

## Dr. Qiang Zhang

Point of contact at POWGEN and Neutron Scattering Scientist  
Neutron Science Division, ORNL

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Total publications: 91; Citations: 2069; H index: 27

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### AWARDS

**Laboratory Directed Research and Development** (Project No. 9533, proposal preparer and investigator)

2018-2020

**Mid-Scale funding** “Development of the 7 T Vanadium-tail magnet to use on POWGEN and NOMAD” (awarded 65,000 \$)

2020-2021

**“Outstanding contribution in reviewing awarded to Qiang Zhang in *Journal of magnetism and magnetic materials***

2017

**Newton International Fellowship in Royal Society** (awarded 101,000 £/2 years, **success ratio ~ 5.6%**)

2011

**UNSW Vice-Chancellor's postdoctoral fellowship** in Australian (My application was chosen for the final list successfully prior to the withdrawal of my application, **success ratio ~ 5%**)

2011

**Marie Curie Fellow** within the Seventh Framework Programme (FP7) of the European Community

2009-2011

**Changxu Shi Scholarship** in Chinese Academy of Sciences

2008

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### EDUCATION

Shenyang National Laboratory for Materials Science, Institute of Metal Research 2005---2009  
and International Centre for Materials Physics, Chinese academy of sciences

**Doctor of philosophy** (Excellent thesis), Materials Physics and Chemistry, Issued on April 2, 2009

Shenyang National Laboratory for Materials Science, Institute of Metal Research, 2002--- 2005  
and International Centre for Materials Physics, CAS;

**Master**, Material Science and Engineering, Issued on July 30, 2005

Department of Physics, Qufu Normal University, China

1998--- 2002

**Bachelor**, Physics, Issued on July 28, 2002

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### EMPLOYMENT

**Aug. 2018--- now** Point of contact at POWGEN and Neutron Scattering Scientist  
in Neutron Science Division, ORNL

**Mar. 2018---Aug. 2018** Assistant Professor-research in Louisiana State University (remote station in Shull Wollan Center, ORNL)

**Apr. 2015--- Mar. 2018** Research associate 5 in Louisiana Consortium for Neutron Scattering (LaCNS), Louisiana State University (remote station in the time-of-flight (TOF) group, QCMD, Oak Ridge National Laboratory)

**Sep. 2011--- April. 2015** Postdoctoral research associate, Ames laboratory, U.S. Department of Energy & Division of Materials Sciences and Engineering, Iowa State University

**Mar. 2012---May. 2012** Newton fellow in School of Physics and Astronomy, University of Glasgow (I resigned this fellowship due to a family issue)

- Sep. 2009---Sep. 2011** Marie Curie experienced researcher, Laboratory CRISMAT, CNRS, France
- Aug. 2008---Aug. 2009** (Half a year overlapped with my Ph.D) Research associate, Research Center for Dielectric and Advanced Matter Physics, Department of Physics, Pusan National University, Republic of Korea
- Oct. 2006---Jan. 2007** Exchange Ph.D student, Magnetic & Superconducting Materials group, Leiden University

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## **DEVELOPMENT OF INSTRUMENT/SAMPLE ENVIRONMENT/SOFTWARE AT POWGEN**

Succeeded in the commissioning on the aluminum tail SlimSam magnet

Succeeded in requesting the mid-scale funding and led the project to develop the vanadium-tail magnet for further use at POWGEN and NOMAD

Identified the temperature offset issue of PAC sample environment, troubleshooted it by doing systematic tests and solved the temperature offset in PAC sample environment for around one year until the cold head was changed and he identified new issue

Coordinated with FullProf developer to deliver a new version of FullProf software to enable an excellent refinement on POWGEN data

Conducted systematic tests and provided the insight/feedback on the complicated absorption corrections on POWGEN data

Conducted systematic tests and provided the insight/feedback on the new calibration script developed by CIS

Tested remote experiment capability and provided the feedback to ensure a convenient use of remote control by the POWGEN users

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## **MENTORING**

Mentor junior POWGEN staff Alicia Manjon Sanz how to calibrate the instrument, prepare measurement scripts, and conduct correct data reduction, operation of the instruments and user support.

2019-2021

Trained postdoctoral researchers Adam Phelan, Chetan Dhital, and Guixin Cao as well as graduate students Zhenyu Diao, Mojammel A Khan, and Yan Wu (all of LSU) and Jinyu Liu (Tulane university) within Louisiana Consortium for Neutron Scattering (LaCNS), on the neutron instruments and data analysis at different beam lines in ORNL

2015-2018

Trained undergraduate students at Iowa State University: Zachary Foltz, Jin Cui, and Spencer Peterson on sample preparation and neutron data analysis

2011-2015

Co-supervised graduate student Y. H. Jang at Pusan National University

2010-2011

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## PEER REVIEWING AND PROFESSIONAL ACTIVITIES

Invited referee for *Physical Review letters*, *Applied physics letters*, *Physical Review Materials*, *Physical Review B*, *Chemistry of materials*, *ACS Materials Letters*, *ACS Applied Materials & Interfaces*, *Inorganic Chemistry*, *EPL*, *Journal of applied physics*, *Journal of physics: Condensed Matter*, *Philosophical magazine letters*, *Intermetallics*, *Journal of physics D: applied physics*, *Thin solid films*, *Journal of alloys and compounds*, *Applied Physics A: Materials Science & Processing*, *Journal of Magnetism and Magnetic Materials*, etc.

Memberships of American Crystallographic Association, American Physical Society, Neutron Scattering Society of America, Materials Research Society.

Workshop on “Neutrons and Complementary Techniques for Quantum Materials”. Co-organizer, 2020.

Head judge for MiTeGen-Society of Physics Students Undergraduate Poster award at ACA2021.

Giving lectures of the Rietveld analysis on TOF neutron data using GSAS-II on the attendees for “National School on Neutron and X-ray Scattering” in 2019 and 2021.

Lead Guest Editor of special issue on “Multiferroics: Synthesis, Characterization, and Applications” in *Advances in Condensed Matter Physics*.

Invited Editor for *ISRN Thermodynamics*, 2013-2015.

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## INVITED/CONTRIBUTED TALKS

**(Invited) Nov. 8-13, 2021, Representational Analysis and Magnetic Structure School in 2021**, “FullProf refinement of commensurate structure from TOF data”

**July 30- Aug. 5, 2021, 71st Annual Meeting of the 2021 American Crystallographic Association**, “Structural, magnetic ordering process and the magnetic excitations in spinel  $\text{FeMn}_2\text{O}_4$ ”

**July 13-16, 2020, Virtual American Conference on Neutron Scattering**, “Quasi-Two-Dimensional Magnetism and Unusual Intermediate Spin State of Tetrahedral  $\text{Co}^{4+}$  in  $\text{Ba}_2\text{CoO}_4$ ”

**(Invited) Jan. 23-25, 2019 Conference on Electronic Materials and Applications**, “Quasi-two-dimensional magnetism and unusual intermediate spin state in Cobaltite involving isolated  $\text{CoO}_4$  tetrahedra”

**March 4–8, 2019, APS March Meeting**, Boston, Massachusetts, “Magnetoelastic coupling, phonon and magnons in inverse spinel  $\text{NiFe}_2\text{O}_4$ ”

**(Invited) July 23-25, 2018, Global Conference on Magnetism and Magnetic Materials**, Osaka, Japan, “Low dimensional magnetism in cobaltite  $\text{Ba}_2\text{CoO}_4$  involving isolated  $\text{CoO}_4$  tetrahedra”

**(Invited) Oct. 12, 2017, Louisiana State University**, Baton Rouge, Louisiana, “Unveiling the Properties of Condensed Matter with Neutrons”

**March 5-9, 2018, APS March meeting**, LA, California, USA. “Magnetic structure and spin-wave dispersion in spinel  $\text{FeMn}_2\text{O}_4$ ”

**Aug. 1-3, 2017, Joint Nanoscience and Neutron Scattering User Meeting in ORNL**, “Realization of the low-dimensional magnetism in non-layered cobaltite”

**March 13-17, 2017, APS March meeting**, New Orleans, LA, USA, “Magnetic structure and anisotropic spin dynamics in  $\text{Ba}_2\text{CoO}_4$ ”

**July 10-14, 2016, American Conference on Neutron Scattering**, Long Beach, CA, USA. “Anisotropic In-Plane Magnetic Correlation Length and Structure-Magnetism Correlation in Bilayered Perovskite  $\text{Sr}_3(\text{Ru}_{1-x}\text{Mn}_x)_2\text{O}_7$ ”

**March 14-19, 2016, APS March meeting**, Baltimore, MD, USA. “Magnetic structure and its role in the possible Weyl state in topological semimetal  $\text{Sr}_{1-y}\text{Mn}_{1-z}\text{Sb}_2$  ( $0 < y, z < 0.1$ )”

**March 14-19, 2015, APS March meeting**, San Antonio, Texas, USA. “Sharp enhancement of spin fluctuations by nematic order in iron pnictides”

**(Invited) Jan. 26, 2015, Louisiana Consortium for Neutron Scattering (LaCNS) in Louisiana State University**, Baton Rouge, Louisiana, “Magnetism and its coupling to structure and superconductivity in iron pnictides”

**March 3-7, 2014 APS March meeting**, Denver, Colorado, USA. “Effect of nematic order on the spin fluctuation spectrum of LaFeAsO”

**March 18-22, 2013 APS March meeting**, Baltimore, MD, USA. “Coupled orthorhombic distortion, antiferromagnetism, and superconductivity in a single twin domain of Ba(Fe<sub>1-x</sub>Co<sub>x</sub>)<sub>2</sub>As<sub>2</sub> (x=0.047)

**Feb. 27 – Mar. 2, 2012 APS March meeting**, Boston, USA. “Cerium-Iron Magnetic Coupling in Single Crystal CeFeAsO at Low Temperatures

**(Invited) April 6-8, 2011 European Marie Curie project “SOPRANO”** meeting in Timisoara, Romania. “Magnetocaloric effect and enhanced refrigeration capacity in a series of (La<sub>0.7</sub>Sr<sub>0.3</sub>MnO<sub>3</sub>/SrRuO<sub>3</sub>) superlattices

**Feb.27-March 3, 2011 TMS Annual Meeting & Exhibition**, San Diego, California, USA. “Magnetocaloric effect and enhanced refrigeration efficiency in (La<sub>0.7</sub>Sr<sub>0.3</sub>MnO<sub>3</sub>/SrRuO<sub>3</sub>) superlattices”

**(Invited) Sept. 15-17, 2010 European Marie Curie project “SOPRANO”** mid-term Meeting within FP7 in Bordeaux, France. “Magnetic properties and magnetocaloric effect in various oxides”.

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## LIST OF PUBLICATIONS

28 papers as the leading author: *Nature Materials* (1), *Physical Review Letters* (2), *Physical Review B* (12), *Physical Review Materials* (1), *Applied Physics Letters* (3), *Journal of Physics: Condensed Matter* (FTC) (1), *Journal of Applied Physics* (3), *Journal of Physics D: Applied Physics* (3), *Solid state communications* (1), *Physica status solidi* (a) (1).

91 peer-reviewed journal articles in total: *Nature Materials* (2), *Physical Review Letters* (3), *Nature Communications* (4), *Energy & Environmental Science* (1), *ACS energy letters* (1), *Journal of the American Chemical Society* (2), *Applied Physics Letters* (10), *Physical Review B* (27), etc. Citations ~2068 and an h-index of 27 based on Google scholar as of Oct 2021. All of my publications can be found in my google citations: <https://scholar.google.com/citations?user=Hj33eQgAAAAJ&hl=en> or my ORCID: <http://orcid.org/0000-0003-0389-7039>. Here is the bar chart of citation result from google scholar and the list of my publications.



**Qiang Zhang**

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[Neutron scattering](#) [magnetism](#)

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	All	Since 2016
Citations	2068	1312
h-index	27	20
i10-index	44	37

### 2021

1. **Qiang Zhang\***, Satoshi Okamoto\*, German D. Samolyuk, Matthew B. Stone, Alexander I. Kolesnikov, Rui Xue, Jiaqiang Yan, Michael A. McGuire, David Mandrus, and D. Alan Tennant, “Unusual exchange couplings and intermediate temperature Weyl state in Co<sub>3</sub>Sn<sub>2</sub>S<sub>2</sub>”, *Physical Review Letters*, 127, 117201, (2021).

2. Laidong Zhou, Tong-Tong Zuo, Chun Yuen Kwok, Se Young Kim, Abdeljalil Assoud, **Qiang Zhang**, Juergen Janek, Linda Nazar, “High areal capacity long cycle life 4 V ceramic all solid state Li ion batteries enabled by chloride solid electrolyte”, *Nature energy*, accepted.
3. Yong Hu, Scott Broderick, Zipeng Guo, Alpha T. N’Diaye, Cheng Li, **Qiang Zhang**, Yulong Huang, Chi Zhou, Shenqiang Ren, “Proton switching molecular magnetoelectricity”, *Nature Communications*, **12**, 4602 (2021).
4. Lei Ding, Xianghan Xu, Harald O. Jeschke, Xiaojian Bai, Erxi Feng, Admasu Solomon Alemayehu, Jaewook Kim, Feiting Huang, **Qiang Zhang**, Xiaxin Ding, Neil Harrison, Vivien Zapf, Daniel Khomskii, Igor I. Mazin, Sang-Wook Cheong, Huibo Cao, “Field-tunable toroidal moment in a chiral-lattice magnet”, *Nature Communications*, **12**, 5339, (2021).
5. Yili Cao, Kun Lin, Sergii Khmelevskiy, Maxim Avdeev, Keith M. Taddei, **Qiang Zhang**, Qingzhen Huang, Qiang Li, Kenichi Kato, Chiu Chung Tang, Alexandra Gibbs, Chin-Wei Wang, Jinxia Deng, Jun Chen, Hongjie Zhang and Xianran Xing, “Ultrawide temperature range super-Invar behavior of  $R_2(\text{Fe,Co})_{17}$  materials (R = rare earth)”, *Physical Review Letters*, **127** (5), 055501, (2021).
6. Vladislav V Klepov, Kristen A Pace, Anna A Berseneva, Justin B Felder, Stuart Calder, Gregory Morrison, Qiang Zhang, Melanie J Kirkham, David S Parker, Hans-Conrad Zur Loye, “Chloride Reduction of  $\text{Mn}^{3+}$  in Mild Hydrothermal Synthesis of a Charge Ordered Defect Pyrochlore,  $\text{CsMn}^{2+}\text{Mn}^{3+}\text{F}_6$ , a Canted Antiferromagnet with a Hard Ferromagnetic Component”, *Journal of the American Chemical Society*, **143**, 11554–11567, (2021).
7. Yi, Qu, Maxx, Arguilla, **Qiang Zhang**, Xin He, Mircea Dinca, “Ultrathin, High-Aspect Ratio, and Free-Standing Magnetic Nanowires by Exfoliation of Ferromagnetic Quasi-One Dimensional van der Waals Lattices”, *Journal of the American Chemical Society*, In Press, (2021).
8. Anjana M. Samarakoon, Andre Sokolowski, Bastian Klemke, Ralf Feyerherm, Michael Meissner, R. A. Borzi, Feng Ye, **Qiang Zhang**, Zhiling Dun, Haidong Zhou, T. Egami, Ludovic Jaubert, Claudio Castelnovo, Roderich Moessner, S. A. Grigera, D. Alan Tennant, “Structural magnetic glassiness in spin ice  $\text{Dy}_2\text{Ti}_2\text{O}_7$ ”, *Science advance*, Under review, arXiv:2107.12305, (2021).
9. S. X. M. Riberolles, **Q. Zhang**, Elijah Gordon, N. P. Butch, Liqin Ke, J.-Q. Yan, and R. J. McQueeney, “Evolution of magnetic interactions in Sb-substituted  $\text{MnBi}_2\text{Te}_4$ ”, *Physical Review B*, **104**, 064401, (2021).
10. LT Nguyen, M Saubanère, **Q Zhang**, RJ Cava, “Structure, Magnetism and First Principles Modeling of the  $\text{Na}_{0.5}\text{La}_{0.5}\text{RuO}_3$  Perovskite”, *Chemistry of Materials* **33**, 600, (2021).
11. William R Meier, Bryan C Chakoumakos, Satoshi Okamoto, Michael A McGuire, Raphaël P Hermann, German D Samolyuk, Shang Gao, **Qiang Zhang**, Matthew B Stone, Andrew D Christianson, Brian C Sales, “A catastrophic charge density wave in  $\text{BaFe}_2\text{Al}_9$ ”, *Chemistry of Materials*, **33**, 2855, (2021).
12. Loi T. Nguyen, Daniel B. Straus, **Q. Zhang**, and R. J. Cava, “Widely spaced planes of magnetic dimers in the  $\text{Ba}_6\text{Y}_2\text{Rh}_2\text{Ti}_2\text{O}_{17-\delta}$  hexagonal perovskite”, *Physical Review Materials* **5**, 034419, (2021).
13. MM Bordelon, JD Bocarsly, L Posthuma, A Banerjee, **Q Zhang**, SD Wilson, “Antiferromagnetism and crystalline-electric field excitations in tetragonal  $\text{NaCeO}_2$ ”, *Physical Review B* **103**, 024430, (2021).
14. Binod K Rai, Ganesh Pokharel, Hasitha Suriya Arachchige, Seung-Hwan Do, **Qiang Zhang**, Masaaki Matsuda, Matthias Frontzek, Gabriele Sala, V Ovidiu Garlea, Andrew D Christianson, Andrew F May, “Complex magnetic phases in polar tetragonal intermetallic  $\text{NdCoGe}_3$ ”, *Physical Review B* **103**, 024430, (2021).
15. M. Sretenovic, S. Okamoto, G. Peiker, T. X. Tang, H. Zhang, C.Q. Xu, T. W. Heitmann, **Q. Zhang**, C. R. dela Cruz, and X. Ke, “Competing energetic states in  $\gamma\text{-Fe}_2\text{WO}_6$  with strong spin-charge-lattice coupling”, *Physical Review B*, In press (2021).
16. Chao Gu, Yongcheng Liang, Xuefeng Zhou, Jian Chen, Dejiang Ma, Jiaqian Qin, Wenqing Zhang, **Qiang Zhang**, Luke L Daemen, Yusheng Zhao, Shanmin Wang, “Crystal structures and formation mechanisms of boron-rich tungsten borides”, *Physical Review B*, **104**, 014110, (2021).

17. B. C. Sales, W. R. Meier, A. F. May, J. Xing, J.-Q. Yan, S. Gao, Y. H. Liu, M. B. Stone, A. D. Christianson, **Q. Zhang**, and M. A. McGuire, “Tuning the flat bands of the kagome metal CoSn with Fe, In, or Ni doping”, *Phys. Rev. Materials* **5**, 044202, (2021).
18. Shang Gao, Andrew F. May, Mao-Hua Du, Joseph A. M. Paddison, Hasitha Suriya Arachchige, Ganesh Pokharel, Clarina dela Cruz, **Qiang Zhang**, Georg Ehlers, David S. Parker, David G. Mandrus, Matthew B. Stone, Andrew D. Christianson, “Hierarchical excitations from correlated spin tetrahedra on the breathing pyrochlore lattice”, *Physical Review B*, **103**, 214418, (2021).
19. Xin Gui, Madalynn Marshall, Ranuri S Dissanayaka Mudiyansele, Ryan A Klein, Qiang Chen, **Qiang Zhang**, William Shelton, Haidong Zhou, Craig M Brown, Huibo Cao, Martha Greenblatt, Weiwei Xie, “Spin Reorientation in Antiferromagnetic Layered FePt<sub>5</sub>P”, *ACS Applied Electronic Materials*, **3**, 3501-3508, (2021).
20. L Jin, **Q Zhang**, RJ Cava, “The Hydrogen-Containing Bronzes H<sub>0</sub>. 23WO<sub>3</sub> and H<sub>0</sub>. 10ReO<sub>3</sub> Synthesized via a Polymer Route”, *Journal of Solid State Chemistry*, **297**, 122059 (2021).
21. Hector C. Mandujano, Sandra L. Gonzalez, Nathan Episcopo, Uma Sitharaman, Narayan Poudel, Krzysztof Gofryk, Yahir E. Garay, Jorge A. Lopez, **Qiang Zhang**, Stuart Calder, and Harikrishnan S. Nair, “Absence of long-range magnetic order in lithium-containing honeycombs Li<sub>4</sub>CrTeO<sub>6</sub> and Li<sub>4</sub>CrSbO<sub>6</sub>”, *Journal of Physics: Condensed Matter*, **33** 295802, (2021).

## 2020

1. **Qiang Zhang**\*+, Jinyu Liu+, Huibo Cao, W Adam Phelan, JF DiTusa, D Alan Tennant, Zhiqiang Mao, “Toward exotic magnetic and topological semimetallic states in Eu<sub>1-x</sub>Sr<sub>x</sub>MnSb<sub>2</sub>”, *NPG: Asia Materials*, Under review, arXiv:2010.10405, (2020) (<sup>†</sup>These authors contribute equally to this work).
2. Haidong Zhou, Chun Yuen Kwok, Abhinandan Shyamsunder, **Qiang Zhang**, Xiaohan Wu, Linda Nazar, “A new halospinel superionic conductor for high-voltage all solid state lithium batteries”, *Energy & Environmental Science*, **13**, 2056-2063, (2020).
3. Anjana M Samarakoon, Kipton Barros, Ying Wai Li, Markus Eisenbach, **Qiang Zhang**, Feng Ye, ZL Dun, Haidong Zhou, Santiago A Grigera, Cristian D Batista, D Alan Tennant, “Machine Learning Assisted Insight to Spin Ice Dy<sub>2</sub>Ti<sub>2</sub>O<sub>7</sub>”, *Nature Communications*, **11**, 892 (2020).
4. Ji Qi, Baojuan Dong, Zhe Zhang, Zhao Zhang, Yanna Chen, **Qiang Zhang**, Sergey Danilkin, Xi Chen, Liangwei Fu, Xiaoming Jiang, Guozhi Chai, Satoshi Hiroi, Koji Ohara, Zongteng Zhang, Weijun Ren, Teng Yang, Jianshi Zhou, Sakata Osami, Jiaqing He, Dehong Yu, Bing Li, Zhidong Zhang, “Dimer rattling mode induced low thermal conductivity in an excellent acoustic conductor”, *Nature Communications*, **11**, 5197 (2020).
5. Kern-Ho Park, Kavish Kaup, Abdeljalil Assoud, **Qiang Zhang**, Xiaohan Wu, Linda F Nazar, “High Voltage Superionic Halide Solid Electrolytes for All-Solid-State Li-Ion Batteries”, *ACS Energy Letters*, **5**, 533, (2020).
6. Shang Gao, Ling-Fang Lin, Andrew F May, Binod K Rai, **Qiang Zhang**, Elbio Dagotto, Andrew D Christianson, Matthew B Stone, “Weakly-coupled alternating S=1/2 chains in the distorted honeycomb-lattice compound Na<sub>2</sub>Cu<sub>2</sub>TeO<sub>6</sub>”, *Physical Review B (Rapid communications)*, **102**, 220402(R), (2020).
7. Sunil K Karna, D Tristant, JK Hebert, G Cao, R Chapai, WA Phelan, **Q Zhang**, Y Wu, C Dhital, Y Li, HB Cao, W Tian, CR Cruz, AA Aczel, O Zaharko, A Khasanov, MA McGuire, A Roy, W Xie, DA Browne, I Vekhter, V Meunier, WA Shelton, PW Adams, PT Sprunger, DP Young, R Jin, JF DiTusa, “Helical magnetic order and Fermi surface nesting in non-centrosymmetric ScFeGe”, *Physical Review B*, **103**, 014443 (2020).
8. T Basu, FY Wei, **Q Zhang**, Y Fang, X Ke, “Complex magnetic structure in Ba<sub>5</sub>Ru<sub>3</sub>O<sub>12</sub> with isolated Ru<sub>3</sub>O<sub>12</sub>-trimer”, *Physical Review Materials*, **4**, 114401 (2020).
9. Xiao Hu, Depei Zhang, Tianran Chen, Alexander Z Chen, Eric N Holmgren, **Qiang Zhang**, Daniel M Pajerowski, Mina Yoon, Guangyong Xu, Joshua J Choi, Seung-Hun Lee, “Crystal structures and rotational dynamics of a two-dimensional metal halide perovskite (OA)<sub>2</sub>PbI<sub>4</sub>”, *The Journal of Chemical Physics*, **152**, 014703 (2020).

- Shogo Wakazaki, Takumi Nishikubo, Yuki Sakai, Kei Shigematsu, Hena Das, Depei Zhang, **Qiang Zhang**, Masaaki Matsuda, Azuma, Masaki, “Stabilized charge, spin and orbital ordering by 6s2 lone pair in  $\text{Bi}_{0.5}\text{Pb}_{0.5}\text{MnO}_3$ ”, *Inorganic Chemistry*, 59, 13390, (2020).
- C Dhital, D Pham, T Lawal, C Bucholz, A Poyraz, **Q Zhang**, R Nepal, R Jin, R Rai, “Crystal and Magnetic Structure of Polar Oxide  $\text{HoCrWO}_6$ ”, *Journal of Magnetism and Magnetic Materials*, 514, 167219 (2020).

## 2019

- L Zhou, A Assoud, **Q Zhang**, X Wu, L Nazar, “A New Family of Argyrodite Thioantimonate Lithium Superionic Conductors”, *Journal of the American Chemical Society*, 141 (48), 19002-19013, (2020).
- Qiang Zhang\***, Satoshi Okamoto\*, Matthew B Stone, Jinyu Liu, Yanglin Zhu, John DiTusa, Zhiqiang Mao, David Alan Tennant\*, “Influence of magnetism on Dirac semimetallic behavior in nonstoichiometric  $\text{Sr}_{1-y}\text{Mn}_{1-z}\text{Sb}_2$  ( $y \sim 0.07$ ,  $z \sim 0.02$ )”, *Physical Review B* 100, 205105, (2019)
- Q Zhang**, Z Diao, H Cao, A Saleheen, R Chapai, D Gong, S Stadler, R Jin, “Structure-Property Relationship in Layered  $\text{BaMn}_2\text{Sb}_2$  and  $\text{Ba}_2\text{Mn}_3\text{Sb}_2\text{O}_2$ ”, *Physical Review B* 99, 184416, (2019).
- Qiang Zhang**, Guixin Cao, Feng Ye, Huibo Cao, Masaaki Matsuda, DA Tennant, Songxue Chi, SE Nagler, WA Shelton, Rongying Jin, EW Plummer, Jiandi Zhang, “Anomalous magnetic behavior of  $\text{Ba}_2\text{CoO}_4$  with isolated tetrahedra”, *Physical Review B*, 99, 094416, (2019).
- G Cao+, **Q Zhang+**, M Frontzek, W Xie, D Gong, GE Sterbinsky, R Jin, “Structure, chromium vacancies, and magnetism in a new  $\text{Cr}_{12-x}\text{Te}_{16}$  compound”, *Physical Review Materials* 3, 125001, (2019). (†*These authors contribute equally to this work*).
- Laidong Zhou, Abdeljalil Assoud, Abhinandan Shyamsunder, Ashfia Huq, **Qiang Zhang**, Pascal Hartmann, Joern Kulisch, Linda F Nazar, “An Entropically Stabilized Fast-ion Conductor:  $\text{Li}_{3.25}[\text{Si}_{0.25}\text{P}_{0.75}]\text{S}_4$ ”, *Chemistry of Materials*, 31, 7801, (2019).
- J-Q Yan, **Q Zhang**, T Heitmann, ZL Huang, WD Wu, D Vaknin, BC Sales, RJ McQueeney, “Crystal growth and magnetic structure of  $\text{MnBi}_2\text{Te}_4$ ”, *Physical Review Materials*, 3, 064202, (2019).
- Mojammel A Khan, **Qiang Zhang**, Jin-Ke Bao, Randy S Fishman, Antia S Botana, Y Choi, G Fabbris, D Haskel, John Singleton, John F Mitchell, “Steplike metamagnetic transitions in a honeycomb lattice antiferromagnet  $\text{Tb}_2\text{Ir}_3\text{Ga}_9$ ”, *Physical Review Materials*, 3, 114411, (2019).
- KM Taddei, LD Sanjeeva, J Xing, **Q Zhang**, D Parker, A Podleznyak, AS Sefat, “Tunable magnetic order in low-symmetry  $\text{SeO}_3$  ligand linked  $\text{Tm}_3(\text{SeO}_3)_3\text{H}_2\text{O}$  (TM=Mn, Co and Ni) compounds”, *Physical Review Materials*, 4, 024410, (2019).
- G Sala, MB Stone, Binod K Rai, AF May, DS Parker, Gábor B Halász, YQ Cheng, G Ehlers, VO Garlea, **Q Zhang**, MD Lumsden, AD Christianson, “Crystal field splitting, local anisotropy, and low energy excitations in the quantum magnet  $\text{YbCl}_3$ ”, *Physical Review B*, 100, 180406, (2019).

## 2018-2017

- J.Y. Liu †, J. Hu †, **Q. Zhang**†, D. Graf, H.B. Cao, S.M.A. Radmanesh, D.J. Adams, Y.L. Zhu, G.F. Cheng, X. Liu, W. A. Phelan, J. Wei, M. Jaime, F. Balakirev, D. A. Tennant, J. F. DiTusa, I. Chiorescu, L. Spinu and Z.Q. Mao\*, “A magnetic topological semimetal  $\text{Sr}_{1-y}\text{Mn}_{1-z}\text{Sb}_2$  ( $y, z < 0.10$ )”, *Nature materials*, 16, 905 (2017). (†*These authors contribute equally to this work*).
- B. Li, H. Wang, Y. Kawakita, **Q. Zhang**, M. Feyngenson, H. L. Yu, D. Wu, K. Ohara, T. Kikuchi, K. Shibata, T. Yamada, X. K. Ning, Y. Chen, J. Q. He, D. Vaknin, R. Q. Wu, K. Nakajima and M. G. Kanatzidis, “Liquid-like thermal conduction in intercalated layered crystalline solids”, *Nature materials*, 17, 226–230 (2018).
- Qiang Zhang**, Feng Ye, Wei Tian, Huibo Cao, Songxue Chi, Dalgis Mesa, Biao Hu, Zhenyu Diao, Rongying Jin, Jiandi Zhang, Ward Plummer, “Manganese-induced magnetic symmetry breaking and its

correlation with the metal-insulator transition in bilayered  $\text{Sr}_3(\text{Ru}_{1-x}\text{Mn}_x)_2\text{O}_7$ ”, *Physical Review B (rapid communications)*, 95, 220403(R), (2017).

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