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Professional Preparation

Ph.D.	Dec. 2002	Mater. Sci. Eng.	North Carolina State University
M.S.	Dec. 1999	Mater. Sci. Eng.	Institute of Metal Research (China)
B.S.	Aug. 1998	Mater. Sci. Eng.	Nanchang University (China)

Appointments

Aug. 2010-present	Associate Professor	Texas A & M University
Jan. 2006-Aug. 2010	Assistant Professor	Texas A & M University
Jan. 06-present	Long Term Visiting Staff Member	Los Alamos National Laboratory
Jan. 05-Dec. 05	Technical Staff Member	Los Alamos National Laboratory
Jan. 03-Dec. 04	Director Funded Postdoctoral Fellow	Los Alamos National Laboratory

Research Interests

- (01/00-present) Nanostructured nitride and oxide thin film heterostructures for structural applications, radiation tolerant materials, microelectronics, optoelectronics, ferroelectric and ferromagnetic materials, high temperature superconductors, solid oxide fuel cells and solar cells.
- (12/02-present) Coated superconductor materials scale-up and architectures; Flux-pinning mechanisms of nanoparticles and defects in high temperature superconductors;
- (01/00-present) Microstructural characterizations with transmission electron microscopy (TEM), high resolution TEM, Scanning transmission electron microscopy (STEM) and XRD; Materials property-microstructure correlations.

Honors

- ASM Silver Medal Award for Outstanding Materials Scientist in Mid Career, 2011
- Charles H. Barclay Jr. Fellow--College of Engineering Faculty Fellow Award 2011
- TEES Selected Young Fellow Award 2010
- NSF CAREER Award 2009.
- Presidential Early Career Awards for Scientists and Engineers 2007 (PECASE awarded in Dec. 2008).
- ONR Young Investigator Program Award, ONR-YIP 2008.
- Featured as one of the Rising Stars of Texas at the NANO Summit, Texas 2007.
- Air Force Young Investigator Research Program Award, AFOSR-YIP 2007.
- Air Force Summer Faculty Fellowship, AFOSR, 2007 and 2008.
- TMS Young Leader representing the Electronic, Magnetic and Photonic Materials Division. (Minerals, Metals and Materials Society, TMS 2005)
- Lab Director Funded Postdoctoral Fellow, Los Alamos National Laboratory (2002-2004).
- Materials Research Society Graduate Student Award (Fall 2001, Boston)

Patents (8 patents in the areas of thin film growth and architectures)

1. Buffer Layer for Thin Film Structures (Issued, U.S. No. 7,129,196.).
2. Method for Improving the Critical Current Density of Thick YBCO Films (Pending, Los Alamos Disclosure No. 2004-008/S-102,337).
3. Simplified architecture for coated conductors (US Patent 7,727,934, Los Alamos Disclosure No. 2004-070/S-104,805).
4. Method for improving performance of high-temperature superconductors in a magnetic field (US Patent 7,642,222, Los Alamos disclosure no. 2004-060/S-102,393).

5. Methods for segmenting coated conductors tape for reduced losses (Issued, US patent No. 7,593,758, Los Alamos disclosure No. 2005-019/S-104,908).
6. New architecture for coated conductors (Issued 7,727,934, Los Alamos Disclosure No. 2005-034/S-104,930).
7. Cubic metal oxide film buffers for IBAD MgO templates amenable for high rate reactive sputter deposition (Pending, Los Alamos Disclosure).
8. Coated Conductors, (US Patent 7737,085)

Conferences Organized

1. TMS Annual Meeting 2005 (Mechanical Behavior of Thin Films and Small Structures),
2. TMS Annual Meeting 2007 (Mechanical Behavior of Nanostructured Materials),
3. MRS 2011
4. MS&T Fall Meeting 2008, 2010, 2011

Synergistic Activities

Panel list for NSF Graduate Fellowship (2007), NSF proposal panels (2009-2011), NSF Center site visit reviews (2010)

Reviewers for proposals from DOE-BES, DOE-SBIR and NSF (2007-2011).

Reviewers for various journals (2003-2011)

Committee Member of the Electronic, Magnetic and Photonic Materials Division. (Minerals, Metals and Materials Society, TMS) and American Ceramic Society (ACerS)

Member of Materials Research Society (MRS), American Society of Metals (ASM), Minerals, Metals and Materials Society (TMS), American Ceramic Society (ACerS), American Association for the Advancement of Science (AAAS) and American Physical Society (APS).

Teaching and Mentoring Achievement

1. Taught one graduate course ELEN 640 Thin Film Science and Technology and one undergraduate course ELEN440 Introduction of Thin Film Science and Technology. A teaching model called "*The Art of Laying Apples*" is developed for explaining the concept of thin film growth for the courses.
2. Currently mentoring 9 Ph.D. students, 2 M.S. students, and 2 undergraduate students, (three female students).
3. Actively involved in outreach activities including the Woman Student Mentor Program, the Woman Engineering Forum and the E3 Summer Research Program for High School Teachers at Texas A & M University, Los Alamos Summer School (at the University of New Mexico) and the Texas Junior Science and Humanities Symposium (Key note speaker, TAMU)

Recent Collaborators

S. Foltyn, G. Swandener-Los Alamos National Laboratory

X. Zhang and T. Caign-Texas A & M University

A. Jacobson, K. Salama and Y. Zhou-Texas Center for Superconductivity, the University of Houston

Masaki Suenaga-Brookhaven National Laboratory

Jodi Reeves, Xuming Xiong-Super Power, Corporation

Jagdish Narayan, Carl Koch – North Carolina State University

Xiaozhou Liao-University of Sydney, Australia.

Huifang Xu-University of Wisconsin

Invited Talks and Seminars (20 invited talks)

1. H. Wang, Nanostructured ceramic thin films for high temperature superconductors, SOFCs, and solar cells, MS&T 2010, Houston.
2. H. Wang, Microstructure and properties of nanostructured functional oxides, Invited speaker at MS& T 2009, Pittsburgh.

3. H. Wang, Microstructure and properties of nanostructured functional oxides, Invited speaker at Electronic Materials and Application 2010, Orlando Fl.
4. H. Wang, J. Yoon, R. Araujo, et al, *Probing the interfacial Defects in YBa₂Cu₃O_{7-?} Thin Films* (Invited), MS& T 2007, Detroit.
5. H. Wang, *Invited speaker The Rising Stars in Texas, Nano Summit, August 2007.*
6. H. Wang, R. Araujo, J.G. Swadener, Y. Wang, X. Zhang, T. Cagin, Ion Irradiation Effects in Nanostructured Nitride Coatings, CAARI 2006, Fort Worth, Texas.
7. H. Wang, *Key note speaker for the Texas Junior Science and Humanities Symposium, January 2007.*
8. H. Wang, *Microstructure revolution of YBCO and its effects on transport properties*, MRS, Spring 2006, San Francisco.
9. H. Wang, *Nitride-based thin films processed by pulsed laser deposition*, TMS, Spring 2005, San Francisco.
10. H. Wang, *Nitride-based thin films and superconductor thin films processed by pulsed laser deposition*, Institute of Metal Research, Shenyang, China, Dec. 14th, 2004.
11. S.R. Foltyn, H. Wang, *Overcome the barrier to 1000 A/cm-width coated conductors*, MRS, Spring 2005, San Francisco.
12. H. Wang, *Nanocrystalline and Single Crystalline TiN and Applications*, MRS Meeting, April 18, 2002, Raleigh.
- 13-20. More than 10 invited university seminars at the University of Connecticut (November 2003), Intel Corporation (March 2004), Texas A & M University (3 times in 2005), the University of Houston (May 2006 and August 2009), North Carolina State University (March 2010), Sam Houston State University (March 2010), Texas Tech University (November 2009).

Journal Publications (total 194 journal articles with a total citation of 3000 times (H factor=29) and 120 conference presentations and proceedings as of August 2011) (*paper from graduate students mentored at TAMU)

(22 published or accepted in 2011, 15 submitted)

194. *Zhenxing Bi, Emily Weal, Hongmei Luo, Aiping Chen, Judith L. MacManus-Driscoll, Quanxi Jia, and Haiyan Wang, Microstructure and magnetic properties of (La_{0.7}Sr_{0.3}MnO₃)_{0.7}:(Mn₃O₄)_{0.3} nanocomposite thin films, *Journal of Applied Physics*, 109, 054302, 2011.
193. *Aiping Chen, Zhenxing Bi, Harshad Hazariwala, Xinghang Zhang, Qing Su, Li Chen, Quanxi Jia, Judith L. MacManus-Driscoll, and Haiyan Wang, Microstructure, magnetic and low-field magnetotransport properties of self-assembled (La_{0.7}Sr_{0.3}MnO₃)_{0.5}:(CeO₂)_{0.5} vertically aligned nanocomposite thin films, *Nanotechnology*, 22, 315712, 2011.
192. *Qing Su, Sungmee Cho, Zhenxing Bi, Aiping Chen and Haiyan Wang, Enhanced Electrochemical Properties of Bi-layer La_{0.5}Sr_{0.5}CoO_{3-δ} Cathode Prepared by a Hybrid Method, *Electrochimica Acta*, 56, 3979, 2011.
191. Li Chen, Chen-Fong Tsai, Yuanyuan Zhu, Zhenxing Bi and Haiyan Wang, Enhanced Superconducting Properties in Epitaxial FeSe Thin Films with Self-assembled Fe₃O₄ Nanoparticles, *Physica C*, 471, 515-519, 2011.
190. *Joon Hwan Lee, Xinghang Zhang and Haiyan Wang, Direct observation of twin deformation in YBCO thin films by in situ nanoindentation in TEM, *Journal of Applied Physics*, 109, 083510, 2011.
189. *S. M. Cho, Y. N. Kim, J.-H. Kim, A. Manthiram, H. Wang, High power density thin film SOFCs with YSZ/GDC bilayer electrolyte, *Electrochimica Acta*, 56, 5472, 2011.
188. S. A. Harrington, J. Zhai, S. Denev, V. Gopalan, H. Wang, Z. Bi, S. A. T. Redfern, S. H. Baek, C. W. Bark, C. B. Eom, Q. X. Jia, M.E. Vickers, J. L. MacManus-Driscoll Green micron thick ferroelectric films with high Curie temperature using a vertical nano-scaffold, *Nature Nanotechnology*, in press, 2011 (published on line DOI 10.1038).

187. *Qing Su, Joon Hwan Lee, Zhenxing Bi, Qifa Zhou, Quanxi Jia, Haiyan Wang, Self-separated PZT Thick Films with Bulk-like Piezoelectric and Electromechanical Properties, *J. Materials Research*, **26**, 1431, 2011.
186. Wang, S.; Cho, S.; Wang, H.; Jacobson A. J., Oxygen Non Stoichiometry in Nanocrystalline $\text{La}_{0.5}\text{Sr}_{0.5}\text{CoO}_{3-x}$ Thin Films, Wang, S.; Cho, S.; Wang, H.; Jacobson A. J. *ECS Transactions Solid Oxide Fuel Cells* 12 (SOFC-XII) (2011), 35, 1891 – 1897.
185. *Aiping Chen, Zhenxing Bi, Chen-Fong Tsai, Joon Hwan Lee, Qing Su, Xinghang Zhang, Q.X. Jia, Judith L. MacManus-Driscoll and Haiyan Wang, *Observation of enhanced and tunable low field magnetoresistance in vertically aligned $(\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3)_{0.5}:(\text{ZnO})_{0.5}$ nanocomposite thin films*, *Advanced Functional Materials*, **21**, 2423-2429, 2011.
184. *Michelle Myers, Michael Myers, Chen-Fong Tsai, Tianlin Lu, Joon Hwan Lee, Lin Shao, Haiyan Wang, Electrical and microstructural properties of N^+ ion-implanted ZnO and ZnO:Ag thin films, *Journal of Vacuum Science and Technology, A*, **29**, 03A108-1, 2011.
183. H. M. Luo, G. F. Zou, H. Wang, J. H. Lee, Y. Lin, Q. L. Lin, E. Bauer, T. M. McCleskey, A. K. Burrell, and Q. X. Jia Controlling crystal structure and oxidation state in metal-nitrides through epitaxial stabilization, accepted by Journal of Physical Chemistry C, 2011.
182. *Nan Li, H. Wang, Xinghang Zhang The Influence of Interfaces on the Formation of Bubbles in He Ion Irradiated Cu/Mo Nanolayers, *Philosophical Magazine Letters*, **91**, 19-29, 2011.
181. *Y. Liu, D. Bufford, H. Wang, C. Sun, X. Zhang, Mechanical properties of highly textured Cu/Ni multilayers, *Acta Materialia*, **59** (2011) 1924–1933.
180. *Cho, Sungmee; Yoon, Jongsik; Kim, Jung-Hyun; Zhang, Xinghang; Manthiram, Arumugam; Wang, Haiyan, Microstructural and Electrical Properties of Ce_{0.9}Gd_{0.1}O_{1.95} Thin Film Electrolyte in Solid Oxide Fuel Cells, *Journal of Materials Research*, **26**, 854-859, 2011. (images selected for journal cover page)
179. T. Fix, F. Schoofs, J.L. MacManus-Driscoll, M.G. Blamire Z. Bi, H. Wang, Influence of SrTiO₃ substrate miscut-angle on the transport properties of LaAlO₃/SrTiO₃ interfaces, *Appl. Phys. Letter*, **99**, 022103, 2011.
178. M. Staruch, L. Stan, J. H. Lee, H. Wang, J. Budnick, and M. Jain *Magnetotransport Properties of Pr_{0.5}Ca_{0.5}MnO₃ Thin Films Grown by a Solution Route*. *Journal of Applied Physics*, **110**, 013921, 2011.
177. S. Patnaik, E.-M. Choi, E. Weal, S.-L. Sahonta, H. Wang, Z. Bi, Q.X. Jia, M. G. Blamire and J.L. MacManus-Driscoll, Strong room temperature ferromagnetism in highly insulating thin films of BiFe_{0.5}Mn_{0.5}O₃, *App. Phys. Lett.*, **98**, 012509, 2011.
176. *D. Bufford, H. Wang, and X. Zhang, High strength, epitaxial nanotwinned Ag films, *Acta Materialia*, **59**, 93–101.2011.
175. *Chen-Fong Tsai, Yuanyuan Zhu, Li Chen and Haiyan Wang, Correlation between Flux Pinning Properties and Interfacial Defects in YBa₂Cu₃O_{7- δ} / CeO₂ Multilayer Thin Films, *IEEE Trans. Appl. Supercond.* **21**, 2758-2761 2011.
174. *Chen-Fong Tsai, Yuanyuan Zhu, Li Chen and Haiyan Wang, Flux Pinning Properties in YBCO Thin Films with Self-Aligned Magnetic Nanoparticles, *IEEE Trans. Appl. Supercond.* **21**, 2749-2752, 2011.
173. F. Napolitano, L. Baqué, S. M. Cho, Q. Su, H. Wang, J. R. Casanovac, D. G. Lamas, A. Soldati and A. Serquis Characterization of SOFC Cathodes Prepared by Pulse Laser Deposition, *ECS Transactions*, **35** (1) 2379-2386 (2011).
172. Yuanyuan Zhu, Chen-Fong Tsai, J. Wang, and H. Wang, Growth and Microstructural Characteristics of Vertically Aligned YBa₂Cu₃O_{7-x}/ BaSnO₃ Nanocomposite Thin Films, submitted, 2011.

171. Yuanyuan Zhu , Christian Kisielowski, Chengyu Song, Andrew Minor and Haiyan Wang Direct quantitative mapping of thin-film lattice strain at SrTiO₃/MgO heterogeneous interface, submitted, 2011.

170 Joon Hwan Lee, Amiya K. Mukherjee, Xinghang Zhang, Haiyan Wang , Direct observation of work hardening in nanocrystalline nickel by in situ TEM, submitted 2011.

169. Yingying Zhang,; Ronning, Filip; Gofryk, Krzysztof; Mara, Nathan; Haberkorn, Nestor; zou, guifu; Wang, Haiyan; Lee, Joon; Bauer, Eve; Mccleskey, T. Mark; Burrell, Anthony; Civale, Leonardo; Zhu, Yuntian; Jia, Quanxi, Role of carbon nanotube ribbon on the superconducting properties of epitaxial NbC films, submitted, 2011.

168. Y. Y. Zhang, N. F. Haberkorn, F. Ronning, H. Wang, J. Lee, et al., Structure and superconducting property of epitaxial δ-MoN films by a chemical solution method, submitted, 2011.

167. *Zhenxing Bi, Haiyan Wang, Oxygen Pressure Effect on the Growth of Epitaxial Mn₃O₄ Thin Film by Pulsed Laser Deposition, submitted, 2011.

166. H. Yang, H. Wang, and Q. X. Jia, Integration of nanoscale epitaxial Bi_{3.15}Nd_{0.85}Ti₃O₁₂ films on SiO₂/Si substrates, submitted, 2011.

165. C. V. Varanasi, J. Reichart, J. Burke, H. Wang, M. Susner, M. Sumption, P.N. Barnes, *Second phase (BaGeO₃, BaSiO₃) nanocolumns in YBa₂Cu₃O_{7-x} films* , submitted, 2011.

164. J. Burke, C.V. Varanasi, L. Brunke, H. Wang, J.H. Lee, P. N. Barnes Microstructure and critical current density of YBa₂Cu₃O_{7-x} + BaSnO₃ thick films grown with pre-mixed pulsed laser ablation target, submitted, 2011.

163. *I. Kim, M.S. Martin, L. Shao, X. Zhang , J.G. Swadener , Y. Q. Wang, H. Wang, Suppression of amorphization in ion irradiated TiN/AlN nanolayer film, submitted, 2011.

162 Weilin Jiang, Haiyan Wang, and Liang Jiao Transition from Irradiation-induced Amorphization to Crystallization in Nanocrystalline Silicon Carbide, submitted, 2011.

161 Sungmee Cho , YoungNam. Kim , JoonHwan Lee Arumugam. Manthiram , Haiyan Wang, Microstructure and electrochemical properties of PBCO/GDC vertically aligned nanocomposite thin film as interlayer for thin film solid oxide fuel cells, submitted 2011.

160. Zili Zhang, Stuart C. Wimbush, Ahmed Kursumovi, Haiyan Wang, Joon Hwan Lee, Hongli Suo and Judith L. MacManus-Driscoll, Biosynthesis of platelike YBCO offering enhanced connectivity and improved inter- and intragranular critical current density for coated conductor, submitted 2011.

159. Aiping Chen, Zhenxing Bi, Chen-Fong Tsai, Li Chen, Qing Su, Xinghang Zhang, Judith L. MacManus-Driscoll, Quanxi Jia, and Haiyan Wang Grain boundary manipulation and low-field magnetoresistance tunability in tilted aligned La_{0.7}Sr_{0.3}MnO₃ nanocolumn films, submitted 2011.

158. S. Baber, Q. Lin, G. Zou, N. Haberkorn, S. Baily, H. Wang, Z. Bi, Yang, Hao; S. Deng, M. Hawley, L. Civale, M. Bauer, T. M. Mccleskey, A. Burrell, Q. Jia, H. Luo, Magnetic Properties of Self-Assembled Epitaxial Nanocomposite CoFe₂O₄:SrTiO₃ and CoFe₂O₄:MgO Films, Submitted to Journal of Physics Chemistry, 2011.

(22 published in 2010)

157. J. Xiong, V. Matias, H. Wang, J. Y. Zhai, B. Maiorov, D. Trugman, B. W. Tao, Y. R. Li, and Q. X. Jia, Much simplified IBAD-TiN template for high performance YBCO coated conductors, Journal of Applied Physics, 108, 083903, 2010.

156. H. Yang, Y. Q. Wang, H. Wang, and Q. X. Jia, Oxygen concentration and its effect on the leakage current in BiFeO₃ thin films, *Applied Physics Letters*, 96, 012909, 2010.

155. *Joon Hwan Lee, Ickchan Kim, Dustin M. Hulbert, Dongtao Jiang, Amiya K. Mukherjee, Xinghang Zhang and Haiyan Wang, Grain and Grain Boundary Activities Observed in Alumina-Zirconia-Magnesia Spinel Nanocomposites by in situ Nanoindentation in a Transmission Electron Microscope, *Acta Materialia*, **58**, 4891-4899, 2010.
154. *Zhenxing Bi, Osman Anderoglu, Xinghang Zhang, Judith L. MacManus-Driscoll, Hao Yang, Quanxi Jia, and Haiyan Wang, Nanoporous Thin Films with Controllable Nanopores Processed from Vertically Aligned Nanocomposites, *Nanotechnology*, **21**, 285606, 2010.
153. Luo, H.M.; Wang, H.; Zou, G.; Bauer, E.; McCleskey, T. M.; Burrell, A. K.; Jia, Q. X. "Review: epitaxial metal-nitride thin films by polymer-assisted deposition", (**invited review**) *Trans. Electri. Electron. Mater.*, **11**, 54-60 (2010).
152. Changhong Chen, Yanhan Zhu, Yong Zhao, Joon Hwan Lee, Haiyan Wang, Ayrton Bernussi, Mark Holtz, and Zhaoyang Fan, VO₂ multidomain heteroepitaxial growth and terahertz transmission Modulation, *Applied Physics Letters*, **97**, 211905, 2010.
151. E. Weal, S. Patnaik, Z. Bi, H. Wang, A. Kursumovec, T. Fix, J.L. MacManus Driscoll Coexistence of strong ferromagnetism and polar switching at room temperature in Fe₃O₄ – BiFeO₃ nanocomposite thin films, *Applied Physics Letters*, **97**, 153121, 2010.
150. S A Harrington, J H Durrell, H Wang, S C Wimbush, C F Tsai and J L MacManus-Driscoll, Understanding nanoparticle self-assembly for a strong improvement in functionality in thin film nanocomposites, *Nanotechnology*, **21**, 095604, 2010.
149. J L MacManus-Driscoll, S C Wimbush, S A Harrington, J H Durrell, G Ercolano, H. Wang, J H Lee, C F Tsai, B Maiorov, A Kursumovic, High Current, Low Cost YBCO Conductors –What’s Next?, *Superconductor Science and Technology*, **23**, 034009, 2010.
148. Y.Y. Kim, H.A. Alwi, Q. Huang, R. Abd-Shukor, C.F. Tsai, H. Wang, K.W. Kim, D.G. Naugle and S. Krishnaswamy, Thermal diffusivity measurement of YBa₂Cu₃O_{7-x} thin film with a picosecond thermoreflectance technique, *Physica C: Superconductivity*, **470**, 365-368, 2010. (doi:10.1016/j.physc.2010.02.01)
147. *Nan Li, Joon Hwan Lee, H. Wang, Kaiyuan Yu, Xinghang Zhang, Size dependent strengthening mechanisms in sputtered Fe/W multilayers, *Journal of Applied Physics*, **107**, 093503, 2010.
146. G. Ercolano, S. A. Harrington, H. Wang, C. F. Tsai, J. L. MacManus-Driscoll, "Enhanced flux pinning in YBa₂Cu₃O_{7-x} thin films using Nb-based double perovskite additions", *Supercon. Sci. Tech.* (Rapid), **23**, 022003 2010.
145. G Zou, H. Wang, N. Mara, H. Luo, X. Zhang, Q. Jia, *et al.*, Chemical Solution Deposition of Epitaxial Carbide Films, *Journal of the American Chemical Society*, **132**, 2516-2517, 2010.
144. C. Varanasi, J. Petry, W. Lanter, L. Brunke, B.T. Yang, J. Burke, H. Wang, J.S. Bulmer, J. Scofield, P.N. Barnes, Growth of high quality carbon nanotubes on free standing diamond substrates, *Carbon*, **48**, 2442-2446, 2010.
143. *Menka Jain, Filip Ronning, Tuson Park, Joe D. Thompson, Jongsik Yoon, Haiyan Wang, Liliana Stan, R.F. DePaula, and Quanxi Jia Magnetotransport properties of the Pr_{0.5}Ca_{0.5}MnO₃ thin films grown by a solution technique, *Journal of Magnetism and Magnetic Materials*, **322**, 2708-2711, 2010.
142. *J.-H. Kim, Y. N. Kim, S. M. Cho, H. Wang and A. Manthiram Electrochemical characterization of YBaCo₃ZnO₇ + Gd_{0.2}Ce_{0.8}O_{1.9} composite cathodes for intermediate temperature solid oxide fuel cells, *Electrochimica Acta*, **55**, 19, 5312-5317, 2010.

141. Michael Myers, Engang Fu, Michelle Myers, Haiyan Wang, Guoqiang Xie, X. Wang, W-K Chu, and Lin Shao An experimental and modeling study on the role of damage cascade formation in nano-crystallization of ion-irradiated Ni₅₂:5Nb10Zr15Ti15Pt7:5metallic glass, *Scripta Materialia*, 63, 1045-1048, 2010.
140. E.G. Fu, A. Misra, H. Wang, Lin Shao X. Zhang, Interface enabled defects reduction in helium ion irradiated Cu/V nanolayers, *Journal of Nuclear Materials*, 407, 178-188, (2010).
139. W. Jiang, H. Wang, I. Kim, Y. Zhang and W. J. Weber Amorphization of nanocrystalline 3C-SiC irradiated with Si⁺ ions, *Journal of Materials Research*, 25, 2341, 2010.
138. Guifu Zou, Hongmei Luo, Yingying Zhang, Jie Xiong, Qiangmin Wei, Mujin Zhuo, Junyi Zhai, Haiyan Wang, Darrick Williams, Nan Li, Eve Bauer, Xinghang Zhang, Thomas M. McCleskey, Yanrong Li, Anthony K. Burrell and Q. X. Jia, A Chemical Solution Approach for Superconducting and Hard Epitaxial NbC Film, *Chemistry Communications*, 46, 7837-7839, 2010.
137. *D. M. Hulbert, D. Jiang, J. Yoon, J. Wang, H. Wang, A. K. Mukherjee, Microstructural Investigations of Alumina-Zirconia-Magnesia Spinel Nanocomposites, *Script Materialia*, 2010.
136. T.B. Holland*, a I.A. Ovid'kob., H. Wang, Joon Hwan Lee, A.K. Mukherjee Elevated temperature deformation behavior of spark plasma sintered nanometric nickel with varied grain size distributions, *Materials Science and Engineering A*, 528, 663-671, 2010.
- (24 published in 2009)**
135. **H. Wang, S.R. Foltyn, L. Civale, B. Mairov, and Q. X. Jia, Attenuation of interfacial pinning enhancement in YBCO using a PrBCO buffer layer, *Physica C*, 469, 2033-2036 (2009). (invited paper)
134. *Haiyan Wang and Jie Wang, *Interfacial Defects and Flux-Pinning Effects in Nanostructured YBa₂Cu₃O_{7-δ} Thin Films*, *IEEE Trans. Appl. Supercond.* 19, 3395-3398, 2009.
133. *Sungmee Cho, Jongsik Yoon, Adriana Serquis, Joon Hwan Lee, Zhenxing Bi, Xinghang Zhang, and Haiyan Wang, Vertically aligned nanocomposite thin film as cathode-electrolyte interface layer for thin film Solid Oxide Fuel Cells, *Advanced Functional Materials*, 19, 1-6, 2009.
132. **Zhenxing Bi, Joonhwan Lee, Hao Yang, Quanxi Jia, Judith L. MacManus-Driscoll, and Haiyan Wang Tunable Lattice Strain in Vertically Aligned Nanocomposite (BiFeO₃)_x:(Sm₂O₃)_{1-x} Thin Films, *Journal of Applied Physics*, 106, 094309, 2009.
131. **Joon Hwan Lee, Chia-Yun Chou, Zhenxing Bi, Chen-Fong Tsai and Haiyan Wang, Growth-controlled surface roughness in Al-doped ZnO as transparent conducting oxide, *Nanotechnology*, 20, 395704, 2009.
130. *S. Harrington, J.H. Durrell, B. Maiorov, H. Wang, J. H. Lee, S. Wimbush, A. Kursumovic, J.L. MacManus-Driscoll Self-assembled, rare earth tantalate pyrochlore nanoparticles for superior flux pinning in YBa₂Cu₃O_{7-δ} films, *Superconductivity Science and Technology*, 22, 022001, 2009.
129. *A. Fouchet, Haiyan Wang, Hao Yang, Zhenxing Bi, Q.X. Jia and J. MacManus-Driscoll, Spontaneous Ordering, Strain Control and Multifunctionality in Vertical Nanocomposite Heteroepitaxial Films, *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, 56, 1534, 2009.
128. *Hongmei Luo, Yuan Lin, Haiyan Wang, Joon Hwan Lee, Q. X. Jia et al, A Chemical Solution Approach to Epitaxial Metal Nitride Thin Films, *Advanced Materials*, 21, 193-197, 2009.
127. A. Kursumovic, J.L. Durrell, S. Harrington, S. Wimbush and J.L. MacManus-Driscoll, B. Maiorov, L. Stan, H. Zhou, and T. Holesinger, H. Wang, High I_c, Lightly Gold-doped YBa₂Cu₃O_{7-x} films grown at Very High Rates, *Superconductor Science and Technology*, 22, 015009, 2009.
126. *Jie Wang, Chen-Fong Tsai, Zhenxing Bi, D. Naugle and Haiyan Wang, *Microstructural and Pinning Properties of YBa₂Cu₃O_{7-δ} Thin Films Doped with Magnetic Nanoparticles*, *IEEE Trans. Appl. Supercond.* 19, 3503-3506, 2009.

125. *Hongmei Luo, Haiyan Wang, Zhenxing Bi, Marilyn E. Hawley, Leonardo Civale, Q. X. Jia, et al, Highly Conductive Epitaxial Layered Ternary Transition Metal Nitride Films, *Angewandte Chemie*, **48**, 1490-1493, 2009.

124. J.L. MacManus-Driscoll, A. Kursumovic, J. H. Durrell, S. Harrington, S. Wimbush, B. Maiorov, L. Stan, H. Zhou, T. Holesinger and H. Wang, High I_c in YBCO films grown at Very High Rates by liquid mediated growth, *IEEE Trans. Appl. Supercond.* **19**, 3180-3183, 2009.

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C. Presentations at Professional Conferences (114 total + 10 invited talks)

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40. L. Civale, B. Maiorov, H. Wang, S.R. Foltyn, J.L. MacManus-Driscoll*, T.G. Holesinger, Q.X. Jia, and P. Arendt *Flux pinning improvement in coated conductors: how much further can we go?* Presented at PACRIM6, 2005.
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