han, *J. Korean Phys. Soc.* **56**, 2050 (2010).
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68. Structural, optical and Electrical Properties of Nitrogen Ion Implanted ZnO Nanorods, C.-H. Kwak, Y.-B. Lee, S.-Y. Seo, S.-H. Kim, C.-I. Park, B.-H. Kim, Zhenlan Jin, and S.-W. Han, *J. Nanosci. Nanotech.* **11**, 7420 (2011).
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71. Synthesis and microstructural properties of ZnO nanorods on Ti-buffer layers, C.-H. Kwak, B.-H. Kim, C.-I. Park, S.-Y. Seo, S.-H. Kim, and S.-W. Han, *J. Crystal Growth* **314**, 264 (2011).
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76. Synthesis and characterization of ferromagnetic $\text{Zn}(1-x)\text{Co}(x)\text{O}$ films, S.-Y. Seo, C.-H. Kwak, S.-H. Kim, S.-H. Park, I.-J. Lee, and Sang-Wook Han, *J. Crystal Growth* **346**, 56 (2012).
77. Local structural properties of Co-ion-implanted ZnO nanorods, C.-I. Park, Zhenlan Jin, E.-S. Jeong, I.-H. Hwang, and S.-W. Han, *J. Korean Phys. Soc.* **63**, 2165 (2013).
78. Induced magnetic anisotropy in permalloy films annealed with magnetic field, Eon Byeong Park, Yong-Chan Kim, Sung-Uk Jang, Ji-Hong Kim, Sang-Wook Han, Soon-Ju Kwon, *Metals and Mater. Intern.* **19**, 129 (2013).
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80. Systematic analysis of palladium-graphene nanocomposites and their catalytic applications in Sonogashira reaction, Kyoung Hoon Lee, Sang-Wook Han, Ki-Young Kwon, and Joon B. Park, *J. Coll. Interf. Sci.* **403**, 127 (2013).
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82. X-ray absorption fine structure study of cobalt ion distribution in ferromagnetic $\text{Zn}(1-x)\text{Co}(x)\text{O}$ films, S.-Y. Seo, E.-S. Jeong, C.-H. Kwak, C.-I. Park, Zhenlan Jin, S.-H. Kim, and S.-W. Han, *J. Phys.: Cond. Matt.* **25**, 256005 (2013).
83. Local Structural Properties Around Cu Atoms in Checkerboard Phased $\text{Ca}(2-x)\text{Na}(x)\text{CuO}(2)\text{Cl}(2)$, K.-H. Kim, H.-G. Lee, and S.-W. Han, *J. Supercon. Novel Magn.*, **26**, 1795 (2013).
84. Coating SiO_2 Support with TiO_2 or ZrO_2 and Effects on Structure and CO Oxidation Performance of Pt Catalysts, Mi-Young Kim, Jae-Soon Choi, Todd J. Toops, Eun-Suk Jeong, Sang-Wook Han, Viviane Schwartz, and Jihua Chen, *Catalysts* **3**, 88 (2013).
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86. Spatiotemporally separating electron and phonon thermal transport in L10 FePt films for heat assisted magnetic recording, D. B. Xu, C. J. Sun, D. L. Brewes, S.-W. Han, P. Ho, J. S. Chen, S. M. Heald, X. Y. Zhang, and G. M. Chow, *J. Appl. Phys. Lett.* **115**, 2430907 (2014).

87. Micro-Structural Properties of YBa(2)Cu(3)O(7-x)/ZnO Nanorods on SrTiO(3), Zhenlan Jin, Changin Park, Kyu Jeong Song, Sukil Kang, Kyeong-Eun Ko, Chan Park, Rock Kil Ko, and S.-W. Han, *J. Nanosci. Nanotech.* **15**, 642 (2015).
88. Local Structural Properties and Growth Mechanism of ZnO Nanorods on Hetero-Interfaces, Zhenlan Jin, Chang-In Park, In-Hui Hwang, and Sang-Wook Han, *J. Nanosci. Nanotech.* **15**, 5306 (2015).
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95. Synthesis and temperature-dependent local structural and electrical properties of VO₂ films, Zhenlan Jin, In-Hui Hwang, Chang-In Park, Jae-Kuan Son, and Sang-Wook Han, *Current Appl. Phys.* **16**, 183 (2016).
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