

Curriculum Vitae

Lin Wang, Ph.D.

HPSynC, Geophysical Laboratory, Carnegie
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Research Interests:

Emergent physical phenomena in materials at extreme conditions (high pressure, high temperature/low temperature); High pressure related synchrotron x-ray techniques; Novel diamond anvil cell high pressure techniques.

Education:

Jilin University, China	Condense Matter Physics	Ph.D., 2006
Jilin University, China	Condense Matter Physics	M.S., 2003
Jilin University, China	Technology of Optoelectronics	B.S., 2001

Employment:

2010 April - present	Research Scientist High Pressure Synergetic Consortium (HPSynC), Geophysical Laboratory, CIW.
2007-2010	Postdoctoral Scientist (Balzan Fellowship) High Pressure Synergetic Consortium (HPSynC), Geophysical Laboratory, CIW.

Selected Publications:

1. **Wang L.**, Yang W.G., Ding Y., Yang R., Xiao S.G., Liu B.B., Sinogeikin S., Meng Y., Shen G.Y., Hemley R.J., Mao W.L., and Mao H.K., Size-Dependent Amorphization of Nanoscale Y₂O₃ at High Pressure. *Phys. Rev. Lett.* 105, 095701 (2010).
2. **Wang L.**, Ding Y., Yang, W., Liu, W., Cai, Z., Kung, J., Shu, J., Hemley, J. R., Mao, L.W., and Mao, H.K., Nanoprobes measurements of materials at megabar pressures. *Proc. Nat. Acad. Sci.* **107**, 6140-6145 (2010)
3. **Wang L.**, Liu, B. B., Liu, D. D., Yao, M. G., Hou, Y. Y., Yu, S. D., Cui, T., Li, D. M., Zou, G. T., Iwasiewicz, A., Sundqvist, B., Synthesis of Thin, Rectangular C₆₀

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Nanorods Using m-Xylene as a Shape Controller.

Advanced Materials **18**, 1883 (2006).

4. **Wang L.**, Liu, B. B., Yu, S. D., Yao, M. G., Liu, D. D., Hou, Y. Y., Cui, T., Zou, G. T., Sundqvist, B., Highly Enhanced Luminescence from Single-Crystalline C₆₀*1m-xylene Nanorods.

Chemistry of Materials **18**, 4190 (2006).

5. Mao W.L., **Wang L.**, Ding Y., Yang W.G., Liu W.J., Kim D.Y. Luo W. Ahuja R., Meng Y. Sinogeikin S. Shu J.F. and Mao H.K., Distortions and stabilization of simple primitive calcium at high pressure and low temperature.

Proc. Nat. Acad. Sci. 107, 9965-9968 (2010).

6. **Wang L.**, Pan Y.X., Ding Y., Yang W.G., Mao W.L., Sinogeikin S.V. Meng Y., Shen G.Y., Mao H.K., High-pressure induced phase transitions of Y₂O₃ and Y₂O₃:Eu³⁺.

Applied Physics Letters **94**, 061921 (2009)

7. **Wang L.**, Liu, B. B., Liu, D. D., Yao, M. G., Yu, S. D., Hou, Y. Y., Cui, T., Zou, G. T., Sundqvist, B., Luo, Z. J., Li, H., Li Y. C., Liu, J., Chen, S. J., Wang, G. R., Liu, Y. C., Synthesis and High Pressure Induced Amorphization of C₆₀ Nanosheets.

Applied Physics Letters **91**, 103112 (2007)

8. **Wang L.**, Ding Y., Patel U., Yang W., Xiao Z., Cai Z., Mao W. L. and Mao H.K., Studing single nanocrystals under high pressure using an x-ray nanoprobe

Review of Scientific Instruments 82, 043903 (2011)

9. **Wang L.**, Liu, B. B., Liu, D.D., Hou, Y.Y., Yao, M.G., Zou, G.T., Li, H., Luo, C.J., Li, Y.C., Liu, J., Sundqvist B., High Pressure Studies of Nano/Sub-Micrometer C₇₀ Rods.

High Energy Physics and Nuclear Physics 29, 112 (2005)

10. **Wang L.**, Liu, B. B., Wang, H., Hou, Y. Y., Pan, Y. W., Cui Q. L., Zou, G.T., LIU, H. J., Ni, Y. H., Xu Z., Li Y.C., Li X. D., Liu, J., Pressure Induced Phase Transition of Nano Zinc Sulfide Shell.

Chinese Journal of High Pressure 19, 357 (2005)

11. Q. Zeng, H. Sheng, Y. Ding, **L. Wang**, W. Yang, J. Jiang, W. Mao, H. K. Mao, Long-rang topological order in metallic glass, *Science*, in press.

12. Y. G. Sun, W. G. Yang, Y. Ren, **L. Wang**, C. H. Lei, Multiple-step phase transformation in silver nanoplates under high pressure.

Small, 7, 606-611 (2011).

13. Sun Y.G., Ren Y., Haeffner D., Almer J., **Wang L.**; Yang, W.G. and Truong T., Nanophase Evolution at Semiconductor/Electrolyte Interface in situ Probed by Time-Resolved High-Energy Synchrotron X-Ray Diffraction.

Nano Letters 10, 3747-3753 (2010).

Selected Presentations:

1. (Invited speaker) "Shape controls and high pressure studies of C₆₀ nanocrystals", High Pressure Group Monthly Meeting at Advanced Photon Source, Argonne, IL, May, 2007.

2. (Invited speaker) "Shape controls and nanoeffect of C₆₀ nanocrystals", APS

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Users Science Seminar, Argonne, IL, July, 2007.

3. (Invited speaker) "Pressure induced phase transition in solvated C60", NSLS Users Science Seminar, Brookhaven National Laboratory, NY, March, 2008.

4. (Invited speaker) "Application of nano/submicron-focused x-ray probe for ultrahigh-pressure studies", High Pressure Synchrotron Science, Advanced Photon Source, 6-8th May 2009.

5. (Invited speaker) "Size-dependent amorphization in nanoscale Y₂O₃ at high pressure" EFree, Geophysical Laboratory, 11th August, 2010.

6. (Invited speaker) "Size-dependent amorphization in nanoscale Y₂O₃ at high pressure" 15th Chinese High Pressure conference, Qinhuangdao, 12-14th October, 2010.

7. (Invited speaker) "Size dependent compressional behavior of Y₂O₃", High Pressure Group Monthly Meeting at Advanced Photon Source, Argonne, IL, 31st Jan., 2011.

Patent

Wang L., Liu B. B., and Zou G. T., A facile method for synthesis of C60 nano-rods, nano-wire and nano-plates. (Chinese, ZL200410011188.6)

Professional Activity

Member of American Geophysical Union.

Member of American Physical Society.

Server as a Reviewer of Several Scientific Journals

Organizer of High Pressure Group Monthly Meeting at Advanced Photon Source (February 2011 --- present).

Ph.D Advisor: Prof. Guangtian Zou and Prof. Bingbing Liu (Jilin Univ.)

Postdoc. Sponsor: Dr. Ho-kwang Mao (Carnegie Institution of Washington)

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Complete publication list of Lin Wang

2011

46. **L. Wang**, Y. Ding, U. Patel, W. Yang, Z.L. Xiao, Z. H. Cai, W. Mao, H. K. Mao, X-ray nanoprobe on single nanocrystal imaging and diffraction studies under high pressure, *Review of Scientific Instruments*, 82, 043903 (2011).

45. Z. P. Li, **L. Wang**, B. B. Liu, J. H. Wang, B. Liu¹, Q. J. Li¹, B. Zou, T. Cui, Y. Meng, H. K. Mao, Z. X. Liu, and J. Liu, The structural transition behavior of CdSe/ZnS core/shell quantum dots under high pressure, *Phys. Status Solidi B*, 1–5 (2011)

44. Z. D. Zeng, **L. Wang**, X. Y. Ma, S. Qu, J. H. Chen, Y. Liu, D. Yang, Effect of germanium doping on mechanical properties of czochralski silicon wafers under indentation, *Scripta Materialia*, 64, 832-835, 2011.

43. D. D. Liu, **L. Wang**, W. Cui, M. G. Yao, Q. J. Li, Z. P. Li, B. Zou, T. Cui, B. B. Liu, B. Sundqvist, Synthesis and solid-state studies of self-assembled C60 microtubes, *Diamond and Related Materials* 20, 178-182 (2011).

42. Q. Zeng, H. Sheng, Y. Ding, **L. Wang**, W. Yang, J. Jiang, W. Mao, H. K. Mao, Long-rang topological order in metallic glass, *Science*, in press.

41. Y. G. Sun, W. G. Yang, Y. Ren, **L. Wang**, C. H. Lei, Multiple-step phase transformation in silver nanoplates under high pressure, *Small*, 7, 606-611 (2011).

40. Q. Liu, X. Hui, C. Wang, Z. Deng, Y. Lv, J. Zhu, S. Zhang, H. Liu, W. Yang, **L. Wang**, H.K. Mao, G. Shen, Z. Lu, Y. Ren, Z. Chen, Z. Lin, Y.S. Zhao, and C.Q. Jin, Pressure-induced isostructural phase transition and correlation of FeAs coordination with the superconducting properties of 111-type Na_{1-x}FeAs *Journal of The American Chemical Society*, in press.

39. J. L. Zhang, S. J. Zhang, H. M. Weng, W. Zhang, L. X. Yang, Q. Q. Liu, S. M. Feng, X. C. Wang, R. C. Yu, L. Z. Cao, **L. Wang**, W. G. Yang, H. Z. Liu, W. Y. Zhao, S. C. Zhang, X. Dai, Z. Fang, and C. Q. Jin, Pressure-induced superconductivity in topological parent compound Bi₂Te₃, *Proc. Nat. Acad. Sci.* 108, 24-28 (2011).

2010

38. **Wang L.**, Yang W.G., Ding Y., Yang R., Xiao S.G., Liu B.B., Shen G.Y., Hemley R.J., Mao W.L., and Mao H.K., Size-Dependent Amorphization of Nanoscale Y₂O₃ at High Pressure, *Phys. Rev. Lett.* 105, 095701 (2010).

37. **Wang L.**, Ding Y., Yang W.G., Liu W.J., Cai Z.H., Kung J., Shu J.F., Hemley R.J., Mao W.L., and Mao H.K., Nanoprobe measurements of materials at megabar pressures, *Proc. Nat. Acad. Sci.* **107**, 6140-6145 (2010)

36. Mao W.L., **Wang L.**, Ding Y., Yang W.G., Liu W.J., Kim D.Y. Luo W. Ahuja R., Meng Y. Sinogeikin S. Shu J.F. and Mao H.K., Distortions and stablition of

Curriculum Vitae

simple primitive calcium at high pressure and low temperature, *Proc. Nat. Acad. Sci.* 107, 9965-9968 (2010).

35. Lin Z.J., **Wang L.**, Zhang J.Z., Guo X.Y., Yang, W.G., Mao H.K. and Zhao Y.S., Nanoscale-twinning induced elastic strengthening in silicon carbide nanowires, *Scripta Materialia*, 63, 981-984 (2010).

34. Sun Y.G., Ren Y., Haefner D., Almer J., **Wang L.**; Yang, W.G. and Truong T., Nanophase Evolution at Semiconductor/Electrolyte Interface in situ Probed by Time-Resolved High-Energy Synchrotron X-Ray Diffraction, *Nano Letters*, 10, 3747-3753 (2010).

33. Shen G.Y., **Wang L.**, Ferry R., Mao H.K., and Hemley R.J., A portable laser heating microscope for high pressure research, *Journal of Physics: Conference Series*, 215, 012191 (2010).

32. Li Q.J., Liu B.B., **Wang L.**, Liu D.M., Liu R., Zou B et al., Pressure-induced amorphization and polyamorphism in one-dimensional single-crystal TiO₂ nanomaterials, *J. Phys. Chem. Lett.* 1, 309 (2010).

2009

31. **Wang L.**, Pan Y.X., Ding Y., Yang W.G., Mao W.L., Sinogeikin S.V. Meng Y., Shen G.Y., Mao H.K., High-pressure induced phase transitions of Y₂O₃ and Y₂O₃:Eu³⁺, *Appl. Phys. Lett.* 94, 061921 (2009)

30. Lin Z.J., **Wang L.**, Zhang J.Z., Mao H.K. and Zhao Y.S., Nanocrystalline tungsten carbide: as incompressible as diamond, *Appl. Phys. Lett.* 95, 211906 (2009).

29. Sun, L.L., Yi, W., **Wang L.**, Shu J.F., Sinogeikin S., Meng Y., Shen G., Bai L.G., Li Y.C., Liu J., Mao H.K., Mao W.L., X-ray diffraction studies and equation of state of methane at 202 GPa, *Chem. Phys. Lett.* 473, 72 (2009).

28. Zhang S.J., Wang X.C., Lu Q.Q., Lv Y.X., Yu X.H., Liu Z.J., Zhao Y.S., **Wang L.**, Ding Y., Mao H.K. and Jin C.Q., Superconductivity at 31K in the "111" type iron arsenide superconductor Na_{1-x}FeAs induced by pressure, *Europhys. Lett.* 88, 47008, (2009).

2008

27. Liu, B.B., Hou, Y.Y., **Wang L.**, Liu, D. D., Yu, S. D., Zou, B., Cui, T., Zou, G. T., Wagberg, T. and Sundqvist, B., High pressure and high temperature induced polymeric C-60 nanocrystal, *Diamond and related materials* 17, 620-623, 2008

26. Li, Q.J., Zhang, J.W., Liu, B.B., Li, M., Yu, S.D., **Wang L.**, Li, Z.P., Liu, D. Hou, Y.Y., Zou, Y.G., Zou, B., Cui, T., Zou, G.T., Synthesis and electrochemical properties of TiO₂-B@C core-shell nanoribbons, *Crystal Growth and Design* 8, 1812 (2008).

25. Li, Q.J., Zhang, J.W., Liu, B.B., Li, M., Liu R.; Li X.L., Ma H.L., Yu, S.D., **Wang L.**, Zou, Y.G., Li, Z.P., Zou, B., Cui, T., Zou, G.T., Synthesis of high-density

Curriculum Vitae

nanocavities inside TiO₂-B nanoribbons and their enhanced electrochemical Lithium storage properties, *Inorganic Chemistry* 47, 9870-9873 (2008).

24. Yao, M.G., Wang, Z.G., Liu, B.B., Zou, Y.G., Yu, S.D., **Wang L.**, Hou, Y.Y., Pan S.F., Jin M.X., Zou B., Cui T., Zou G.T., Sundqvist B., Raman signature to identify the structural transition of single-wall carbon nanotubes under high pressure, *Physics Review B* 78, 205411 (2008)

2007

23. **Wang L.**, Liu, B. B., Liu, D. D., Yao, M. G., Yu, S. D., Hou, Y. Y., Cui, T., Zou, G. T., Sundqvist, B., Luo, Z. J., Li, H., Li Y. C., Liu, J., Chen, S. J., Wang, G. R., Liu, Y. C., Synthesis and High Pressure Induced Amorphization of C60 Nanosheets, *Applied Physics Letters*, 91, 103112 (2007)

22. Liu, B.B. **Wang, L.** Zou, G.T. Iwasiewicz, A. Sundqvist, B., A Facile Solution Method to Synthesis of C60 Nanorods, *Materials Research Society Symposium Proceedings*, 963, 49-54 (2007).

21. Hou, Y.Y., Liu, B.B., **Wang L.**, Yu, S., Yao, M.G., Chen A., Liu, D., Zou, Y.G., Li, Z.P. Zou, B., Cui, T., Zou GT., Iwasiewicz, A., Sundqvist, B., Comparative study of pressure-induced polymerization in C-60 nanorods and single crystals, *Journal of Physics- Condensed Matter* 19, 425207(2007)

20. Liu, B.B., Hou, Y.Y., **Wang L.**, Zou, Y.G., Iwasiewicz, A., Sundqvist, B., High pressure and high temperature induced polymeric C60 nanorods and their photoluminescence properties, *Materials research at high pressure*, 987, 99 (2007)

19. Li, Z.P., Liu, B.B., Li, X.L., Yu, S.D., **Wang L.**, Hou, Y.Y., Zou, Y.G., Yao, M.G., Li, Q.J., Zou, B., Cui, T., Zou, G.T., Solvothermal synthesis of ZnS nanorods and their pressure modulated photoluminescence spectra, *Journal of Physics-Condensed Matter* 19, 425227(2007)

18. Yu, S.D., Chang, L.X., Yang, H.B., Liu, B.B., Hou, Y.Y., **Wang L.**, Yao, M.G., Cui, T., Zou, G.T., Study of the hydrostatic pressure dependence of the Raman spectrum of W/WS₂ fullerene-like nanosphere with core-shell structure, *Journal of Physics- Condensed Matter* 19, 425228 (2007)

17. Zou, Y.G., Liu, B.B., Yao, M.G., Hou, Y.Y., **Wang L.**, Yu, S.D., Wang, P., Cui, T., Zou, G., Wagberg, T., Sundqvist, B., Wang, G.R., Liu, Y.C., Effective polymerization of C-60 in SWNTs under high pressure and simultaneous UV light irradiation, *Acta Physica Sinica*, 56, 5172 (2007)

16. Li, Z.P., Liu, B.B., Li, X.L., Yu, S.D., **Wang L.**, Hou, Y.Y., Zou, Y.G., Yao, M.G., Li, Q.J., Zou, B., Cui, T., Zou, G.T. Wang, G.R., Liu, Y.C, Synthesis of ZnS nanocrystals with controllable structure and morphology and their photoluminescence property, *Nanotechnology* 18, 255602 (2007)

15. Zou, Y.G., Liu, B.B., Yao, M.G., Hou, Y.Y., **Wang L.**, Yu, S.D., Wang, P., Li, B., Zou, B., Cui, T., Zou, G., Wagberg, T., Sundqvist, B., Raman spectroscopy

Curriculum Vitae

study of carbon nanotube peapods excited by near-IR laser under high pressure, *Physics Review B* **76**, 195417 (2007)

2006

14. **Wang L.**, Liu, B. B., Liu, D. D., Yao, M. G., Hou, Y. Y., Yu, S. D., Cui, T., Li, D. M., Zou, G. T., Iwasiewicz, A., Sundqvist, B., Synthesis of Thin, Rectangular C60 Nanorods Using m-Xylene as a Shape Controller, *Advanced Materials*, **18**, 1883 (2006).

13. **Wang L.**, Liu, B. B., Yu, S. D., Yao, M. G., Liu, D. D., Hou, Y. Y., Cui, T., Zou, G. T., Sundqvist, B., Highly Enhanced Luminescence from Single-Crystalline C60*1m-xylene Nanorods, *Chemistry of Materials* **18**, 4190 (2006).

12. Hou, Y. Y., Liu, B. B., **Wang L.**, Yu, S. D., Yao, M. G., Chen, A., Liu, D.D Zou, G. T., Iwasiewicz, A., Iwasiewicz, A., Sundqvist, B., Photoluminescence properties of high-pressure-polymerized C60 nanorods in the orthorhombic and tetragonal phases, *Applied Physics Letters* **89**, 181925 (2006).

11. Hou, Y.Y., Liu, B.B., Ma, H., **Wang L.**, Zhao, Q., Cui, T., Hu, Q., Chen, A., Liu, D.D., Yu, S.D., Jia, X.P., Zou, G.T., Sundqvist, B., Pressure-induced polymerization of nano- and submicrometer C60 rods into a rhombohedral phase, *Chemical Physics Letters* **423**, 215 (2006).

10. Yao, M.G., Liu, B.B., Zou, Y.G, **Wang L.**, Cui, T., Zou, G.T., Li, J.X., Sundqvist, B., Effect of Rare-Earth Component of the RE/Ni Catalyst on the Formation and nanostructure of Single-Walled Carbon Nanotubes, *The Journal of Physical Chemistry B*, **110**, 15284.(2006).

9. Chen, S. J., Liu, Y.C., Shao, C.L., Xu, C.S., Liu, Y.X., Liu, C.Y., Zhang, B.P., **Wang L.**, Liu, B.B., Zou, G.T., Photoluminescence study of ZnO nanotubes under hydrostatic pressure, *Applied Physics Letters* **88**, 133127 (2006)

8. Chen SJ, Liu YC, Shao CL, Xu CS, Liu YX, **Wang L.**, Bingbing Liu, Zou GT, Photoluminescence of wurtzite ZnO under hydrostatic pressure, *Journal of Applied Physics* **99**, 66102 (2006).

7. Yao, M.G., Liu, B.B., Zou, Y.G., Li, D.M., Ai, X.L., **Wang L.**, Yu, S.D., Zou, G.T., Sundqvist, B., Synthesis and characterization of SWCNTs with Ho/Ni as catalyst, *New Carbon Materials* **21**, 70 (2006)

2005 and before

6. **Wang L.**, Liu, B. B., Liu, D.D., Hou, Y.Y., Yao, M.G., Zou, G.T., Li, H., Luo, C.J., Li, Y.C., Liu, J., Sundqvist B., High Pressure Studies of Nano/Sub-Micrometer C70 Rods, *High Energy Physics and Nuclear Physics* **29**, 112 (2005)

5. **Wang L.**, Liu, B. B., Wang, H., Hou, Y. Y., Pan, Y. W., Cui Q. L., Zou, G.T., LIU, H. J., Ni, Y. H., Xu Z., Li Y.C., Li X. D., Liu, J., Pressure Induced Phase Transition of Nano Zinc Sulfide Shell, *Chinese Journal of High Pressure* **19**, 357 (2005)

Curriculum Vitae

4. Yao, M.G., Liu, B.B., Zou, Y.G., **Wang L.**, Li, D.M., Cui, T., Zou, G.T., Sundqvist, B., Synthesis of single-wall carbon nanotubes and long nanotube ribbons with Ho/Ni as catalyst by arc discharge, *Carbon* **43**, 2894 (2005).

3. Chen S.J., Liu Y.C., Shao C.L., Xu C.S., Liu Y.X., **Wang L.**, Liu B.B., Zou G.T., Pressure-dependent photoluminescence of ZnO nanosheets, *Journal of Applied Physics* **98**, 106106 (2005).

2. Liu, B.B., Yu, M., Li, D.M., Cui, T., **Wang L.**, Yao, M.G., Yu, S.D., Zou, G.T., Wang, X., Zhao, B., Sundqvist, B., Effects of silver films with different nano-particle sizes on SERS of single-walled carbon nanotubes, *Chemical Journal of Chinese Universities-Chinese* **26**, 1930 (2005)

1. Yu, M., Liu, B.B., Li, D.M., Li, M.H., Yao, M.G., **Wang L.**, Wang, H., Zou, G.T., Wang, X., Zhao, B., Sundqvist, B., SERS study of single-walled carbon nanotubes on silver films deposited on different substrates, *Chemical Journal of Chinese Universities-Chinese* **24**, 1285 (2003)
