Yang Li, Ph. D.

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Professional Experience

- July 2014 – present, Professor, Department of General Engineering, University of Puerto Rico at Mayaguez
- July 2009 – 2014, Associate Professor, Department of General Engineering, University of Puerto Rico at Mayaguez
- July 2006 – 2009, Assistant Professor, Department of General Engineering, University of Puerto Rico at Mayaguez
- Aug. 2005 – July 2006 Assistant Research Professor, Department of Physics, The University of Texas at Arlington
- June 2001 – July 2005, Postdoctoral Associate Researcher and teaching stuff, Department of Physics, Texas A&M University
- May 1999 – May 2000, Postdoctoral Associate Researcher (Royal Society Fellowship), Blackett Laboratory, Department of Physics, Imperial College, London, UK

Research Interests

1. Superconductivity, magnetism and thermoelectricity of 4f- and 3d-doped nanostructured clathrate materials
2. Magnetic nanoparticles by mechanical alloying, exchange-coupled nanocomposite magnets, structural and microscopic characterization, magnetic thin films, magnetic transport properties, magnetic semiconductors
3. Core-shell nanoclusters: Synthesis, magnetism and application for biomedicine.
4. Study of new functional materials for temperature sensors
5. Electronic structure calculation for functional materials by the first-principle
6. Novel Materials Exploration and Synthesis - New materials include thermoelectric materials, magnetic clathrates, high-Tc superconductors, magnetic semiconductor, heavy fermion materials and nanostructure materials. Further work includes related hybridization-gap materials, new rare-earth intermetallics, and related materials. A new study in this direction involves imaging and manipulating vortices in high-Tc superconducting films and magnetic nanostructures based on molecular magnets.
7. Single crystal growth of Kondo semiconductors, magnetic clathrates and high-Tc superconductors
8. Spin injection in Si and Ge nanodevices, magnetic film of germanium clathrate: New semiconductor materials with nanoscale magnetic array
9. pH Sensitive chitosan alginate hydrogel with adjustable mechanical resistance and their application in drug delivery.

10. The spin torque effect in single-walled carbon nanotube - toward a new spintronics multi-functional device
11. Hybrid magnetic nanostructure film materials on the high-Tc superconducting substrate.
12. Flux pinning of stress-field induced by lattice-mismatch in high-Tc superconductors
13. Novel applications of engineered vortex arrangements in superconductors

Education

- Ph. D., Materials Physics, University of Science and Technology Beijing, (March, 1993)
- MS, Materials Physics, University of Science and Technology Beijing, (December, 1989)
- BS, Physics, University of Science and Technology Beijing (July, 1984)

Honors and Awards

- Distinguished Professor, University of Puerto Rico, Mayaguez, 2010.
- PI and co-PI for research program of NSF (Grant No. DMR 1531755, DMR- 0821284), NASA (Grant No. NNX10AM80H, NNX07AO30A), DoD (Grand No.52648-RT-ISP), and INDUNIV Foundation (Grant No. G-09-03).

Synergistic Activities

- Editorial Advisory Board Member of Open Condensed Matter Physics Journal.
- Panelist and referee of NSF
- Referee for J. Mater. Res., Physica C, Physica B, J. Appl. Phys., Appl. Phys. Lett., Phys. Rev. B, IEEE transactions, J. MMM, J. Phys. Chem Sol., Chin. Phys. Lett., Acta Physica Sinica, J. Chin. Rare Earth Soc., J. Industrial and Management Optimization

Recently Important Publications (Selected from 160 peer-reviewed papers)

1. J.H. Ross and Yang Li, Chapter V, Superconductivity and Magnetism in Silicon and Germanium Clathrates in "Nanoscale Magnetic Materials and Applications", Publisher: Springer-Verlag New York, LLC, May 2009).
2. Yang Li, Jose Garcia, Giovanni Franco, Junqiang Lu, Kejie Lu, et al. “Critical magnetic fields of superconducting aluminum-substituted Ba8Si42Al4 clathrate”, J. Appl. Phys. 117, 213912 (2015).
3. Yang Li, Jose Garcia, Ning Chen, Lihua Liu, Feng Li, Yuping Wei, Shanli Bi, Guohui Cao, and Z. S. Feng, ”Superconductivity in Al-substituted Ba8Si46 clathrates”, J. Appl. Phys. 113, 203908 (2013).
4. L. Liu, S. Bi, B. Peng and Yang Li, “Effect of Eu substitution on superconductivity in Ba8- xEuxAl6Si40 clathrates”, J. Appl. Phys. 117, 17E117 (2015).
5. L. Liu, S. Bi, N. Chen, F. Li, Y. Liu, G. Cao, Yang Li, “The effect of Al-substitution on superconducting type-I clathrate Ba8Si46”, Physica C: Superconductivity and its applications, 506, 94 (2014).

6. L. Liu, F. Li, Y. Wei, N. Chen, H. Qiu, S. Bi, G. Cao, Yang Li, “Synthesis and Thermoelectric Properties of Rare Earth Yb-doped Ba8-xYbxSi30Ga16 Clathrates”, J. Alloy Compound 588, 271 (2014).X.H Zhu, N. Chen and L.H. Liu, Yang Li, “Study on rare-earth doped type-I germanium clathrates” J. Appl. Phys. 111, 07E305 (2012).
7. Yang Li, W.P. Wang, X.X. Li, L.H. Liu, A.H. Wang, N. Chen, Y. Liu and G.H. Cao, "Mg- doping effect on structural and magnetic properties on two-dimensional triangular lattice LiVO2". J. Appl. Phys. 107, 09E108 (2010).
8. N. Chen, S.P. Qu, Yang Li, “Synthesis of LiFeAs Superconductor by Electrochemistry at Room Temperature”, J. Appl. Phys. 107, 09E123 (2010).
9. Yang Li, J. Gao, N. Chen, Y. Liu, Z.P. Luo, R.H. Zhang, X.Q. Ma, G.H. Cao, "Electronic structure and physical properties of Ba8Ga16Sn30 clathrates with type-I and type-VIII structure" Physica B 403 1140 (2008).
10. Yang Li, R. H. Zhang, Y. Liu, N. Chen, Z. P. Luo, X.Q. Ma, G. H. Cao, C. R. Hu, J.H. Joseph, “Superconductivity in gallium-substituted Ba8Si46 clathrates”, Phys. Rev. B75, 054513(2007).
11. Yang Li, Y. Liu, N. Chen, G.H. Cao, Z.S. Feng, J.H. Ross, Jr., “Vacancy and Copper-doping effect on superconductivity for clathrate materials” Phys. Lett. A345, 398 (2005).
12. W.P. Gou, S. Y. Rodriguez, Yang Li, et al., “NMR experiments and electronic structure calculations in type-I BaAlGe clathrates”, Phys. Rev. B. 80, 144108 (2009).
13. Yang Li and J. H. Ross, Jr., “Ferromagnetism in Fe-doped Ba6Ge25 chiral clathrate”, Appl. Phys. Lett. 83, 2868-70 (2003).
14. Z. G. Yin, N. F. Chen, Yang Li, "Interface as the origin of ferromagnetism in cobalt doped ZnO film grown on silicon substrate", Appl. Phys. Lett. 93, 142109 (2008).
15. Y.P. Wang, Yang Li, C.B. Rong and J.P. Liu, “Sm–Co hard magnetic nanoparticles prepared by surfactant-assisted ball milling”, Nanotechnology 18, 465701 (2007).
16. C.G. Hu, Yang Li, J.P. Liu, Y.Y. Zhang, G. Bao, B. Buchine, Z.L. Wang, “Sonochemical synthesis of ferromagnetic core–shell Fe3O4–FeP nanoparticles and FeP nanoshells”, Chemical Physics Letters 428, 343 (2006).
17. W.P. Gou, Yang Li, J. Chi, J.H. Ross, Jr., M. Beekman, and G. S. Nolas, “NMR Study of Slow Atomic Motion in Sr8Ga16Ge30 Clathrate”, Phys. Rev. B 71, 174307 (2005).
18. J. Chi, Yang Li, F. G. Vagizov, Venkatesh Goruganti, and Joseph H. Ross, Jr., “NMR and Mossbauer study of FeAl2” Phys. Rev. B 71, 024431 (2005).
19. D.Y. Kong, Yang Li, X. Ouyang, A.V. Prosvirin, H.H. Zhao, J.H. Ross, Jr., K.R. Dunbar, and A. Clearfield, "Syntheses, Structure, and Magnetic Properties of New Types of Cu(II), Co(II), and Mn(II) Organophosphonate Materials: Three-Dimensional Frameworks and a One-Dimensional Chain Motif," Chem. Mater., 16, 3020-3031 (2004).
20. Yang Li, J. Chi, W.P. Gou, S. Khandekar and J. H. Ross, Jr, “Structure and stability of Ba- Cu-Ge type-I clathrates”, J. Phys.:Condens. Matter 15, 5535-5542 (2003).
21. Yang Li and Joseph H. Ross, Jr., “Superconductivity at 10 K in (Ge-Ba)-based compounds”, IEEE Transactions on Applied superconductivity, 13(2) 3047-3050 (2003).
22. D. Y. Kong, Yang Li, J.H. Ross Jr. and A. Clearfield, “A novel copper organophosphonate with a pore-like 3D framework and Cu–Cu magnetic ordering”, Chem. Commun. 1720-1721 (2003).

23. Li-hua Liu, Feng Li, Ning Chen, Hong-mei Qiu, Guo-hui Cao, Yang Li, “Influence of sintering temperature on the thermoelectric properties of Ba8Ga16Si30 clathrate treated by spark plasma sintering” International Journal of Minerals, Metallurgy, and Materials, 22, pp 78 (2015)
24. Yang Li, Weipeng Wang, Xiaoxiang Li, Lihua Liu, Aihua Wang, Ning Chen, Yang Liu, and Guohui Cao “Lithium Magnestium Vanadium Oxide Li0.85Mg0.15VO2”, International Center for Diffraction Data, (I02608, 2014)
25. Yang Li, X.X. Li, L.H. Liu, N. Chen, J. García, R. Dávila, D. Faica, A. Rivera, P. Rodríguez, R. Pérez and G.H. Cao, “Structural and magnetic properties on F-doped LiVO2 with two- dimensional triangular lattice.” MRS Proceedings, Cambridge University Press, Volume 1344, 145-150 (2011).
26. Yang Li, B.Y. Ma, N. Chen, J. Lu, et al. “Comparison study of magnetic ordering for Fe-free and Fe-doped LiMn2O4 spinel oxide” J. Phys. Conf. Ser. 273 012117 (2011).
27. B.K. Woo, Z.P. Luo, Yang Li, et al, "Luminescence enhancement of CaZnGe2O6:Tb3+ afterglow phosphors synthesized using ZnO nanopowders", Optical Materials, 33, 1283 (2011).
28. N. Chen, Y. Liu, Y.K. Jia, S. P. Qu, W. J. Zhang, Yang Li, “Effect of bond length and radius on superconducting transition temperature for FeAs-based superconductors”, Science China: Physics, Mechanics & Astronomy, 53, 1−5 (2010).
29. B. K. Woo, Yang Li, S. P. Singh, “Well Trap Structures and Bulk-nano Environment Luminescence Centers in CaZnGe2O6:Tb3+ Long Afterglow Phosphor”, Malaysian Journal of Science, 31, 45 (2012).
30. C.B Rong, Yang Li, and J. P. Liu, “Curie temperatures of annealed FePt nanoparticle systems” J. Appl. Phys. 101, 09K505 (2007)
31. N. Chen and Yang Li, “A Possible Pairing Mechanism in Fe-Based High Temperature Superconductors”, Open Condensed Matter Physics Journal, 1, 13 (2008).
32. N. Chen, Y. Liu, W.J. Zhang and Yang Li, “High-Tc Superconductivity Related to Deep Inner Orbital Coupling in FeAs Based Compounds” J. Appl. Phys. 105, 07E317 (2009).
33. N. Chen, L.G. Zhang, Yang Li, "Spin Distributions on CaCuO2 Cuprate High-Tc Superconductor", Physica B 403 1142(2008).
34. Ji Chi, Yang Li, Weiping Gou, V. Goruganti, K. D. D. Rathnayaka, Joseph H. Ross, “Kondo lattice behavior and magnetic field effects in Al20V2Eu”, Physica B 403 1426 (2008).
35. V. Goruganti, Yang Li, J.H. Ross, Jr., Y. Oner, “Magnetic and Transport Properties of Nd2Ni2Pb” J. Appl. Phys. 99, 08P303 (2006).
36. Z.S. Feng and Yang Li, “Traveling wave solutions to the Fisher equation”, Physica A 366, 115 (2006).
37. V. M. Chakka, B. Altuncevahir, Z. Q. Jin, Yang. Li, J. P. Liu, “Magnetic Nanoparticles Produced By Surfactant-Assisted Ball Milling” J. Appl. Phys. 99, 08E912 (2006).
38. Y.P. Zhang, L.Q. Pan, H. Zhu, H.M. Qiu, J.H. Yin, Yang Li, F. Zhao, X.D. Zhao, J.Q. Xiao, “Fabrication and characterization of Mn-doped Cu2O thin films grown by RF magnetron sputtering”, J. Magn. Magn. Mater. 320, 3303-3306 (2008).
39. A. Wang, T. Liu, Y. Liu, G.H. Cao, C. Dong, N. Chen, Z.S. Feng, and Yang Li, “Anomalous Structural Change of Layered Perovskite Manganites La2-2xSr1+2xMn2O7”, Open Condensed Matter Physics Journal, 2, 19 (2009).

40. Yang Li, W.P. Gou, Ji Chi, V. Goruganti, and J.H. Ross, Jr. “Transition-Metal Substitution in Semiconducting Ba8Ga16Ge30 Clathrates, Physics of semiconductors, (ed. J. Menendez and C. Van de Walle) AIP Conf. Proc. 772, 331 (2005).
41. A. Wang, G. Cao, Y. Liu, Y. Long, Yang Li, Z. Feng and J.H. Ross, Jr., “Magnetic entropy change of the layered perovskites La2-2xSr1+2xMn2O2”, J. Appl. Phys. 97, 103906 (2005).
42. Yang Li, Y. Liu, R. F. Duan, X. T. Xiong, B. Y. Wang, G. H. Cao, L. Wei, D. N. Zheng, Z. X. Zhao, and J. H. Ross, Jr., “Positron annihilation study of the O-T phase transition for Eu1+xBa2-xCu3O7-y superconductors”. Physica C 402 179-187 (2004).
43. Z.P. Luo, Yang Li, H. Hashimoto, H. Ihara, A. Iyo, K. Tokiwa, J.A. Larrea J., and E. Baggio-Saitovitch, “Defective Structure in the high-Tc Superconductor Hg-1234”, Physica C 408 50 (2004).
44. Yang Li and J.H. Ross, Jr.,"New transition-metal doped germanium clathrates", Material Research Soc. Symp. Proc. Vol. 793 © 2004 Materials Research Society, S7.3.1-6 (2004).
45. Yang Li, J. H. Ross, Jr., J. A. Larrea J. and Elisa Baggio-Saitovitch, “Study of superconducting Ba-Ge-Co compounds” Physica C408 867 (2004).
46. Yang Li, Z.G. Yin, Y. Wang, G.H. Cao, J.H. Ross Jr., A.D. Caplin, G. Perkins, B.Y. Wang, and L. Wei, "Flux Pinning Behavior and Positron Annihilation Study on (Pb,Sn)-Doped Bi- 2212 Superconductors", Material Research Soc. Symp. Proc. Vol. EXS-3 © 2004 Materials Research Society, EE8.33 (2004).
47. A. Mondal, Yang Li, M.A. Khan, J.H. Ross, Jr., and R.P. Houser, “Supramolecular Copper Hydroxide Tennis Balls: Self-Assembly, Structures, and Magnetic Properties of Octanuclear [Cu8L8(OH)4]4+Clusters (HL= N-(2-Pyridylmethyl)acetamide)” Inorganic Chemistry 43 7075- 7082 (2004).
48. C. S. Lue, Yang Li, and J.H. Ross, Jr. and G.M. Irwin, “NMR and Mössbauer study of spin dynamics and electronic structure of Fe2+xV1–xAl and Fe2VGa”, Phys. Rev. B67, 224425 (2003).
49. Z. G. Yin, Yang Li, X. T. Xiong, Y. Liu, G. H. Cao, J. H. Ross, Jr,, “Preparation and properties of (Y,Eu)-123 superconducting single crystals”, Physica C 390 254-262 (2003).
50. Yang Li, G.H. Cao, G.C. Che, Z.X. Zhao, E. M. Baggio-Saitovitch, “Defect and pinning effect of Sn-doping on (La1-xSrx)2Cu1-xSnxO4 superconductors” Physica C 382 (2-3) 243-250 (2002).
51. Yang Li, S. Kaviraj, A. Berenov, G.K. Perkins, J. Driscoll, A.D. Caplin, G.H. Cao, "Enhancement of critical current density of (Pb,Sn)-doped Bi-2212 superconductors at high temperature”, Physica C 355, 51-58 (2001)
52. Yang Li and Z. X. Zhao, “Stress-field pinning induced by the lattice mismatch in 123 phase”, Physica C 351, 1-4 (2001).
53. Yang Li, G. Perkins, A. D. Caplin, Q. Z. Ma, G. H. Cao, “Stress-field pinning for Eu,Y-123 superconductors” Physica C 341-348 (1-4) 2037-2038 (2000).
54. Yang Li, G.K. Perkins, A.D. Caplin, Q.Z. Ma, G.H. Cao, “Study of pinning behaviour in Y- doped Eu-123 superconductors” Superconductor Sci. Technol. 13 1029-1034 (2000).