

BIOGRAPHICAL SKETCH

Yan Chen, PhD

Neutron Scattering Scientist, VULCAN
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Interests

- Advanced *in situ* neutron and X-ray diffraction.
- Synthesis mechanism of oxides and alloys for energy and engineering applications.
- Structural transition in atomic scale under non-equilibrium conditions and external stimuli.
- Deformation mechanisms of engineering materials for superior mechanical behaviors.
- Nondestructive residual stress, texture, and microstructure investigation in engineering components.

Education

- B. S. Materials Science and Engineering, Tsinghua University, Beijing, China, 2007
M. S. Materials Science and Engineering, Tsinghua University, Beijing, China, 2009
Ph. D. Materials Science and Engineering, University of Central Florida, Orlando, USA, 2013

Research and Professional Experience

- Neutron Scattering Scientist, VULCAN, Neutron Scattering Division, ORNL (2017 – Present)
- Postdoctoral Research Associate, Spallation Neutron Source, ORNL (2013 – 2017)
- Graduate Research Assistant, Department of Mechanical, Materials and Aerospace Engineering, University of Central Florida, 2009 – 2013.
- Visiting Student Scholar, Spallation Neutron Source, ORNL (2012)
- Visiting Student Scholar, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland (2011)
- Graduate Research Assistant, Department of Materials Science and Engineering, Tsinghua University, China (2007 – 2009)

Honors and Awards

- 2022 2022 Team Science Award. Building and Transportation Science Division, ORNL.
- 2022 ORNL's Top 10 Neutron Scattering Achievements of 2020. "New 3-D printed alloys offer strength, greater resistance", in paper "Strong yet ductile nanolamellar high-entropy alloys by additive manufacturing", *Nature*, 608, 62-68 (2022).
- 2021 Top Cited Article 2020-2021 in Journal of the American Ceramic Society. "The effect of submicron grain size on thermal stability and mechanical properties of high-entropy carbide ceramics", *Journal of the American Ceramic Society*, 103, 4463-4472 (2020).
- 2020 ORNL's Top 10 Neutron Scattering Achievements of 2020. "The Structure of a Fast-Charging Lithium Anode", in paper "Ultra-Lithium-Rich Disordered Rocksalt Anode for Fast-charging Lithium-Ion Batteries", *Nature*, 585, 63-67, 2020.
- 2019 NSD Best Paper Award, 2019. "Lattice-Cell Orientation Disorder in Complex Spinel Oxides", *Advanced Energy Materials*, 7(4), 1601950, 2017.
- 2019 ORNL's Top 10 Neutron Scattering Achievements of 2019. "Understanding hydrogen, lithium ionic mobility in aqueous-lithium metal batteries", in paper "Elucidating the mobility of H⁺ and Li⁺ ions in

- ($\text{Li}_{6.25-x}\text{H}_x\text{Al}_{0.25}$) $\text{La}_3\text{Zr}_2\text{O}_{12}$ via correlative neutron and electron spectroscopy”, *Energy & Environmental Science*, 12, 945-951, 2019.
- 2018 ORNL’s Top neutron scattering achievements of 2018, “*Path to better engineering alloys revealed*”, in paper “Deformation mechanisms and work-hardening behavior of transformation-induced plasticity high entropy alloys by in-situ neutron diffraction”, *Materials Research Letters*, 6, 11, 620-626, 2018.
- 2012 Honorable Mentions of the 2012 Dr. Bernard S. Baker Student Award for Fuel Cell Research
- 2012 Poster Award at the MCARE Graduate Student Poster Contest, Clearwater, FL
- 2007 Gua-Chuan Scholarship for Overall Excellence, Department of Materials Science and Engineering, Tsinghua University, Beijing, China
- 2005 Gua-Chuan Scholarship for Overall Excellence, Department of Materials Science and Engineering, Tsinghua University, Beijing, China
- 2004 Scholarship for Overall Excellence, Tsinghua University, Beijing, China

Professional Activities

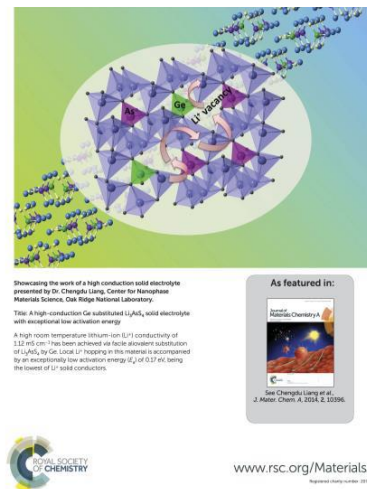
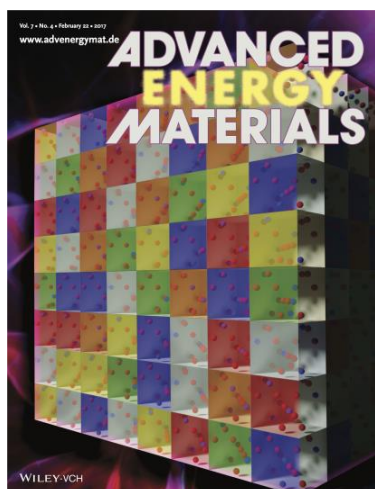
- **Organizer:**
 - Workshop on Vulcan Data Reduction and Analysis 2022, Oak Ridge, TN, August 17-18, 2022.
 - User meeting workshop: “Materials Synthesis Science and Opportunities Aided by in-situ Scattering Tools”, Virtual, 2021.
- **Professional society affiliation:** Material Research Society (MRS); The American Ceramic Society (ACerS); Association for Iron & Steel Technology (AIST); The Minerals, Metals & Materials Society (TMS); American Electrochemistry Society (past).
- **Reviewer of academic journals:** ACS Applied Energy Materials; ACS Applied Materials & Interfaces; Advanced Engineering Materials; Advances in Applied Ceramics; Ceramics International; Energy & Fuels (ACS); Fuel Cells; Intermetallics; International Journal of Applied Ceramic Technology; Journal of Electronic Materials; Journal of Environmental Sciences; Journal of Engineering Manufacture; Journal of Power Sources; Journal of Renewable and Sustainable Energy; Journal of the American Ceramic Society; Journal of the European Ceramic Society; Materials; Materials and Design; Materials Letters; Materials Today Advances; Nano Energy; Scientific Reports; Scripta Materialia.

Publications

- As of June 2023, a total 103 publications (journal papers, proceedings and technique reports), with the use of neutron instruments including VULCAN, POWGEN, NOMAD, POWDER, EQ-SANS, VISION and BASIS.
- More than 20 oral and poster presentations in international conferences.
- **Selected news releases and website highlights**
 1. [Real-Time Diagnostics for Better Engines](https://science.osti.gov/bes/Highlights/2022/BES-2022-06-e). (2022)
(<https://science.osti.gov/bes/Highlights/2022/BES-2022-06-e>)
 2. [Strong Additively Manufactured High-Entropy Alloys](https://neutrons.ornl.gov/highlights/strong-additively-manufactured-high-entropy-alloys). (2022)
(<https://neutrons.ornl.gov/highlights/strong-additively-manufactured-high-entropy-alloys>)
 3. [Founding Father' of lithium-ion batteries helps solve 40-year problem with his invention](https://neutrons.ornl.gov/content/%E2%80%98founding-father%E2%80%99-lithium-ion-batteries-helps-solve-40-year-problem-his-invention). (2021)
(<https://neutrons.ornl.gov/content/%E2%80%98founding-father%E2%80%99-lithium-ion-batteries-helps-solve-40-year-problem-his-invention>)
 4. [A cousin of table salt could make energy storage faster and safer](https://neutrons.ornl.gov/content/a-cousin-table-salt-could-make-energy-storage-faster-and-safer). (2021)
(<https://neutrons.ornl.gov/content/a-cousin-table-salt-could-make-energy-storage-faster-and-safer>)
 5. [Operando Material Lattice Strain Measurement in Firing Engine Accelerates Advanced Vehicle Research](https://live-neutrons.pantheonsite.io/highlights/operando-material-lattice-strain-measurement-firing-engine-accelerates-advanced-vehicle#overlay-context=all-news%3Ffield_news_type_tid%3D1133). (2021)
(https://live-neutrons.pantheonsite.io/highlights/operando-material-lattice-strain-measurement-firing-engine-accelerates-advanced-vehicle#overlay-context=all-news%3Ffield_news_type_tid%3D1133)
 6. [West Virginia researchers use neutrons to study materials for power plant improvements](https://neutrons.ornl.gov/highlights/west-virginia-researchers-use-neutrons-to-study-materials-for-power-plant-improvements). (2020)

- (<https://neutrons.ornl.gov/content/west-virginia-researchers-use-neutrons-study-materials-power-plant-improvements>)
7. [Honda Probes Residual Stress Distribution in Complex 3D-Printed Automobile Structures](https://neutrons.ornl.gov/highlights/honda-probes-residual-stress-distribution-complex-3d-printed-automobile-structures). (2020)
(<https://neutrons.ornl.gov/highlights/honda-probes-residual-stress-distribution-complex-3d-printed-automobile-structures>)
 8. [Princeton uses neutrons to squeeze possibilities for piezoelectrochemical self-charging technologies](https://neutrons.ornl.gov/content/princeton-uses-neutrons-squeeze-possibilities-piezoelectrochemical-self-charging). (2020)
(<https://neutrons.ornl.gov/content/princeton-uses-neutrons-squeeze-possibilities-piezoelectrochemical-self-charging>)
 9. [Beyond Theoretical Lithiation of the Anode Material \$\text{Li}_4\text{Ti}_5\text{O}_{12}\$](https://neutrons.ornl.gov/highlights/beyond-theoretical-lithiation-anode-material-li4ti5o12) . (2020)
(<https://neutrons.ornl.gov/highlights/beyond-theoretical-lithiation-anode-material-li4ti5o12>)
 10. [From ancient pottery to fiber optics, ceramics keep evolving—now with lasers and neutrons](https://neutrons.ornl.gov/content/ancient-pottery-fiber-optics-ceramics-keep-evolving-now-with-lasers-and-neutrons). (2019)
(<https://neutrons.ornl.gov/content/ancient-pottery-fiber-optics-ceramics-keep-evolving-now-with-lasers-and-neutrons>)
 11. [ORNL–Eck Industries partnership fast-tracks high-performance alloys to market](https://neutrons.ornl.gov/content/ornl-eck-industries-partnership-fast-tracks-high-performance-alloys-market). (2019)
(<https://neutrons.ornl.gov/content/ornl-eck-industries-partnership-fast-tracks-high-performance-alloys-market>)
 12. [Neutrons analyze advanced high-strength steels to improve vehicle safety and efficiency](https://neutrons.ornl.gov/content/neutrons-analyze-advanced-high-strength-steels-improve-vehicle-safety-and-efficiency). (2018)
(<https://neutrons.ornl.gov/content/neutrons-analyze-advanced-high-strength-steels-improve-vehicle-safety-and-efficiency>)
 13. [New family of aluminum-cerium alloys shows significantly improved high-temperature performance, economic benefits](https://www.greencarcongress.com/2017/12/20171205-alce.html). (2017)
(<https://www.greencarcongress.com/2017/12/20171205-alce.html>)
 14. [Researchers Improve Performance of Cathode Material by Controlling Oxygen Activity](https://jacobsschool.ucsd.edu/news/release?id=1975). (2016)
(<https://jacobsschool.ucsd.edu/news/release?id=1975>)
 15. [Neutrons offer guide to getting more out of solid-state lithium-ion batteries](https://www.ornl.gov/news/neutrons-offer-guide-getting-more-out-solid-state-lithium-ion-batteries). (2015)
(<https://www.ornl.gov/news/neutrons-offer-guide-getting-more-out-solid-state-lithium-ion-batteries>)

➤ Journal covers of publications



- Lattice-cell orientation disorder in complex spinel oxides
- *Advanced Energy Materials*, 7(4), 2017.
- High performance aluminum-cerium alloys for high-temperature applications
- *Materials Horizons*, 4, 2017.
- A high-conduction Ge substituted Li_3AsS_4 solid electrolyte with exceptional low activation energy
- *Journal of Materials Chemistry A*, 2(27), 2014.

➤ List of publications in journals

1. Chen Y., Lee K., An K., Yu D., Zhou H., Whittingham M.S., "[Neutron Diffraction Probing Hydrogen in Monoclinic \$\text{H}_2\text{VOPO}_4\$](#) ", *Materials Letters*, in press (2023).
 2. Lin K., Zhang W., Yu C., Sun Q., Cao Y., Li W., Jiang S.H., Li Q., Zhang Q., An K., Chen Y., Yu D., Liu J., Kato K., Gu L., Zhang Q., Kuang X., Tang Y., Miao J., Xing X., "[Chemical heterogeneity modulated zero thermal expansion alloy over super-wide temperature range](#)", *Cell Reports Physical Science*, 4, 101254 (2023).
 3. Liu Y., Ren J., Guan S., Li C., Zhang Y., Muskeri S., Liu Z., Yu D., Chen Y., An K., Cao Y., Liu W., Zhu Y., Chen W., Mukherjee S., Zhu T., "[Microstructure and mechanical behavior of additively manufactured CoCrFeMnNi high-entropy alloys: Laser directed energy deposition versus powder bed fusion](#)", *Acta Materialia*, 250, 118884 (2023).
 4. Lyu Z., Li Z., Sasaki T., Gao Y.F., An K., Chen Y., Yu D., Hono K., Liaw P.K., "[Micromechanical origin for the wide range of strength-ductility trade-off in metastable high entropy alloys](#)", *Scripta Materialia*, 231, 115439 (2023).
 5. Parascos K., Watts J.L., Alarco J.A., Chen Y., Talbot P.C., "[Optimizing \$\text{Li}^+\$ transport in \$\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}\$ solid electrolytes](#)", *Ceramics International*, in press (2023).
 6. Xie D., Li Z., Sasaki T., Gao Y.F., Lyu Z., Feng R., Chen Y., An K., Chew H.B., Nakata T., Kamado S., Hono K., Liaw P.K., "[Identifying the effect of coherent precipitates on the deformation mechanisms by in situ neutron diffraction in an extruded magnesium alloy under low-cycle fatigue conditions](#)", *Acta Materialia*, 251, 118903 (2023).
 7. Zhang D., Chen Y., Vega H., Feng T., Yu D., Everet M., Neufeind J., An K., Chen R., Luo J., "[Long- and short-range orders in 10-component compositionally complex ceramics](#)", *Advanced Powder Materials*, 2, 100098 (2023).
- (2022)
8. Chen Y., An K., "[Unraveling transition-metal-mediated stability of spinel oxide via in situ neutron scattering](#)", *Journal of Energy Chemistry*, 68, 60-70 (2022).

9. Feng R., Kim G., Yu D., **Chen Y.**, Chen W., Liaw P.K., An K., "[Elastic behavior of binary and ternary refractory multi-principal-element alloys](#)", *Materials & Design*, 219, 110820 (2022).
10. He X., Wu J., Zhu Z., Liu H., Li N., Zhou D., Hou X., Wang J., Zhang H., Bresser D., Fu Y., Crafton M.J., McCloskey B., **Chen Y.**, An K., Liu P., Jain A., Li J., Yang W., Yang Y., Winter M., Kostecki R., "[Chemical and structural evolution of Li-Mn-rich layered electrodes under different current densities](#)", *Energy & Environmental Science*, 15, 10, 4137-4147 (2022).
11. Li F., Gao P., **Chen Y.**, Li C., Shang X., Wan P., Chen W., Kang T., Zhao Z., An K., "[In-situ neutron diffraction investigation of two-stage martensitic transformation in a 13%Mn steel with serrated deformation](#)", *Materials Science and Engineering A*, 840, 142955 (2022).
12. Li W., Lin K., Yan Y., Yu C., Cao Y., Chen X., Wang C., Kato K., **Chen Y.**, An K., Zhang Q., Gu L., Li Q., Deng J., Xing X., "[Seawater Corrosion Resistant and Isotropic Zero Thermal Expansion \(Zr, Ta\)\(Fe, Co\)₂ Alloy](#)", *Advanced Materials*, 34, 2109592 (2022).
13. Li Z., Guan B., Xia F., Nie J., Ma L., Li W., Li W., Zhou L., Wang Y., Tian H., Luo J., **Chen Y.**, Frost M., An K., Liu X., "[High-Entropy Perovskite as a High-Performing Chromium-Tolerant Cathode for Solid Oxide Fuel Cells](#)", *ACS Applied Materials & Interfaces*, 14, 21, 24363–24373 (2022).
14. Parascos K., Watts J.L., Alarco J.A., **Chen Y.**, Talbot P.C., "[Compositional and structural control in LLZO solid electrolytes](#)", *RSC Advances*, 12, 23466-23480 (2022).
15. Ren J., Zhang Y., Zhao D., **Chen Y.**, Guan S., Liu Y., Liu L., Peng S., Kong F., Poplawsky J., Gao G., Voisin T., An K., Wang Y.M., Xie K.G., Zhu T., Chen W., "[Strong yet ductile nanolamellar high-entropy alloys by additive manufacturing](#)", *Nature*, 608, 62-68 (2022).
16. Srinivasan R., Chandran K.S., **Chen Y.**, An K., "[In-Operando Neutron Diffraction Investigation of Structural Transitions during Lithiation of Si Electrode in Li-Ion Battery](#)", *Journal of the Electrochemical Society*, 169, 100545 (2022).
17. Yu C., Lin K., Cao Y., Li W., **Chen Y.**, An K., Wang C., Kato K., Li Q., Deng J., Xing X., "[Two-dimensional zero thermal expansion in low-cost Mn₂Fe_{5-x}Si₃ alloys via integrating crystallographic texture and magneto-volume effect](#)", *Science China Materials*, 65, 1912–1919 (2022).
18. Zhang D., **Chen Y.**, Feng T., Yu D., An K., Chen R., Luo J., "[Discovery of a reversible redox-induced order-disorder transition in a 10-component compositionally complex ceramic](#)", *Scripta Materialia*, 215, 114699 (2022).
19. Zhu N., Avery D.Z., **Chen Y.**, An K., Jordon J.B., Allison P.G., Brewer L.N., "[Residual Stress Distributions in AA6061 Material Produced by Additive Friction Stir Deposition](#)", *Journal of Materials Engineering and Performance*, (2022).
- (2021)
20. Feng R., Rao Y., Liu C., Xie X., Yu D., **Chen Y.**, Ghazisaeidi M., Ungar T., Wang H., An K., Liaw P.K., "[Enhancing fatigue life by ductile-transformable multicomponent B2 precipitates in a high-entropy alloy](#)", *Nature Communications*, 12, 3588 (2021).
21. Feng R., Zhang C., Gao M.C., Pei Z., Zhang F., **Chen Y.**, Ma D., An K., Poplawsky J., Ouyang L., Ren Y., Hawk J.A., Widom M., Liaw P.K., "[High-throughput design of high-performance lightweight high-entropy alloys](#)", *Nature Communications*, 12, 4329 (2021).
22. Frank M., Nene S.S., **Chen Y.**, Thapliyal S., Shukla S., Liu K., Sinha S., Wang T., Frost M., An K., Mishra R.S., "[Direct evidence of the stacking fault-mediated strain hardening phenomenon](#)", *Applied Physics Letters*, 119, 081906 (2021).
23. Fu S., Yu D., **Chen Y.**, Zou T., Gai Z., Chen X., An K., "[Magnetic ordering suppressed phase transformation of a TRIP-HEA during thermal cycling](#)", *Applied Physics Letters*, 119, 171906 (2021).
24. Halacoglu S., Chertmanova S., **Chen Y.**, Li Y., Rajapakse M., Sumanasekera G., Narayanan B., Wang H., "[Visualization of Solid-State Synthesis for Chalcogenide Na Superionic Conductors by in situ Neutron Diffraction](#)", *ChemSusChem*, 14, 5161-5166 (2021).
25. Kumar S., Vijayan S.R., Nandwana P., Poplawsky J., **Chen Y.**, Babu S.S., "[Role of thermo-mechanical gyrations on the \$\alpha/\beta\$ interface stability in a Ti6Al4V AM alloy](#)", *Scripta Materialia*, 204, 114134 (2021).

26. Xie D., Lyu Z., Li Y., Liaw P.K., Chew H.B., Ren Y., **Chen Y.**, An K., Gao Y.F., "[In situ monitoring of dislocation, twinning, and detwinning modes in an extruded magnesium alloy under cyclic loading conditions](#)", *Materials Science and Engineering A*, 806, 140860 (2021).
27. Xin F., Zhou H., Zong Y., Zuba M.J., **Chen Y.**, Chernova N.A., Bai J., Pei B., Goel A., Rana J., Wang F., An K., Piper L.F., Zhou G., Whittingham M.S., "[What is the Role of Nb in Nickel-Rich Layered Oxide Cathodes for Lithium-Ion Batteries?](#)", *ACS Energy Letters*, 6, 1377–1382 (2021).
28. Xu P., Yang Z., Yu X., Holoubek J., Gao H., Li M., Cai G., Bloom I., Liu H., **Chen Y.**, An K., Pupek K.Z., Liu P., Chen Z., "[Design and Optimization of the Direct Recycling of Spent Li-Ion Battery Cathode Materials](#)", *ACS Sustainable Chemistry & Engineering*, 9, 12, 4543–4553 (2021).
29. Yu C., Lin K., Jiang S.H., Cao Y., Li W., Wang Y., **Chen Y.**, An K., You L., Kato K., Li Q., Chen J., Deng J., Xing X., "[Plastic and low-cost axial zero thermal expansion alloy by a natural dual-phase composite](#)", *Nature Communications*, 12, 4701 (2021).
30. Zhang Q., Arnold W., Hood Z.D., Li Y., DeWees R., Chi M., Chen Z., **Chen Y.**, Wang H., "[Li_{0.625}Al_{0.125}H_{0.25}Cl_{0.75}O_{0.25} Superionic Conductor with Disordered Rock-Salt Structure](#)", *ACS Applied Energy Materials*, 4, 7674-7680 (2021).
31. Zhang X., Wang F., Wu Z., Lu Y., Yan X., Nastasi M., **Chen Y.**, Hao Y., Hong X., Cui B., "[Direct Selective Laser Sintering of Hexagonal Barium Titanate Ceramics](#)", *Journal of the American Ceramic Society*, 104, 3, 1271-1280 (2021).
32. Zhong W., Lin J.I., **Chen Y.**, Li Z., An K., Sutton B., Heuser B.J., "[Microstructure, Hardness, and Residual Stress of the Dissimilar Metal Weldments of SA508-309L/308L-304L](#)", *Metallurgical and Materials Transactions A*, 52, 1927-1938 (2021).
- (2020)
33. Frank M., **Chen Y.**, Nene S.S., Sinha S., Liu K., An K., Mishra R.S., "[Investigating the deformation mechanisms of a highly metastable high entropy alloy using in-situ neutron diffraction](#)", *Materials Today Communications*, 23, 100858 (2020).
34. Frank M., Nene S.S., **Chen Y.**, Gwalani B., Kautz E.J., Devaraj A., An K., Mishra R.S., "[Correlating work hardening with co-activation of stacking fault strengthening and transformation in a high entropy alloy using in-situ neutron diffraction](#)", *Scientific Reports*, 10, 22263 (2020).
35. Fu S., Yu D., **Chen Y.**, An K., Chen X., "[Size effect in stainless steel thin wires under tension](#)", *Materials Science and Engineering: A*, 790, 139686, (2020).
36. Kumar S., Kamath R., Nandwana P., **Chen Y.**, Babu S.S., "[Dynamic Phase Transformations in Additively Manufactured Ti-6Al-4V during Thermo-Mechanical Gyration](#)", *Materialia*, 14, 100883 (2020).
37. Lin K., Li W., Yu C., Jiang S.H., Cao Y., Li Q., Chen J., Zhang M., Xia M., **Chen Y.**, An K., Li X., Zhang Q., Gu L., Xing X., "[High performance and low thermal expansion in Er-Fe-V-Mo dual-phase alloys](#)", *Acta Materialia*, 198, 271-280 (2020).
38. Liu H., Zhu Z., Yan Q., Yu S., He X., **Chen Y.**, Zhang R., Ma L., Liu T., Li M., Lin R., Chen Y., Li Y., Xing X., Choi Y., Gao L., Cho H.S., An K., Feng J., Kostecki R., Amine K., Wu T., Lu J., Xin H., Ong S.P., Liu P., "[A disordered rock salt anode for fast-charging lithium-ion batteries](#)", *Nature*, 585, 63-67 (2020).
39. Liu R., Liang Z., Xiang Y., Zhao W., Liu H., **Chen Y.**, An K., Yang Y., "[Recognition of V³⁺/V⁴⁺/V⁵⁺ Multielectron Reactions in Na₃V\(PO₄\)₂: A Potential High Energy Density Cathode for Sodium-Ion Batteries](#)", *Molecules*, 25, 1000 (2020).
40. Petz D., Muhlbauer M.J., Baran V., Frost M., Schokel A., Paulmann C., **Chen Y.**, Garces D., Senyshyn A., "[Lithium heterogeneities in cylinder-type Li-ion batteries – fatigue induced by cycling](#)", *Journal of Power Sources*, 448, 227466 (2020).
41. Wang F., Zhang X., Yan X., Lu Y., Nastasi M., **Chen Y.**, Cui B., "[The Effect of Submicron Grain Size on Thermal Stability and Mechanical Properties of High-Entropy Carbide Ceramics](#)", *Journal of the American Ceramic Society*, 103, 4463-4472 (2020).
42. Wissink M., **Chen Y.**, Frost M., Curran S.J., Rios O., Sims Z.C., Weiss D.T., Stromme E.T., An K., "[Operando measurement of lattice strain in internal combustion engine components by neutron diffraction](#)", *Proceedings of the National Academy of Sciences of the United States of America*, 117, 52, 33061-33071 (2020).

43. Xu P., Dai Q., Gao H., Liu H., Zhang M., Li M., **Chen Y.**, An K., Meng Y.S., Liu P., Li Y., Spangenberg J.S., Gaines L., Lu J., Chen Z., "[Efficient Direct Recycling of Lithium-Ion Battery Cathodes by Targeted Healing](#)", *Joule*, 4, 12, 2609-2626 (2020).

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44. An K., **Chen Y.**, Stoica A.D., "[VULCAN: A “hammer” for high-temperature materials research](#)", *MRS Bulletin*, 44, 878-885 (2019).

45. Fan Q., Yang S., Liu J., Liu H., Lin K., Liu R., Hong C., Liu L., **Chen Y.**, An K., Liu P., Shi Z., Yang Y., "[Mixed-conducting interlayer boosting the electrochemical performance of Ni-rich layered oxide cathode materials for lithium ion batteries](#)", *Journal of Power Sources*, 421, 91-99 (2019).

46. Liu H., Zhu Z., Huang J., He X., **Chen Y.**, Zhang R., Lin R., Li Y., Yu S., Xing X., Yan Q., Li X., Frost M., An K., Feng J., Kostecki R., Xin H., Ong S.P., Liu P., "[Elucidating the Limit of Li Insertion into the Spinel Li₄Ti₅O₁₂](#)", *ACS Materials Letters*, 1, 96-102 (2019).

47. Liu X., **Chen Y.**, Hood Z.D., Ma C., Yu S., Sharafi A., Wang H., An K., Sakamoto J., Siegel D.J., Cheng Y.Q., Jalarvo N., Chi M., "[Elucidating the mobility of H⁺ and Li⁺ ions in \(Li_{6.25-x}H_xAl_{0.25}\)La₃Zr₂O₁₂ via correlative neutron and electron spectroscopy](#)", *Energy & Environmental Science*, 12, 3, 945-951 (2019).

48. Rauch H.A., **Chen Y.**, An K., Yu H.Z., "[In Situ Investigation of Stress-Induced Martensitic Transformation in Granular Shape Memory Ceramic Packings](#)", *Acta Materialia*, 168, 362-375 (2019).

49. Shang Y.Y., Wu Y., He J.Y., Zhu X.Y., Liu S.F., Huang H.L., An K., **Chen Y.**, Jiang S.H., Wang H., Liu X.J., Lu Z.P., "[Solving the strength-ductility tradeoff in the medium-entropy NiCoCr alloy via interstitial strengthening of carbon](#)", *Intermetallics*, 106, 77-87 (2019).

50. Zheng S., Zheng F., Liu H., Zhong G., Wu J., Feng M., Wu Q., Zuo W., Hong C., **Chen Y.**, An K., Liu P., Wu S., Yang Y., "[A novel ordered rocksalt type Li-rich Li₂Ru_{1-x}Ni_xO_{3-δ} \(0.3 ≤ x ≤ 0.5\) cathode material with tunable anionic redox potential](#)", *ACS Applied Energy Materials*, 2, 5933-5944 (2019).

(2018)

51. Fu S., Bei H., **Chen Y.**, Liu T.K., Yu D., An K., "[Deformation mechanisms and work-hardening behavior of transformation-induced plasticity high entropy alloys by in-situ neutron diffraction](#)", *Materials Research Letters*, 6, 11, 620-626 (2018).

52. Lee C., Song G., Gao M.C., Feng R., Chen P., Brechtel J., **Chen Y.**, An K., Guo W.T., Poplawsky J., Li S., Samaei A.T., Chen W., Hu A., Choo H., Liaw P.K., "[Lattice Distortion in a Strong and Ductile Refractory High-entropy Alloy](#)", *Acta Materialia*, 160, 158-172 (2018).

53. Liu H., Liu H., Seymour I.D., Chernova N.A., Wiaderek K.M., Trease N.M., Hy S., **Chen Y.**, An K., Zhang M., Borkiewicz O.J., Lapidus S., Qiu B., Xia Y., Liu Z., Chupas P.J., Chapman K.W., Whittingham M.S., Grey C.P., Meng Y.S., "[Identifying the chemical and structural irreversibility in LiNi_{0.8}Co_{0.15}Al_{0.05}O₂ – a model compound for classical layered intercalation](#)", *Journal of Materials Chemistry A*, 6, 9, 4189-4198 (2018).

54. Liu Y., Li C.W., Liu C., **Chen Y.**, An K., Landskron K., "[Probing the electrolyte infiltration behaviour of activated carbon supercapacitor electrodes by in situ neutron scattering using aqueous NaCl as electrolyte](#)", *Carbon*, 136, 139-142 (2018).

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1. **Chen Y.**, An K, "Neutron Scattering Aiding to Understand Material Processing for Energy Storage Applications", 2023 MRS Fall Meeting & Exhibit, San Francisco, CA, April 10-14, 2023.
2. **Chen Y.**, An K, "Probing Structure Evolution in Functional Oxides by in-situ Neutron Diffraction", Electronic Materials and Applications (EMA) 2023, Orlando, FL, January 17-20, 2023. (**Invited**)
3. **Chen Y.**, An K, "Neutron Scattering Visualizing Defects Generation and Structure Recovery in Ball-milled Spinel Oxide", MS&T 2022, Pittsburgh, PA, October 9-12, 2022. (**Invited**)
4. **Chen Y.**, Wang H, An K, "Neutron Diffraction Probing Fast Ion Transport Tunnels in Crystalline Solids", American Chemical Society (ACS) Fall 2022 meeting, Chicago, IL, August 21–25, 2022. (**Invited**)
5. **Chen Y.**, An K, "Transition-metal-mediated Thermal Stability of Spinel Cathode in Li-ion Battery by In Situ Neutron Scattering", MS&T 2021, Virtual, October 17-20, 2021.
6. **Chen Y.**, An K, "Neutrons Guide Materials Design and Synthesis of Functional Oxides", MS&T 2020, Virtual, November 2-6, 2020. (**Invited**)
7. **Chen Y.**, An K, "In-situ Neutron Diffraction Revealing Stress-Induced Structure Evolution in Functional Oxides", 69th Annual Denver X-ray Conference, Virtual, August 3-7, 2020. (**Invited**)
8. **Chen Y.**, Stoica A, An K, "Accelerating Crystallographic Orientations Measurement in Polycrystalline Materials by Utilizing Time-of-flight Neutron Diffraction", 10th American Conference on Neutron Scattering (ACNS 2020), Virtual, July 13-16, 2020.
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10. **Chen Y.**, Wang H, An K, "Fast ion transport tunnels in solid-state crystalline electrolytes", 2018 MRS Fall Meeting & Exhibit, Boston, MA, November 25 –30, 2018.
11. **Chen Y.**, Chen KP, An K, "Visualization of ferroelastic domain switching in (K,Na,Li)(Nb,Ta)O₃ lead-free piezoelectric ceramics by in situ neutron diffraction", MS&T 2017, Pittsburgh, PA, October 8-12, 2017. (**Invited**)

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13. **Chen Y**, Rangasamy E, Liang C and An K, “Structural Origin of High Li⁺ Conduction in Doped Li₇La₃Zr₂O₁₂ Garnets”, 2015 MRS Fall Meeting & Exhibit, Boston, MA, November 29 – December 4, 2015.
14. **Chen Y**, Rangasamy E, Liang C and An K, “Dopant effects on the synthesis of garnet-type fast Li-ion conductor by in-situ neutron diffraction”, 2014 MRS Fall Meeting & Exhibit, Boston, MA, November 30 – December 5, 2014.
15. **Chen Y**, Yang L, Ren F and An K, “Visualizing the structural evolution of LSM/*x*YSZ composite cathodes for SOFC by in situ neutron diffraction”, 2014 MRS Fall Meeting & Exhibit, Boston, MA, November 30 – December 5, 2014.
16. **Chen Y**, Cheng Y, Feygenson M, Liang C and An K, “Unraveling Ordering Structures of LiNi_{0.5}Mn_{1.5}O₄ Cathode by Neutron Diffraction and Computer Simulation”, American Conference on Neutron Scattering, Knoxville, TN, June 1-5, 2014.
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