Wei Tian

1 Bethel Valley Road
Oak Ridge National Laboratory
PO BOX 2008 MS6393
Oak Ridge, TN 37831

Phone: (865) 574-6427
Fax: (865) 574-6268
E-mail: tianwn@ornl.gov

Research Interest:

Study the physical properties of correlated electron materials with the potential for interesting electrical and/or magnetic behaviors using different techniques, in particularly, using neutron scattering techniques.

Education:

- University of Tennessee, Knoxville, U.S.A
  Ph. D. in Physics — Summer 2006
- Fudan University, Shanghai, China
  B.S. in Nuclear physics — Summer 1992

Employment:

- Neutron Scattering Scientist, ORNL — September, 2013-Present
- Instrument Scientist, ORISE career development — October 2011-September 2013
- Postdoc, Ames Lab (station at HFIR, ORNL) — Oct. 2006-2011
- Research Associate, CIAE, China — August 1992-1997

Research Experience:

- 116 peer reviewed publications, h-index=32
- Neutron Scattering Scientist, ORNL — October, 2011-Present

  Recent research topics:

  1. Molecular magnet: $(NH_4)_2[FeCl_5(H_2O)]$
  2. Low dimensional magnetism: $NaM(M = Mn, Co, Cr)(Si, Ge)_2O_6$ pyroxenes with competing FM and AFM interactions
  3. Multiferroics: hexagonal manganite $Y_{0.7}Lu_{0.3}MnO_3$

4. Magnetocaloric materials: Tb_5Ge_4 useful as solid state magnetic refrigerants

5. Frustrated magnet: honeycomb lattice $SrHo_2O_4$

- Postdoc, employed by Ames Lab based at ORNL Oct 2006-2011

  Performed neutron scattering experiments to study the physical properties of $LiMPO_4$ (M = Mn, Co), $TbBaFe_2O_5$, Tb_5Ge_4, SrL_2O_4 (L = Ho and Er), $Tb(Co/Fe)_2Zn_{20}$, and Fe-As superconductors

- Graduate student and Research Assistant, UT Physics August 2001-2006

  Synthesize, characterize and study the physical properties of $LiVO_2$, $DMACuCl_3$, $LiNiO_2$, $LiCoO_2$, $BaVS_3$ and $Nd_{1-x}Sr_xMnO_3$. In particular, perform neutron scattering experiments to study the unusual magnetic properties of $LiVO_2$ and $DMACuCl_3$.

- Graduate student and Teaching Assistant, UT Physics Fall 1999 - 2001

- Visiting Scholar, BNL September 1997 - July 1999

  Participated in the Muon Identifier (MuID) construction of π/μ identification. In charge of the quality assurance of the Limited Streamer Tubes which is the major component of MuID. Did manage and run large experimental set up for control tube's efficiency, leakage current, gas leak, mortality under high voltage.

- Visiting Scholar, ORNL April 1996 - October 1996

  Performed studies of Limited Streamer Tube with cross-section (9mm x 9mm) for MuID (Muon Identifier) subsystem of RHIC (Relativistic Heavy Ion Collider) built at BNL. Tested tubes shipped from China Institute of Atomic Energy (CIAE) and Italy and compared their performances.

- Research Associate, CIAE, China August 1992 - April 1996

  1. Performed the study of Pion-Muon separation in PHENIX Muon ID using GEANT3 (PISA) and PAW .

  2. Participated in $40Ca + 58Ni \longrightarrow 92Rh\gamma - \gamma$ coincidence experiment. Was responsible for writing data acquisition program (XSYS) and set up electronics. Took lead role in experimental data analysis with PAW software package .

  3. Group member of RHIC (Relativistic Heavy Ion Collider) group at CIAE. Performed studies of Limited Streamer Tubes. Optimized high voltage conditioning and time jitter for tubes with different cross sections.

Award:

Neutron Science Fellowship, University of Tennessee, 2004 to 2006

Services:

- SESAPS 2018 local organizing committee member
- Co-organizer of Neutrons and complementary techniques for quantum materials virtual workshop in 2020
- Co-organizer of APS Focus Topic on Low-Dimensional and Molecular Magnetism for APS 2021 March meeting

Presentations:

1. "Crystal Growth and Physical Properties of $Nd_{1-x}Sr_xMnO_3$", contributed talk, March Meeting, 2002.
2. "Crystal Growth and Physical Properties of $LiVO_2$", contributed talk, March Meeting, 2003.
3. "Physical Properties and Neutron Scattering Studies of $LiVO_2$" SESAPS Meeting, November 11-13, 2004.
4. "Bulk Properties and Neutron Scattering Studies of $LiVO_2$", contributed talk, March Meeting, 2005.
5. "Magnetic Excitations in the Orbitally Degenerate Triangular Lattice $LiVO_2$ Studied by Inelastic Neutron Scattering", contributed talk, March Meeting, 2006.
6. "Neutron Scattering in the Novel Quantum Magnets: $LiVO_2$ & $DMACuCl_3$", seminar at Ames Lab and Iowa State University, May 2006.
7. "Magnetic Excitations in $LiCoPO_4$", contributed talk, March Meeting, 2008.
8. "Neutron Scattering Studies of $LiCoPO_4$ & $LiMnPO_4$", International Conference on Neutron Scattering, 2009.
9. "Magnetic Phase Transition and Spin Dynamics in $LiCoPO_4$ & $LiMnPO_4$", seminar ORNL, April 2009.
10. "Neutron Scattering Studies of Low Dimensional Magnets: $DMACuCl_3$ & $LiMPO_4$ (M = Co, Mn)", seminar at ORNL, November 2009.
11. "Interplay between Fe and Nd magnetism in NdFeAsO single crystals", contributed talk, March Meeting, 2010.

12. "Interplay between Fe and Nd magnetism in NdFeAsO single crystals", seminar at ORNL, October 2010.

13. "Doping influence on the spin dynamics and magnetoelectric effect in hexagonal $Y_{0.7}Lu_{0.3}MnO_3$", contributed talk, March Meeting, 2014.

14. "Single crystal neutron diffraction study of organic multiferroic $(ND_4)_2[FeCl_5(D_2O)]$", contributed talk, March Meeting, 2015.

15. "Field evolution of magnetism in multiferroic $(ND_4)_2[FeCl_5(D_2O)]$", contributed talk, March Meeting, 2016.

16. "Inelastic neutron scattering study of molecular multiferroic $(ND_4)_2[FeCl_5(D_2O)]$", contributed talk, March Meeting, 2018.

17. "Neutron scattering study of the evolution from ferromagnetism to antiferromagnetism in $NaCrSi_xGe_{2-x}O_6$ pyroxenes", contributed talk, March Meeting, 2019.

18. "Phase competition and collective phenomena in molecular multiferroic $(ND_4)_2[FeCl_5(D_2O)]$", invited talk, 8th Workshop on 8th Workshop on "Current Trends in Molecular and Nanoscale Magnetism" (CTMNM) Rhodes, Greece May 27-31, 2019.

19. "Neutron scattering study of the coupled phenomena in molecular multiferroic $(ND_4)_2[FeCl_5(D_2O)]$", invited talk at Molecular Magnetism in North America Conference, February 2020.

20. "Magnetic Excitations of the Hybrid Multiferroic $(ND_4)_2[FeCl_5(D_2O)]$", contributed talk, March Meeting, 2021.

List of publications

---

[1] Feng Ye, Zachary Morgan, Wei Tian, Songxue Chi, Xiaoping Wang, Michael E. Manley, David Parker, Mojammel A. Khan, J. F. Mitchell, and Randy Fishman, "Canted antiferromagnetic order and spin dynamics in the honeycomb-lattice compound $Tb_2Ir_3Ga_9$", *Phys. Rev. B*, **103**, 184413 (2021)

[2] Karna S.K., Tristant D., Hebert J.K., Cao G., Chapai R., Phelan W.A., Zhang Q., Wu Y., Dhital C., Li Y., Cao H.B., Tian W., dela Cruz C., Aczel A.A., Zaharko O., Khasanov A., McGuire M.A., Roy A., Xie W., Browne D.A., Vekhter I., Meunier V., Shelton W.A., "Helical

magnetic order and Fermi surface nesting in noncentrosymmetric ScFeGe", *Phys. Rev. B*, **103**, 014443 (2021).

[3] Zhang H.D., Zhu Y.L., Qiu Y., Tian W., Cao H.B., Mao Z.Q., Ke X., "Field-induced magnetic phase transitions and the resultant giant anomalous Hall effect in the antiferromagnetic half-Heusler compound DyPtBi", *Phys. Rev. B*, **102**, 094424 (2020).

[4] Feng Ye, Christina Hoffmann, Wei Tian, Hengdi Zhao, and G. Cao, "Pseudospin-lattice coupling and electric control of the square-lattice iridate Sr_2IrO_4", *Phys. Rev. B* **102**, 115120 (2020).

[5] Fang Y., Tang F., Ruan Y.R., Zhang J.M., Zhang H.D., Gu H., Zhao W.Y., Han Z., Tian W., Qian B., Jiang X.F., Zhang X.M., Ke X., "Magnetic-field-induced nontrivial electronic state in the Kondo-lattice semimetal CeSb", *Phys. Rev. B*, **101**, 094424 (2020).

[6] Pajerowski D.M., Pratt D.K., Hahn S.E., Tian W., Granroth G.E., Kolesnikov A.I., Taskin A.A., Ando Y., McQueeney R.J., "Spin waves above and below the Verwey transition in $TbBaFe_2O_5$", *Phys. Rev. B*, **101**, 064418 (2020).

[7] Yan J.Q., Tian W., Cao H.B., Chi S.X., Ye F., Llobet A., Puretzky A., Chen Q., Ma J., Ren Y., Cheng J.G., Zhou J.S., McGuire M.A., McQueeney R.J., "Lattice distortion in the spin-orbital entangled state in RVO_3 perovskites", *Phys. Rev. B*, **100**, 184423 (2019).

[8] Wilde J.M., Kreyssig A., Vaknin D., Sangeetha N.S., Li B., Tian W., Orth P.P., Johnston D.C., Ueland B.G., McQueeney R.J., "Helical magnetic ordering in $Sr(Co_{1x}Ni_x)_2As_2$", *Phys. Rev. B*, **100**, 161113(R) (2019).

[9] Tian W., Yan J.Q., Kolesnikov A.I., "Insights into the evolution from ferromagnetism to antiferromagnetism: A doping-dependent study of $NaCrSi_xGe_{2x}O_6$ (0 x 2)", *Phys. Rev. B*, **99**, 064427 (2019).

[10] Li B., Sizyuk Y., Sangeetha N.S., Wilde J.M., Das P., Tian W., Johnston D.C., Goldman A.I., Kreyssig A., Orth P.P., McQueeney R.J., Ueland B.G., "Antiferromagnetic stacking of ferromagnetic layers and doping-controlled phase competition in $Ca_{1x}Sr_xCo_{2y}As_2$", *Phys. Rev. B*, **100**, 024415 (2019).

[11] Liu Y., Islam F., Dennis K.W., Tian W., Ueland B.G., McQueeney R.J., Vaknin D., "Hole doping and antiferromagnetic correlations above the Nel temperature of the topological semimetal $(Sr_{1x}K_x)MnSb_2$", *Phys. Rev. B*, **100**, 014437 (2019).

[12] Liu Y., Ma T., Zhou L., Straszheim W.E., Islam F., Jensen B., Tian W., Heitmann T.W.,

Rosenberg R.A., Wilde J.M., Li B., Kreyssig A., Goldman A.I., Ueland B.G., McQueeney R.J., Vaknin D., "Crystal growth, microstructure, and physical properties of $SrMnSb_2$", *Phys. Rev. B*, **99**, 054435 (2019).

[13] Schmehr J.L., Zoghlin E., Porter Z., Wang X.P., Ruff J.P., Tian W., Islam Z., Wilson S.D., "Preferential quenching of 5d antiferromagnetic order in $Sr_3(Ir_{1x}\ Mn_x)_2O_7$", *Journal of Physics: Condensed Matter*, **31**, 244003 (2019).

[14] Amanda J. Clune, Jisoo Nam, Minseong Lee, Kendall D. Hughey, Wei Tian, Jaime A. Fernandez-Baca, Randy S. Fishman, John Singleton, Jun Hee Lee and Janice L. Musfeldt, "Magnetic field-temperature phase diagram of multiferroic $(NH_4)_2FeCl_5H_2O$", *npj Quantum Materials*, **4**, 44 (2019)

[15] Huon A., Vibhakar A.M., Grutter A.J., Borchers J.A., Disseler S.M., Liu Y., Tian W., Orlandi F., Manuel P., Khalyavin D.D., Sharma Y., Herklotz A., Lee H.N., Fitzsimmons M.R., Johnson R.P., May S.J., "Helical magnetism in Sr-doped $CaMn_7O_{12}$ films", *Phys. Rev. B*, **98**, 224419 (2018).

[16] Hu D., Wang W., Zhang W.L., Wei Y., Gong D., Tam D.W., Zhou P., Li Y., Tan G., Song Y., Georgii R., Pedersen B., Cao H.B., Tian W., Roessli B., Yin Z.P., Dai P.C., "c-axis pressure-induced antiferromagnetic order in optimally P-doped $BaFe_2(As_{0.7}0P_{0.30})_2$ superconductor", *npj Quantum Materials*, **3**, 47 (2018).

[17] Tian W., Cao H.B., Clune A.J., Hughey K.D., Hong T., Yan J.Q., Agrawal H.K., Singleton J., Sales B.C., Fishman R.S., Musfeldt J.L., Fernandez-Baca J.A., "Electronic phase separation and magnetic-field-induced phenomena in molecular multiferroic $(ND_4)_2FeCl_5D_2O$", *Phys. Rev. B*, **98**, 054407 (2018).

[18] Li X.G., Sheng J.M., Tian C.K., Wang Y.Y., Xia T.L., Wang L., Ye F., Tian W., Wang J.C., Liu J., Zhang H.X., Bao W., Cheng P., "Effects of vanadium doping on $BaFe_2As_2$", *EPL*, **122**, 67006 (2018).

[19] Wang W., Song Y., Cao C., Tseng K.F., Keller T., Li Y., Harriger L.W., Tian W., Chi S.X., Yu R., Nevidomskyy A.H., Dai P.C., "Local orthorhombic lattice distortions in the paramagnetic tetragonal phase of superconducting $NaFe_{1x}Ni_xAs$", *Nature Communications*, **9**, 3128 (2018).

[20] A. Kreyssig, J. M. Wilde, A. E. Bhmer, W. Tian, W. R. Meier, Bing Li, B. G. Ueland, Mingyu Xu, S. L. Budko, P. C. Canfield, R. J. McQueeney, and A. I. Goldman, "Antiferromagnetic order in $CaK(Fe_{1x}Ni_x)_4As_4$ and its interplay with superconductivity", *Phys. Rev. B* **97**, 224521

(2018).

[21] Nepal R., Zhang Q., Dai S., Tian W., Nagler S.E., Jin R., "Structural and magnetic transitions in spinel $FeMn_2O_4$ single crystals", *Phys. Rev. B* **97**, 024410 (2018).

[22] Ueland B.G., Jo N.H., Sapkota A., Tian W., Masters M., Hodovanets H., Downing S.S., Schmidt C., McQueeney R.J., Bud'ko S.L., Kreyssig A., Canfield P.C., Goldman A.I., "Reduction of the ordered magnetic moment and its relationship to Kondo coherence in $Ce_{1-x}La_xCu_2Ge_2$", *Phys. Rev. B* **97**, 165121 (2018).

[23] Ye F., Wang J.C., Sheng J.M., Hoffmann C., Gu T., Xiang H.J., Tian W., Molaison J.J., dos Santos A.M., Matsuda M., Chakoumakos B.C., Fernandez-Baca J.A., Tong X., Gao B., Kim J.W., Cheong S.W., "Soft antiphase tilt of oxygen octahedra in the hybrid improper multiferroic $Ca_3Mn_{1.9}Ti_{0.1}O_7$", *Phys. Rev. B* **97**, 041112 (R) (2018).

[24] Zhu M., Li P.G., Wang Y., Cao H.B., Tian W., Zhang H.D., Phelan B.D., Mao Z.Q., Ke X., "Temperature- and field-driven spin reorientations in triple-layer ruthenate $Sr_4Ru_3O_{10}$" *Scientific Reports* **8**, 3914 (2018).

[25] Weiyi Wang, Yu Song, Ding Hu, Yu Li, Rui Zhang, L. W. Harriger, Wei Tian, Huibo Cao, and Pengcheng Dai, Local breaking of fourfold rotational symmetry by short-range magnetic order in heavily overdoped $Ba(Fe_{1x}Cu_x)_2As_2$"*Phys. Rev. B* **96**, 161106 (R) (2017).

[26] Li S., Gan Y., Wang J., Zhong R., Schneeloch J.A., Xu Z.J., Tian W., Stone M.B., Chi S.X., Matsuda M., Sidis Y., Bourges P., Li Q., Gu G.D., Tranquada J.M., Xu G., Birgeneau R.J., Wen J., "Suppression of the antiferromagnetic order when approaching the superconducting state in a phase-separated crystal of $K_xFe_{2-y}Se_2$", *Phys. Rev. B* **96**, 094503 (2017).

[27] Schneeloch J.A., Guguchia Z., Stone M.B., Tian W., Zhong R., Mohanty K.M., Xu G., Gu G.D., Tranquada J.M., "Growth and structural characterization of large superconducting crystals of $La_{2-x}Ca_{1+x}Cu_2O_6$", *Physical Review Materials* **1**, 7, 074801 (2017).

[28] Zhai K., Wu Y., Shen S., Tian W., Cao H.B., Chai Y.S., Chakoumakos B.C., Shang D., Yan L., Wang F., Sun Y., "Giant magnetoelectric effects achieved by tuning spin cone symmetry in Y-type hexaferrites", *Nature Communications* **8**, 519 (2017).

[29] Zou T., Lee C.C., Tian W., Cao H.B., Zhu M., Qian B., dela Cruz C., Ku W., Mao Z.Q., Ke X., "G-type magnetic order in ferropnictide $Cu_xFe_{1-y}As$ induced by hole doping on As sites", *Phys. Rev. B* **95**, 5, 054414 (2017).

[30] Zhu M., Wang Y., Li P.G., Ge J.J., Tian W., Keavney D.J., Mao Z.Q., Ke X., "Tipping the

magnetic instability in paramagnetic $Sr_3Ru_2O_7$ by Fe impurities", *Phys. Rev. B* **95**, 17, 174430 (2017).

[31] Zhu M., Shanavas K.V., Wang Y., Zou T., Sun W.F., Tian W., Garlea V.O., Podlesnyak A.A., Matsuda M., Stone M.B., Keavney D.J., Mao Z.Q., Singh D.J., Ke X., "Non-Fermi surface nesting driven commensurate magnetic ordering in Fe-doped Sr_2RuO_4", *Phys. Rev. B* **95**, 5, 054413 (2017).

[32] Zhu M., Peng J., Tian W., Hong T., Mao Z.Q., Ke X., "Tuning the competing phases of bilayer ruthenate $Ca_3Ru_2O_7$ via dilute Mn impurities and magnetic field", *Phys. Rev. B* **95**, 14, 144426 (2017).

[33] Zhang Q., Ye F., Tian W., Cao H.B., Chi S.X., Hu B., Diao Z., Tennant D.A., Jin R., Zhang J., Plummer W., "Manganese-induced magnetic symmetry breaking and its correlation with the metal-insulator transition in bilayered $Sr_3(Ru_{1-x}Mn_x)_2O_7$", *Phys. Rev. B* **95**, 22, 220403(R) (2017).

[34] David W. Tam, Yu Song, Haoran Man, Sky C. Cheung, Zhiping Yin, Xingye Lu, Weiyi Wang, Benjamin A. Frandsen, Lian Liu, Zizhou Gong, Takashi U. Ito, Yipeng Cai, Murray N. Wilson, Shengli Guo, Keisuke Koshiishi, Wei Tian, Bassam Hitti, Alexandre Ivanov, Yang Zhao, Jeffrey W. Lynn, Graeme M. Luke, Tom Berlijn, Thomas A. Maier, Yasutomo J. Uemura, and Pengcheng Dai, "Uniaxial pressure effect on the magnetic ordered moment and transition temperatures in $BaFe_{2-x}T_xAs_2$(T=Co,Ni)", *Phys. Rev. B* **95**, 6, 060505(R) (2017).

[35] Jayasekara W.T., Pandey A., Kreyssig A., Sangeetha N.S., Sapkota A., Kothapalli K., Anand V.K., Tian W., Vaknin D., Johnston D.C., McQueeney R.J., Goldman A.I., Ueland B.G., "Suppression of magnetic order in CaCo 1.86 As 2 with Fe substitution: Magnetization, neutron diffraction, and x-ray diffraction studies of $Ca(Co_{1-x}Fe_x)_yAs_2$", *Phys. Rev. B* **95**, 6, 064425 (2017).

[36] Tian W., Cao H.B., Wang J.C., Ye F., Matsuda M., Yan J.Q., Liu Y., Garlea V.O., Agrawal H.K., Chakoumakos B.C., Sales B.C., Fishman R.S., Fernandez-Baca J.A., "Spin-lattice coupling mediated multiferroicity in $(ND_4)_2FeCl_5D_2O$", *Phys. Rev. B* **94**, 214405 (2016).

[37] Song Y., Yamani Z., Cao C., Li Y., Zhang C., Chen J.S., Huang Q.Z., Wu H., Tao J., Zhu Y., Tian W., Chi S.X., Cao H.B., Huang Y.B., Dantz M., Schmitt T., Yu R., Nevidomskyy A.H., Morosan E., Si Q., Dai P.C., "A Mott insulator continuously connected to iron pnictide superconductors", *Nature Communications* **7**, 13879 (2016).

[38] Zou T., Cao H.B., Liu G.Q., Peng J., Gottschalk M., Zhu M., Zhao Y., Leao J.B., Tian W., Mao Z.Q., Ke X.,"Pressure-induced electronic and magnetic phase transitions in a Mott insulator: Ti-doped $Ca_3Ru_2O_7$ bilayer ruthenate", *Phys. Rev. B* **94**, 4, 041115(R) (2016).

[39] Jiang S., Liu C., Cao H.B., Birol T., Allred J.M., Tian W., Liu L., Cho K., Krogstad M.J., Ma J., Taddei K.M., Tanatar M.A., Hoesch M., Prozorov R., Rosenkranz S., Uemura Y.J., Kotliar G., Ni N., "Structural and magnetic phase transitions in $Ca_{0.73}La_{0.27}FeAs_2$ with electron-overdoped FeAs layers", *Phys. Rev. B* **93**, 5, 054522 (2016).

[40] Jiang S., Liu L., Schutt M., Hallas A.M., Shen B., Tian W., Emmanouilidou E., Shi A., Luke G.M., Uemura Y.J., Fernandes R.M., Ni N., "Effect of interlayer coupling on the coexistence of antiferromagnetism and superconductivity in Fe pnictide superconductors: A study of $Ca_{0.74(1)}La_{0.26(1)}(Fe_{1-x}Co_x)As_2$ single crystals", *Phys. Rev. B* **93**, 17, 174513 (2016).

[41] Ma J., Kamiya Y., Hong T., Cao H.B., Ehlers G., Tian W., Batista C.D., Dun Z.L., Zhou H.D., Matsuda M., "Static and Dynamical Properties of the Spin-1/2 Equilateral Triangular-Lattice Antiferromagnet $Ba_3CoSb_2O_9$", *Phys. Rev. Lett* **116**, 087201 (2016).

[42] Tan G., Song Y., Zhang C., Lin L., Xu Z., Hou T., Tian W., Cao H.B., Li S., Feng S., Dai P.C., "Electron doping evolution of structural and antiferromagnetic phase transitions in $NaFe_{1-x}Co_xAs$ iron pnictides", *Phys. Rev. B* **94**, 1, 014509 (2016).

[43] Wang J.C., Ye F., Chi S.X., Fernandez-Baca J.A., Cao H.B., Tian W., Gooch M., Poudel N., Wang Y.Q., Lorenz B., Chu C.W., "Pressure effects on magnetic ground states in cobalt-doped multiferroic $Mn_{1-x}Co_xWO_4$", *Phys. Rev. B* **93**, 15, 155164 (2016).

[44] Wang M., Yi M., Tian W., Bourret-Courchesne E., Birgeneau R.J., "Elucidating the magnetic and superconducting phases in the alkali metal intercalated iron chalcogenides", *Phys. Rev. B* **93**, 7, 075155 (2016).

[45] Zhang Q., Kumar C.M., Tian W., Dennis K.W., Goldman A.I., Vaknin D., "Structure and magnetic properties of LnMnSbO (Ln=La and Ce)", *Phys. Rev. B* **93**, 094413 (2016).

[46] Poudel L., dela Cruz C., Payzant E.A., May A.F., Koehler M.R., Garlea V.O., Taylor A.E., Parker D.S., Cao H.B., McGuire M.A., Tian W., Matsuda M., Jeen H., Lee H.N., Hong T., Calder S., Zhou H.D., Lumsden M.D., Keppens V., Mandrus D., Christianson A.D., "Structural and magnetic phase transitions in $CeCu_{6-x}T_x$ (T=Ag,Pd)", *Phys. Rev. B* **92**, 214421 (2015).

[47] Song Y., Lu X., Abernathy D.L., Tam D.W., Niedziela J., Tian W., Luo H.Q., Si Q., Dai P.C., "Energy dependence of the spin excitation anisotropy in uniaxial-strained $BaFe_{1.9}Ni_{0.1}As_2$",

Phys. Rev. B **92**, 18, 180504(R) (2015).

[48] W. Tian, C. Svoboda, M. Ochi, M. Matsuda, H. B. Cao, J.-G. Cheng, B. C. Sales, D. G. Mandrus, R. Arita, N. Trivedi, and J.-Q. Yan, "High antiferromagnetic transition temperature of the honeycomb compound $SrRu_2O_6$", *Phys. Rev. B* **92**, 100404(R) (2015).

[49] Chen X., Hogan T., Walkup D., Zhou W., Pokharel M., Yao M., Tian W., Ward T. Z., Zhao Y., Parshall D., Opeil C., Lynn J. W., Madhaven V., Wilson S. D., "The influence of electron-doping on the ground state of $(Sr_{1-x}La_x)_2IrO_4$", *Phys. Rev. B* **92**, 075125 (2015).

[50] Ma J., Lee J. H., Hahn S. E., Hong T., Cao H. B., Aczel A. A., Dun Z. L., Stone M. B., Tian W., Qiu Y., Copley J. R.D., Zhou H. D., Fishman R. S., Matsuda M., "Strong competition between orbital ordering and itinerancy in a frustrated spinel vanadate", *Phy. Rev. B* **91**, 020407(R) (2015).

[51] Wen J. J., Tian W., Garlea V. O., Koohpayeh S. M., McQueen T. M., Li H. F., Yan J. Q., Rodriguez-Rivera J. A., Vaknin D., Broholm C. L., "Disorder from order among anisotropic next-nearest-neighbor Ising spin chains in $SrHo_2O_4$", *Phys. Rev. B* **91**, 054424 (2015).

[52] Yu J., LeClair P. R., Mankey G. J., Robertson J. L., Crow M. L., Tian W., "Exploring the magnetic phase diagram of dysprosium with neutron diffraction", *Phys. Rev. B* **91**, 014404 (2015).

[53] Zhang Q., Tian W., Peterson S. G., Dennis K. W., Vaknin D., "Spin reorientation and Ce-Mn coupling in antiferromagnetic oxypnictide CeMnAsO", *Phys. Rev. B* **91**, 064418 (2015).

[54] Lee M., Choi E. S., Huang X., Ma J., DelaCruz C. R., Matsuda M., Tian W., Dun Z. L., Dong S., Zhou H. D., "Magnetic phase diagram and multiferroicity of $Ba_3MnNb_2O_9$: A spin-5/2 triangular lattice antiferromagnet with weak easy-axis anisotropy", *Phys. Rev. B* **90**, 224402 (2014).

[55] W. T. Jayasekara, Wei Tian, H. Hodovanets, P. C. Canfield, S. L. Budko, A. Kreyssig, and A. I. Goldman,"Complex magnetic ordering in $CeGe_{1.76}$ studied by neutron diffraction", *Phys. Rev. B* **90**, 134423 (2014).

[56] Meng Wang, Wei Tian, P. Valdivia, Songxue Chi, E. Bourret-Courchesne, Pengcheng Dai, and R. J. Birgeneau,"Two spatially separated phases in semiconducting $Rb_{0.8}Fe_{1.5}S_2$", *Phys. Rev. B* **90**, 125148 (2014).

[57] A. Sapkota, G. S. Tucker, M. Ramazanoglu, W. Tian, N. Ni, R. J. Cava, R. J. McQueeney, A. I. Goldman, and A. Kreyssig1 "Lattice distortion and stripelike antiferromagnetic order in

$Ca_{10}(Pt_3As_8)(Fe_2As_2)_5$", *Phys. Rev. B* **90**, 100504(R) (2014).

[58] Ling Cai, Jean Toulouse, Haosu Luo, Wei Tian, "Anisotropic phonon coupling in relaxor ferroelectric $(Na_{1/2}Bi_{1/2})$TiO3 near its high temperature phase transition", *Phys. Rev. B* **50**, 054118(2014).

[59] X. Ke, J. Peng, W. Tian, Tao Hong, M. Zhu, and Z. Q. Mao, "Commensurate-incommensurate magnetic phase transition in the Fe-doped ruthenate bilayer $Ca_3Ru_2O_7$", *Phys. Rev. B* **89**, 220407(R)(2014).

[60] Chetan Dhital, Tom Hogan, Z. Yamani, Robert J. Birgeneau, W. Tian, M. Matsuda, A. S. Sefat, Ziqiang Wang, and Stephen D. Wilson, "Evolution of antiferromagnetic susceptibility under uniaxial pressure in $Ba(Fe_{1-x}Co_x)_2As_2$", *Phys. Rev. B* **89**, 214404(2014).

[61] Chenglin Zhang, Leland W. Harriger, Zhiping Yin, Weicheng Lv, Miaoyin Wang, Guotai Tan, Yu Song, D. L. Abernathy, Wei Tian, Takeshi Egami, Kristjan Haule, Gabriel Kotliar, and Pengcheng Dai, "Effect of Pnictogen Height on Spin Waves in Iron Pnictides", *Phys. Rev. Lett* **112**, 217202(2014).

[62] Tao Hong, K. P. Schmidt, K. Coester, F. F. Awwadi, M. M. Turnbull, Y. Qiu, J. A. Rodriguez-Rivera, M. Zhu, X. Ke, C. P. Aoyama, Y. Takano, Huibo Cao, W. Tian, J. Ma, R. Custelcean, H. D. Zhou, and M. Matsuda, "Magnetic ordering induced by interladder coupling in the spin-1/2 Heisenberg two-leg ladder antiferromagnet $C_9H_{18}N_2CuBr_4$", *Phys. Rev. B* **89**, 174432(2014).

[63] W. Tian, Guotai Tan, Liu Liu, Jinxing Zhang, Barry Winn, Tao Hong, J. A. Fernandez-Baca, Chenglin Zhang, and Pengcheng Dai, "Influence of doping on the spin dynamics and magnetoelectric effect in hexagonal $Y_{0.7}Lu_{0.3}MnO_3$", *Phys. Rev. B* **89**, 144417(2014).

[64] J. Ma, V. O. Garlea, A. Rondinone, A. A. Aczel, S. Calder, C. dela Cruz, R. Sinclair, W. Tian, Songxue Chi, A. Kiswandhi, J. S. Brooks, H. D. Zhou, and M. Matsuda, "Magnetic and structural phase transitions in the spinel compound $Fe_{1+x}Cr_{2-x}O_4$", *Phys. Rev. B* **89**, 134106(2014).

[65] Chetan Dhital, Tom Hogan, Wenwen Zhou, Xiang Chen, Zhensong Ren, Mani Pokharel, Yoshinori Okada, M. Heine, Wei Tian, Z. Yamani, C. Opeil, J. S. Helton, J. W. Lynn, Ziqiang Wang, Vidya Madhavan, and Stephen D. Wilson, "Carrier localization and electronic phase separation in a doped spin-orbit-driven Mott phase in $Sr_3(Ir_{1-x}Ru_x)_2O_7$", *Nat. Commun* DOI: 10.1038/ncomms4377 (2014).

[66] Qiang Zhang, Wei Tian, Haifeng Li, Jong-Woo Kim, Jiaqiang Yan, R. William McCallum,

Thomas A. Lograsso, Jerel L. Zarestky, Sergey L. Budko, Robert J. McQueeney, and David Vaknin, "Magnetic structures and interplay between rare-earth Ce and Fe magnetism in single-crystal CeFeAsO", *Phys. Rev. B* **88**, 174517(2013).

[67] J. Ma, C. D. Dela Cruz, Tao Hong, W. Tian, A. A. Aczel, Songxue Chi, J.-Q. Yan, Z. L. Dun, H. D. Zhou, and M. Matsuda, "Magnetic phase transition in the low-dimensional compound $BaMn_2Si_2O_7$", *Phys. Rev. B* **88**, 144405(2013).

[68] Xingye Lu, H. Gretarsson, Rui Zhang, Xuerong Liu, Huiqian Luo, Wei Tian, Mark Laver, Z. Yamani, Young-June Kim, A. H. Nevidomskyy, Qimiao Si, and Pengcheng Dai, "Avoided quantum criticality and magnetoelastic coupling in $BaFe_{2-x}Ni_xAs_2$", *Phys. Rev. Lett* **110**, 257001 (2013).

[69] Wenbin Wang, Jun Zhao, Zheng Gai, Nina Balke, Miaofang Chi, Ho Nyung Lee, Wei Tian, Leyi Zhu, Xuemei Cheng, David J. Keavney, Jieyu Yi, Thomas Z. Ward, Paul C. Snijders, Hans M. Christen, Jian Shen and Xiaoshan Xu, "Room-temperature multiferroic hexagonal $LuFeO_3$ films", *Phys. Rev. Lett* **110**, 237601 (2013).

[70] J. Ma, O. Delaire, A. F. May, C. E. Carlton, M. A. McGuire, L. H. VanBebber, D. L. Abernathy, G. Ehlers, Tao Hong, A. Huq, Wei Tian, V. M. Keppens, Y. Shao-Horn, and B. C. Sales, "Glass-like phonon scattering from a spontaneous nanostructure in $AgSbTe_2$", *Nat. Nanotechnology* DOI: 10.1038/nnano.2013.95 (2013).

[71] J. Lamsal, G. S. Tucker, T. W. Heitmann, A. Kreyssig, A. Jesche, Abhishek Pandey, Wei Tian, R. J. McQueeney, D. C. Johnston, and A. I. Goldman, "Persistence of local-moment antiferromagnetic order in $Ba_{1-x}K_xMn_2As_2$", *Phys. Rev. B* **87**, 144418(2013).

[72] Jin Peng, X. Ke, Gaochao Wang, J. E. Ortmann, David Fobes, Tao Hong, Wei Tian, Xiaoshan Wu, and Z. Q. Mao, "From quasi-two-dimensional metal with ferromagnetic bilayers to Mott insulator with G-type antiferromagnetic order in $Ca_3(Ru_{1-x}Ti_x)_2O_7$", *Phys. Rev. B* **87**, 085125(2013).

[73] D. K. Pratt, S. Chang, W. Tian, A. A. Taskin, Yoichi Ando, J. L. Zarestky, A. Kreyssig, A. I. Goldman, and R. J. McQueeney,"Checkerboard to stripe charge ordering transition in $TbBaFe_2O_5$", *Phys. Rev. B* **87**, 045127(2013).

[74] J. Cheng, W. Tian, J. Zhou, V. M. Lynch, H. Steinfink, A. Manthiram, A. F May, V. O. Garlea, J. C. Neuefeind, and J. Yan, "Crystal and magnetic structures and physical properties of a new pyroxene $NaMnGe_2O_6$ synthesized under high pressure", *Journal of the American*

Chemical Society DOI: 10.1021/ja312038g (2013).

[75] Chetan Dhital, Sovit Khadka, Z. Yamani, Clarina de la Cruz, T. C. Hogan, S. M. Disseler, Mani Pokharel, K. C. Lukas, Wei Tian, C. P. Opeil, Ziqiang Wang, and Stephen D. Wilson,"Spin ordering and electronic texture in the bilayer iridate $Sr_3Ir_2O_7$", *Phys. Rev. B* **86**, 100401(R) (2012).

[76] C. H. Wang, M. D. Lumsden, R. S. Fishman, G. Ehlers, T. Hong, W. Tian, H. Cao, A. Podlesnyak, C. Dunmars, J. A. Schlueter, J. L. Manson, and A. D. Christianson,"Magnetic properties of the S=1/2 quasisquare lattice antiferromagnet $CuF_2(H_2O)_2$(pyz) (pyz = pyrazine) investigated by neutron scattering", *Phys. Rev. B* **86**, 064439 (2012).

[77] G. S. Tucker, D. K. Pratt, M. G. Kim, S. Ran, A. Thaler, G. E. Granroth, K. Marty, W. Tian, J. L. Zarestky, M. D. Lumsden, S. L. Bud'ko, P. C. Canfield, A. Kreyssig, A. I. Goldman, and R. J. McQueeney,"Competition between stripe and checkerboard magnetic instabilities in Mn-doped $BaFe_2As_2$", *Phys. Rev. B* **86**, 020503(R) (2012).

[78] Rasmus Toft-Petersen, Niels H. Andersen, Haifeng Li, Jiying Li, Wei Tian, Sergey L. Bud'ko, Thomas B. S. Jensen, Christof Niedermayer, Mark Laver, Oksana Zaharko, Jeffrey W. Lynn, and David Vaknin,"Magnetic phase diagram of magnetoelectric $LiMnPO_4$", *Phys. Rev. B* **85**, 224415 (2012).

[79] Dalgis Mesa, Feng Ye, Songxue Chi, J. A. Fernandez-Baca, W. Tian, Biao Hu, R. Jin, E. W. Plummer, and Jiandi Zhang, "Single-bilayer E-type antiferromagnetism in Mn-substituted $Sr_3Ru_2O_7$: Neutron scattering study", *Phys. Rev. B* **85**, 180410(R) (2012).

[80] Jinsheng Wen, Zhijun Xu, Guangyong Xu, Qing Jie, M. Hcker, A. Zheludev, Wei Tian, B. L. Winn, J. L. Zarestky, D. K. Singh, Tao Hong, Qiang Li, Genda Gu, and J. M. Tranquada, "Probing the connections between superconductivity, stripe order, and structure in $La_{1.905}Ba_{0.095}Cu_{1-y}Zn_yO_4$ ", *Phys. Rev. B* **85**, 134512 (2012).

[81] C. R. Rotundu, W. Tian, K. C. Rule, T. R. Forrest, J. Zhao, J. L. Zarestky, and R. J. Birgeneau, "Neutron scattering study of underdoped $Ba_{1-x}K_xFe_2As_2$ (x=0.09 and 0.17) self-flux-grown single crystals and the universality of the tricritical point", *Phys. Rev. B* **85**, 144506 (2012).

[82] Chetan Dhital, Z. Yamani, Wei Tian, J. Zeretsky, A. S. Sefat, Ziqiang Wang, R. J. Birgeneau, and Stephen D. Wilson, "Effect of Uniaxial Strain on the Structural and Magnetic Phase Transitions in $BaFe_2As_2$", *Phys. Rev. Lett* **108**, 087001 (2012).

[83] Athena S. Sefat, Karol Marty, Andrew D. Christianson, Bayrammurad Saparov, Michael A.

McGuire, Mark D. Lumsden, Wei Tian, and Brian C. Sales, "Effect of molybdenum 4d hole substitution in $BaFe_2As_2$", *Phys. Rev. B* **85**, 024503 (2012).

[84] X. Ke, J. Peng, D. J. Singh, Tao Hong, Wei Tian, C. R. Dela Cruz, and Z. Q. Mao, "Emergent electronic and magnetic state in $Ca_3Ru_2O_7$ induced by Ti doping ", *Phys. Rev. B* **84**, 201102(R) (2011).

[85] Miaoyin Wang, Chen Fang, Dao-Xin Yao, GuoTai Tan, Leland W. Harriger, Yu Song, Tucker Netherton, Chenglin Zhang, Meng Wang, Matthew B. Stone, Wei Tian, Jiangping Hu and Pengcheng Dai, "Spin waves and magnetic exchange interactions in insulating $Rb_{0.89}Fe_{1.58}Se_2$", *Nat. Commun* x:x doi: 10.1038/ncomms1573 (2011).

[86] Meng Wang, Miaoyin Wang, G. N. Li, Q. Huang, C. H. Li, G. T. Tan, C. L. Zhang, Huibo Cao, Wei Tian, Yang Zhao, Y. C. Chen, X. Y. Lu, Bin Sheng, H. Q. Luo, S. L. Li, M. H. Fang, J. L. Zarestky, W. Ratcliff, M. D. Lumsden, J. W. Lynn, and Pengcheng Dai, "Antiferromagnetic order and superlattice structure in nonsuperconducting and superconducting $Rb_yFe_{1.6+x}Se_2$", *Phys. Rev. B* **84**, 094504 (2011).

[87] D. K. Pratt, M. G. Kim, A. Kreyssig, Y. B. Lee, G. S. Tucker, A. Thaler, W. Tian, J. L. Zarestky, S. L. Bud'ko, P. C. Canfield, B. N. Harmon, A. I. Goldman, and R. J. McQueeney, "Incommensurate Spin-Density Wave Order in Electron-Doped $BaFe_2As_2$ Superconductors", *Phys. Rev. Lett* **106**, 257001 (2011).

[88] M. Hücker, M. V. Zimmermann, Z. J. Xu, J. S. Wen, G. D. Gu, W. Tian, J. L. Zarestky, J. M. Tranquada, "Zn-Doping Dependence of Stripe Order in $La_{1.905}Ba_{0.095}CuO_4$", *J Supercond Nov Magn* **24**, 1229-1233 (2011).

[89] M. G. Kim, D. K. Pratt, G. E. Rustan, W. Tian, J. L. Zarestky, A. Thaler, S. L. Bud'ko, P. C. Canfield, R. J. McQueeney, A. Kreyssig, and A. I. Goldman, "Magnetic ordering and structural distortion in Ru-doped $BaFe_2As_2$ single crystals studied by neutron and x-ray diffraction", *Phys. Rev. B* **83**, 054514 (2011).

[90] M. G. Kim, A. Kreyssig, A. Thaler, D. K. Pratt, W. Tian, J. L. Zarestky, M. A. Green, S. L. Bud'ko, P. C. Canfield, R. J. McQueeney and A. I. Goldman, "Antiferromagnetic ordering in the absence of a structural distortion in $Ba(Fe_{1-x}Mn_x)_2As_2$", *Phys. Rev. B* **82**, 220503 (R) (2010).

[91] X. Ke, P. P. Zhang, S. H. Baek, J. Zarestky, W. Tian, and C. B. Eom, "Magnetic structure of epitaxial multiferroic $BiFeO_3$ films with engineered ferroelectric domains", *Phys. Rev. B* **82**,

134448 (2010).

[92] W. Tian, J. Li, H. Li, J. W. Lynn, J. L. Zarestky and D. Vaknin, "Neutron Scattering Studies of $LiCoPO_4$ & $LiMnPO_4$", *Journal of Physics: Conference Series* **251**, 012005 (2010).

[93] H.-F. Li, C. Broholm, D. Vaknin, R. M. Fernandes, D. L. Abernathy, M. B. Stone, D. K. Pratt, W. Tian, Y. Qiu, N. Ni, S. O. Diallo, J. L. Zarestky, S. L. Bud'ko, P. C. Canfield, R. J. McQueeney, "Anisotropic and quasipropagating spin excitations in superconducting $Ba(Fe_{0.926}Co_{0.074})_2As_2$", *Phys. Rev. B* **82**, 140503 (R) (2010).

[94] W. Tian, W. Ratcliff II, M. G. Kim, J.-Q. Yan, P. A. Kienzle, Q. Huang, B. Jensen, K. W. Dennis, R. W. McCallum, T. A. Lograsso, R. J. McQueeney, A. I. Goldman, J. W. Lynn, and A. Kreyssig, "Interplay of Fe and Nd magnetism in NdFeAsO single crystals", *Phys. Rev. B* **82**, 060514 (R) (2010).

[95] H-F. Li, W. Tian, J-Q. Yan, J. L. Zarestky, R. W. McCallum, T. A. Lograsso, D. Vaknin, "Phase transitions and iron-ordered moment form factor in LaFeAsO", *Phys. Rev. B* **82**, 064409 (2010).

[96] S. O. Diallo, D. K. Pratt, R. M. Fernandes, W. Tian, J. L. Zarestky, M. Lumsden, T. G. Perring, C. L. Broholm, N. Ni, S. L. Budko, P. C. Canfield, H.-F. Li, D. Vaknin, A. Kreyssig, A. I. Goldman, and R. J. McQueeney, "Paramagnetic spin correlations in $CaFe_2As_2$ single crystals", *Phys. Rev. B* **81**, 214407 (2010).

[97] A. Kreyssig, M. G. Kim, S. Nandi, D. K. Pratt, W. Tian, J. L. Zarestky, N. Ni, A. Thaler, S. L. Bud'ko, P. C. Canfield, R. J. McQueeney, and A. I. Goldman, "Suppression of antiferromagnetic order and orthorhombic distortion in superconducting $Ba(Fe_{0.961}Rh_{0.039})_2As_2$", *Phys. Rev. B* **81**, 134512 (2010).

[98] Rafael M. Fernandes, Daniel K. Pratt, Wei Tian, Jerel Zarestky, Andreas Kreyssig, Shibabrata Nandi, Min Gyu Kim, Alex Thaler, Ni Ni, Paul C. Canfield, Robert J. McQueeney, Jörg Schmalian, and Alan I. Goldman, "Unconventional pairing in the iron arsenide superconductors", *Phys. Rev. B* **81**, 140501(R) (2010).

[99] D. K. Pratt, A. Kreyssig, S. Nandi, N. Ni, A. Thaler, M. D. Lumsden, W. Tian, J. L. Zarestky, S. L. Budko, P. C. Canfield, A. I. Goldman, and R. J. McQueeney, "Dispersion of the superconducting spin resonance in underdoped and antiferromagnetic $BaFe_2As_2$", *Phys. Rev. B* **81**, 140510 (R) (2010).

[100] W. Tian, A. D. Christianson, J. L. Zarestky, S. Jia, S. L. Bud'ko, P. C. Canfield, P. M. B.

Piccoli, and A. J. Schultz, "Magnetic order in $TbCo_2Zn_{20}$ and $TbFe_2Zn_{20}$", *Phys. Rev. B* **81**, 144409 (2010).

[101] Y. Lee, David Vaknin, Haifeng Li, Wei Tian, Jerel L. Zarestky, N. Ni, S. L. Bud'ko, P. C. Canfield, R. J. McQueeney, and B. N. Harmon,"Magnetic form factor of iron in $SeFe_2As_2$", *Phys. Rev. B* **81**, 060406 (R) (2010).

[102] W. Tian, A. Kreyssig, J. L. Zarestky, L. Tan, S. Nandi, A. I. Goldman, T. A. Lograsso, D. L. Schlagel, K. A. Gschneidner, V. K. Pecharsky, and R. J. McQueeney, "Single-crystal neutron diffraction study of short-range magnetic correlations in Tb_5Ge_4", *Phys. Rev. B* **80**, 134422(2009).

[103] J.-Q. Yan, S. Nandi, J. L. Zarestky, W. Tian, A. Kreyssig, B. Jensen, A. Kracher, K. W. Dennis, R. J. McQueeney, A. I. Goldman, R. W. McCallum, and T. A. Lograsso, "Flux growth at ambient pressure of millimeter-sized single crystals of LaFeAsO, $LaFeAsO_{1-x}F_x$, and $LaFe_{1-x}Co_xAsO$", *Appl. Phys. Lett* **95**, 222504 (2009).

[104] Haifeng Li, W. Tian, J. L. Zarestky, A. Kreyssig, Ni Ni, S. L. Bud'ko, P. C. Canfield, A. I. Goldman, R. J. McQueeney, and D. Vaknin, "Magnetic and lattice coupling in single-crystal $SrFe_2As_2$: A neutron scattering study", *Phys. Rev. B* **80**, 054407(2009).

[105] D. K. Pratt, W. Tian, A. Kreyssig, J. L. Zarestky, S. Nandi, N. Ni, S. L. Bud'ko, P. C. Canfield, A. I. Goldman, and R. J. McQueeney, "Coexistence of Competing Antiferromagnetic and Superconducting Phases in the Underdoped $Ba(Fe_{0.953}Co_{0.047})_2As_2$ Compound Using X-ray and Neutron Scattering Techniques", *Phys. Rev. Lett.* **103**, 087001 (2009).

[106] Jiying Li, W. Tian, Ying Chen, Jerel L. Zarestky, Jeffrey W. Lynn, and David Vaknin, "Antiferromagnetism in the magnetoelectric effect single crystal $LiMnPO_4$", *Phys. Rev. B* **79**, 144410 (2009).

[107] W. Tian, Jiying Li, Jeffrey W. Lynn, Jerel L. Zarestky, and David Vaknin, "Spin dynamics in the magnetoelectric effect compound $LiCoPO_4$", *Phys. Rev. B.* **78**, 184429 (2008).

[108] M. Angst, R. P. Hermann, A. D. Christianson, M. D. Lumsden, C. Lee, M.-H. Whangbo, J.-W. Kim, P. J. Ryan, S. E. Nagler, W. Tian, R. Jin, B. C. Sales, and D. Mandrus, "Charge Order in $LuFe_2O_4$: Antiferroelectric Ground State and Coupling to Magnetism", *Phys. Rev. Lett.* **101**, 227601 (2008).

[109] A. D. Christianson, M. D. Lumsden, M. Angst, Z. Yamani, W. Tian, R. Jin, E. A. Payzant, S. E. Nagler, B. C. Sales, and D. Mandrus, "Three-dimensional magnetic correlations in mul-

tiferroic $LuFe_2O_4$", *Phys. Rev. Lett.* **100**(10), 107601 (2008).

[110] M. B. Stone, W. Tian, M. D. Lumsden, G. E. Granroth, D. Mandrus, J.-H. Chung, N. Harrison, and S. E. Nagler, "Quantum spin correlations in an organometallic alternating-sign chain", *Phys. Rev. Lett.* **99**(8), 087204 (2007).

[111] M. B. Stone, W. Tian, T. P. Murphy, S. E. Nagler, and D. G. Mandrus, "Field dependent phase diagram of the quantum spin chain $(CH_3)_2NH_2CuCl_3$", *Low Temperature Physics: 24th International Conference on Low Temperature Physics - LT24. AIP Conference Proceedings*, **850**, 1015-1016 (2006).

[112] Maria Varela, Timothy J. Pennycook, W. Tian, David Mandrus, Stephen J. Pennycook, "Atomic scale characterization of complex oxide interfaces", *Journal of Materials Science* **41**(14) 4389 (2006).

[113] W. Tian, M. B. Stone, D. G. Mandrus, B. C. Sales, R. Jin, D. T. Adroja, and S. E. Nagler, "Magnetic excitations in the orbitally degenerate triangular lattice $LiVO_2$", *Physica B,* **385-386**, 50 (2006).

[114] Matthew B. Stone, W. Tian, Garrett E. Granroth, Mark D. Lumsden, David G. Mandrus, and Stephen E. Nagler, "Spin-dynamics of the low-dimensional magnet $(CH_3)_2NH_2CuCl_3$", *Physica B* **385-386**, 438 (2006).

[115] J.-H. Chung, Th. Proffen, S. Shamoto, A. M. Ghorayeb, L. Croguennec, W. Tian, B. C. Sales, R. Jin, D. Mandrus, and T. Egami, "Local structure of $LiNiO_2$ studied by neutron diffraction", *Phys. Rev. B.* **71**, 064410 (2005).

[116] W. Tian, M. F. Chisholm, P. G. Khalifah, R. Jin, B. C. Sales, S. E. Nagler, and D. Mandrus, "Single crystal growth and characterization of nearly stoichiometric $LiVO_2$", *Materials Research Bulletin* **39**(9). 1319 (2004).