

Dr. Qiang Zhang

Point of contact and Neutron Scattering Scientist at POWGEN

Neutron Science Division, ORNL

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Total publications: 125; Citations:3180; H index: 30

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AWARDS

Neutron Science Division “Best Paper” Award	2022
Top 10 science achievements in SNS & HFIR (Two papers selected: first-authored <i>PRL</i> and coauthored <i>Nature energy</i>)	2022
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 \$)	2020-2022
Outstanding contribution in reviewing in <i>Journal of magnetism and magnetic materials</i>	2017
Newton International Fellowship in Royal Society (awarded 101,000 £/2 years, success ratio ~ 5.6%)	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

EDUCATION

Ph.D Materials Physics and Chemistry, Institute of Metal Research, Chinese academy of sciences	April. 2009
M.S. Materials Physics and Chemistry, Institute of Metal Research, Chinese academy of sciences	Sep. 2005
B.S. Physics, Qufu Normal University	July. 2002

EMPLOYMENT

Aug. 2018--- now	Neutron Scattering Scientist in Neutron Science Division, ORNL
Mar. 2018---Aug. 2018	Assistant Professor 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 fellow, Laboratory CRISMAT, CNRS, France
Oct. 2006---Jan. 2007	Exchange Ph. D student, Magnetic & Superconducting Materials group, Leiden University

PEER REVIEWING

Invited referee for *Physical Review letters*, *Physical Review B*, *Physical Review Materials*, *npj 2D Materials and Applications*, *Chemistry of materials*, *ACS Materials Letters*, *Applied physics 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.

PROFESSIONAL ACTIVITIES

Associate editor in *Frontier In Physics* (2023-now)

Associate editor in *Crystals* (2022-now)

Organizing Committee member for Focus Topic “Spin-Dependent Phenomena in Semiconductors including 2D Materials and Topological Systems” in APS march meeting in 2023

Invited lectures “FullProf refinement of commensurate magnetic structure from TOF data” and “GSAS-II refinement of commensurate magnetic structure from TOF data” for Magnetic Structure Determination from Neutron Diffraction Data (MagStr) workshop, October 3-7, 2022

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

Co-organizer for workshop on “Neutrons and Complementary Techniques for Quantum Materials”, 2022.

Invited lecture “FullProf refinement of commensurate structure from TOF data” for 2021 School on Representational Analysis and Magnetic Structures (RAMS).

Serve as organizers for one session for APS march meeting in 2023.

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

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

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.

INVITED/CONTRIBUTED TALKS

(Invited) March 6-10th, APS march meeting in 2023, Las Vegas, “Interplay between local symmetry breaking, magnetic order and Weyl states in $\text{Co}_3\text{Sn}_2\text{S}_2$ ”.

(Invited) “FullProf refinement of commensurate magnetic structure from TOF data”
& “GSAS-II refinement of commensurate magnetic structure from TOF data” for Magnetic Structure Determination from Neutron Diffraction Data (MagStr) workshop, October 3-7, 2022

July 30-Aug 3rd, 2022, ACA2022, Portland, Oregon “Correlation between local symmetry breaking, magnetism and Weyl properties in $\text{Co}_3\text{Sn}_2\text{S}_2$ ”

March 14-18, 2022, APS March meeting in 2022, Chicago “Magnetic order, unusual exchange couplings and intermediate temperature electronic band structures in $\text{Co}_3\text{Sn}_2\text{S}_2$ ”

(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 FeMn_2O_4 ”

July 13-16, 2020, Virtual American Conference on Neutron Scattering, “Quasi-Two-Dimensional Magnetism and Unusual Intermediate Spin State of Tetrahedral Co^{4+} in Ba_2CoO_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 CoO_4 tetrahedra”

March 4–8, 2019, APS March Meeting, Boston, Massachusetts, “Magnetoelastic coupling, phonon and magnons in inverse spinel NiFe_2O_4 ”

(Invited) July 23-25, 2018, Global Conference on Magnetism and Magnetic Materials, Osaka, Japan, “Low dimensional magnetism in cobaltite Ba_2CoO_4 involving isolated 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 FeMn_2O_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 Ba_2CoO_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 $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$ ($x=0.047$)”

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 $(\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3/\text{SrRuO}_3)$ superlattices”

Feb. 27-March 3, 2011 TMS Annual Meeting & Exhibition, San Diego, California, USA. “Magnetocaloric effect and enhanced refrigeration efficiency in $(\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3/\text{SrRuO}_3)$ 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”.

PUBLICATION SUMMARY

35 papers as the leading/corresponding author: *Nature Materials* (1), *Physical Review Letters* (2), *Journal of the American Chemical Society* (2), *NPG: Asia Materials* (1), *Physical Review B* (12), *Physical Review Materials* (2), *Chemistry of Materials* (1), *Physical Review Materials* (1), *Applied Physics Letters* (3), *Inorganic Chemistry* (1), *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).

125 peer-reviewed journal articles in total: *Nature Materials* (2), *Nature energy*(1), *Physical Review Letters* (3), *Nature Communications* (5), *Journal of the American Chemical Society* (4), *Advanced Materials* (1), *NPG: Asia Materials* (1), *Energy & Environmental Science* (1), *Advanced science*(1), *ACS energy letters* (1), *Physical Review B* (30), *Chemistry of Materials*(4), *Applied Physics Letters* (10), etc. Citations ~3180 and an h-index of 30 based on Google scholar as of April. 15th, 2023. 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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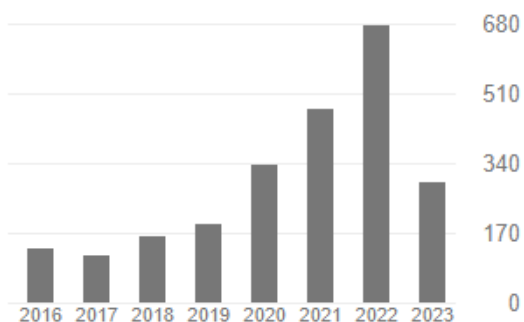
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Neutron scattering magnetism

Cited by

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	All	Since 2018
Citations	3180	2142
h-index	30	22
i10-index	57	42



2023

1. Yingdong Guan, Leixin Miao, Jingyang He, Jinliang Ning, Yangyang Chen, Weiwei Xie, Jianwei Sun, Venkatraman Gopalan, Jun Zhu, Xiaoping Wang, Nasim Alem*, **Qiang Zhang***, Zhiqiang and Mao*, “Layered semiconductor $\text{Cr}_{0.32}\text{Ga}_{0.68}\text{Te}_{2.33}$ with concurrent broken inversion symmetry and ferromagnetism: a bulk ferrovalley material candidate”, *Journal of the American Chemical Society*, 145, 4683 (2023).
2. **Q Zhang***, W Tian, RK Nepal, A Huq, S Nagler, JF DiTusa, R Jin*, “Polyhedral distortions and unusual magnetic order in spinel FeMn_2O_4 ”, *Chemistry of Materials*, **35**, 6, 2330–2341, (2023).
3. Y Huang, **Q Zhang**, YC Li, Y Yao, Y Hu, S Ren, “Chemical Tuning Meets 2D Molecular Magnets”, *Advanced Materials* **35** (5), 2208919, (2023).

- Igor M Gussev, Eric C O'Quinn, Matthew Tucker, Rodney C Ewing, Cale Overstreet, Jörg Neufeind, Michelle Everett, Qiang Zhang, David Sprouster, Daniel Olds, Gianguido Baldinozzi, Maik Lang, "Systematic study of short-and long-range correlations in RE₃TaO₇ weberite-type compounds by neutron total scattering and X-ray diffraction", *Journal of Materials Chemistry A*, (2023).
- Hector Cein Mandujano, Alejandro Metta, Neven Barišić, **Qiang Zhang**, Wojciech Tabiś, Naveen Kumar Chogondahalli Muniraju, Harikrishnan S Nair, "Sawtooth lattice multiferroic BeCr₂O₄: Noncollinear magnetic structure and multiple magnetic transitions", *Physical Review Materials*, 7, 024422, (2023).
- Mengru Cong, Han Ge, Lei Zhang, Weijun Ren, Nan Zhao, Tiantian Li, Shanmin Wang, Jinlong Zhu, Jiawei Mei, **Qiang Zhang**, Jieming Sheng, Fei Gao, Bing Li, Zhidong Zhang, Liusuo Wu, "Magnetic phase diagram and multiple field-induced states in the intermetallic triangular-lattice antiferromagnet NdAuAl₄Ge₂ with Ising-like spins", *Physical Review Materials*, 7, 024423, (2023).
- Shivani Sharma, Masoud Mardani, Keke Feng, Kaya Wei, Ryan Baumbach, **Qiang Zhang**, David J Singh, Theo Siegrist, "Crystal growth and magnetic structure of ternary silicide EuPd₃Si₂", *Physical Review Materials*, 7, 023402, (2023).
- Kun Lin, Wenbing Zhang, Chengyi Yu, Qiang Sun, Yili Cao, Wenjie Li, Suihe Jiang, Qiang Li, **Qiang Zhang**, Ke An, Yan Chen, Dunji Yu, Jue Liu, Kenichi Kato, Qinghua Zhang, Lin Gu, Xiaojun Kuang, Yu Tang, Jun Miao, Xianran Xing, "Chemical Heterogeneity Modulated Zero Thermal Expansion Alloy Over Super-Wide Temperature Range", *Cell Reports Physical Science* (2023).
- Xuyu Dong, Kun Lin, Chengyi Yu, Wenbin Zhang, Wenjie Li, Qian Zhang, **Qiang Zhang**, Jue Liu, Yili Cao, Xianran Xing, "Zero thermal expansion in non-stoichiometric and single-phase (Hf, Nb) Fe_{2.5} alloy", *Scripta Materialia*, **229**, 115388 (2023).
- C Dhital, RL Dally, R Ruvalcaba, R Gonzalez-Hernandez, J Guerrero-Sanchez, HB Cao, **Q Zhang**, W Tian, Y Wu, MD Frontzek, SK Karna, A Meads, B Wilson, R Chapai, D Graf, J Bacsá, R Jin, JF DiTusa, "Multi-k magnetic structure and large anomalous Hall effect in candidate magnetic Weyl semimetal NdAlGe", arXiv preprint arXiv:2302.05596, (2023).

2022

- Qiang Zhang***, Yuanpeng Zhang*, Masaaki Matsuda, Vasile O Garlea, Jiaqiang Yan, Michael A. McGuire, D. Alan Tennant, and Satoshi Okamoto, "Hidden local symmetry breaking in a kagome-lattice magnetic Weyl semimetal", *Journal of the American Chemical Society*, 144, 14339 (2022). ([2022 Neutron Science Division Best Paper Award](#))
- Qiang Zhang***+, Jinyu Liu+, Huibo Cao, W Adam Phelan, JF DiTusa, D Alan Tennant, Zhiqiang Mao, "Toward tunable quantum transport and novel magnetic states in Eu_{1-x}Sr_xMnSb₂ (z<0.05)", *NPG: Asia Materials*, 14, 1-11 (2022).
- 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*, 19, 2146 (2021). ([2022 top 10 science achievements at SNS & HFIR; US DOE highlight;](#))
- Qiang Zhang***, Yohann Bréard, Vincent Hardy, "Spin-Glass-like State and Reversible Room-Temperature Magnetocaloric Effect in Double Distorted Perovskites Nd(Cu_{3-x}Mn_x)Mn₄O₁₂", *Inorganic Chemistry*, 61, 5792 (2022).
- Yong Hu, Jennifer L Gottfried, Rose Pesce-Rodriguez, Chi-Chin Wu, Scott D Walck, Zhiyu Liu, Sangeeth Balakrishnan, Scott Broderick, Zipeng Guo, **Qiang Zhang**, Lu An, Revant Adlakha, Mostafa Nouh, Chi Zhou, Peter W Chung, Shenqiang Ren, "Releasing chemical energy in spatially programmed ferroelectrics", *Nature Communications*, **13**, 6959 (2022)
- L Jin, D Ni, X Gui, DB Straus, **Q Zhang**, RJ Cava, "Ferromagnetic Double Perovskite Semiconductors with Tunable Properties", *Advanced science*, 2104319, (2022).

7. BC Sales, WR Meier, DS Parker, L Yin, JQ Yan, AF May, S Calder, AA Aczel, **Q Zhang**, H Li, T Yilmaz, E Vescovo, H Miao, RP Hermann, MA McGuire, “Chemical Control of Magnetism in the Kagome Metal $\text{CoSn}_{1-x}\text{In}_x$: Magnetic Order from Nonmagnetic Substitutions”, *Chemistry of Materials*, **34**, 15, 7069–7077, (2022)
8. A. M. Samarakoon, D. Alan Tennant, Feng Ye, **Qiang Zhang**, S. A. Grigera, “Integration of Machine Learning with Neutron Scattering: Hamiltonian Tuning in Spin Ice with Pressure”, *Communications materials*, **3** (1), 1-11 (2022).
9. Laidong Zhou, Qiang Zhang, and Linda F. Nazar. “Li-Rich and Halide-Deficient Argyrodite Fast Ion Conductors”, *Chemistry of Materials*, **34**, 21, 9634–9643, (2022).
10. Samarakoon, A.M., André Sokolowski, Bastian Klemke, Ralf Feyerherm, Michael Meissner, R. A. Borzi, Feng Ye, **Qiang Zhang**, Zhiling Dun, Haidong Zhou, T. Egami, Jonathan N. Hallén, Ludovic Jaubert, Claudio Castelnovo, Roderich Moessner, S. A. Grigera, D. Alan Tennant, Structural magnetic glassiness in the spin ice $\text{Dy}_2\text{Ti}_2\text{O}_7$. *Physical Review Research*, **4**, 033159, (2022).
11. 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 $\text{Dy}_2\text{Ti}_2\text{O}_7$ ”, *Physical Review Research*, **4**, 033159, (2022).
12. Fei Gao, Jieming Sheng, Weijun Ren, **Qiang Zhang**, Xiaohua Luo, Ji Qi, Mengru Cong, Bing Li, Liusuo Wu, Zhidong Zhang, “Incommensurate spin density wave and magnetocaloric effect in the metallic triangular lattice HoAl_2Ge_2 ”, *Physical Review B* **106**, 134426, (2022).
13. H. Ge, L. Zhang, N. Zhao, J. Yang, L. Wang, L. Zhou, Y. Fu, T. T. Li, Z. M. Song, F. Ding, J. B. Xu, Y. F. Zhang, S. M. Wang, J. W. Mei, X. Tong, P. Miao, H. He, **Q. Zhang***, L. S. Wu*, and J. M. Sheng*, “Successive magnetic orderings in the Ising spin chain magnet DyNi_5Ge_8 ”, *Physical Review Materials* **6**, 085001, (2022).
14. H. Ge, C. J. Huang, **Q. Zhang**, N. Zhao, L. Wang, J. Yang, Y. Fu, L. Zhang, Z. M. Song, T. T. Li, F. Ding, J. B. Xu, Y. F. Zhang, X. Tong, S. M. Wang, J. W. Mei, A. Podlesnyak, L. S. Wu, Gang Chen, J. M. Sheng, “Interplay of itinerant electrons and Ising moments in a hybrid honeycomb quantum magnet TmNi_3Al_9 ”, *Physical Review B* **106**, 054434 (2022).
15. U Zweck, P Neibecker, S Mühlbauer, **Q Zhang**, PY Chiu, M Leitner, “Magnetization reversal induced by antiphase domain boundaries in Heusler compounds”, *Physical Review B* **106** (22), 224106 (2022).
16. Ranuri S Dissanayaka Mudiyansele, **Qiang Zhang**, Madalynn Marshall, Mark Croft, Zhixue Shu, Tai Kong, Weiwei Xie, “Spin Reorientation in Antiferromagnetic MnPd_5Se with an Anti- CeCoIn_5 Structure Type”, *Inorg. Chem.*, **61**, 3981 (2022).
17. John A Schneeloch, Yu Tao, Yongqiang Cheng, Luke Daemen, Guangyong Xu, **Qiang Zhang**, Despina Louca, “Gapless Dirac magnons in CrCl_3 ”, *npj Quantum Materials*, **7**, 66 (2022).
18. Tanya Berry, Allyson Marie Fry-Petit, Mekhola Sinha, **Qiang Zhang**, Gudrun Auffermann, Tyrel M McQueen, Sven P Rudin, W Adam Phelan, “The Role of Phonons and Oxygen Vacancies in Non-Cubic SrVO_3 ”, *Inorg. Chem.*, **61**, 3007 (2022).
19. Jo W. Haddock, Zach J. Barton, Keke Feng, Ryan E. Baumbach, **Qiang Zhang**, Susan E. and Lattner, “Flux Growth of Cerium Nickel Gallides Studied by In Situ Neutron Diffraction”, *Inorg. Chem.*, **61**, 15645 (2022).
20. Zachary T Messegee, Philippe Gall, Hari Bhandari, Peter E Siegfried, Chang-Jong Kang, Benjamin Chen, Carl R Conti III, Banghao Chen, Mark Croft, **Qiang Zhang**, Syed N Qadri, Joseph Prestigiacomo, Nirmal J Ghimire, Patrick Gougeon, Xiaoyan Tan, “ $\text{LiMo}_8\text{O}_{10}$: Polar Crystal Structure with Infinite Edge-Sharing Molybdenum Octahedra”, *Inorg. Chem.*, **61**, 13924 (2022).
21. Tepei Nagase, Takumi Nishikubo, Masayuki Fukuda, Yuki Sakai, Kei Shigematsu, Yoichi Ikeda, Yusuke Nambu, **Qiang Zhang**, Masaaki Matsuda, Ko Mibu, Masaki Azuma, Takafumi Yamamoto, “ $\text{SrV}_{0.3}\text{Fe}_{0.7}\text{O}_{2.8}$: A Vacancy-Ordered Fe-Based Perovskite Exhibiting Room-Temperature Magnetoresistance”, *Inorg. Chem.*, **61**, 8987 (2022).
22. Lun Jin, Danrui Ni, Xin Gui, Daniel B Straus, **Qiang Zhang**, Robert J Cava, “Magnetic cations doped into a Double Perovskite Semiconductor”, *J. Mater. Chem. C*, **10**, 3232 (2022).

23. C Dhital, RL Dally, D Pham, T Keen, **Q Zhang**, P Siwakoti, R Nepal, R Jin, R Rai, “Magnetic structure of magnetoelectric multiferroic HoFeWO₆”, *J. Magn. Magn. Mater.*, **544** 168725, (2022).

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 Co₃Sn₂S₂”, *Physical Review Letters*, 127, 117201, (2021). ([US DOE highlight](#); [2022 FY top 10 science achievements at SNS & HFIR](#))
2. 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).
3. Lei Ding, Xianghan Xu, Harald O. Jeschke, Xiaojian Bai, Erxi Feng, Admasu Solomon Alemayehu, Jaewook Kim, Feiting Huang, **Qiang Zhang**, Xiixin 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).
4. 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 R₂(Fe,Co)₁₇ materials (R = rare earth)”, *Physical Review Letters*, 127 (5), 055501, (2021).
5. 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 Mn³⁺ in Mild Hydrothermal Synthesis of a Charge Ordered Defect Pyrochlore, CsMn²⁺Mn³⁺F₆, a Canted Antiferromagnet with a Hard Ferromagnetic Component”, *Journal of the American Chemical Society*, 143, 11554–11567, (2021).
6. 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*, **143**, 46, 19551 (2021).
7. Michael A. McGuire, **Qiang Zhang**, Hu Miao, Wei Luo, Mina Yoon, Yaohua Liu, Turgut Yilmaz, and Elio Vescovo, “Antiferromagnetic Order and Linear Magnetoresistance in Fe-Substituted Shandite Co₃In₂S₂”, *Chemistry of Materials* 33, 9741, (2021).
8. S. X. M. Riberolles, **Q. Zhang**, Elijah Gordon, N. P. Butch, Liqin Ke, J.-Q. Yan, and R. J. McQueeney, “Noncollinear spin structure with weak ferromagnetism in NbMnP”, *Physical Review B*, 104, 174413, (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 MnBi₂Te₄”, *Physical Review B*, 104, 064401, (2021).
10. LT Nguyen, M Saubanère, **Q Zhang**, RJ Cava, “Structure, Magnetism and First Principles Modeling of the Na_{0.5}La_{0.5}RuO₃ 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 BaFe₂Al₉”, *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 Ba₆Y₂Rh₂Ti₂O_{17-δ} 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 NaCeO₂”, *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 NdCoGe₃”, *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 γ -Fe₂WO₆ 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).
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