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SUMMARY

In charge of the NScD Materials Science and Engineering Initiative and Industrial Application Program office of the Shull Wollan Center of University of Tennessee and Neutron Science Directorate of ORNL in promoting the engagement of academic industrial users in use of neutrons to solve fundamental materials science and critical engineering problems. In charge of the state-of-the-art engineering diffractometer, VULCAN, at the world most intense pulse based spallation neutron source, Oak Ridge National Laboratory. Engaged in materials science studies by neutron scattering. Specialized in structural and functional materials behaviors under complex environments, and performance, stability and dynamics of energy storage and conversion materials.

RESEARCH INTERESTS

Research interests and activities are in neutron scattering studies of material systems under temperature, magnet, current, and complex loading, etc.; electrochemical performance, durability and reliability of energy storage/conversion materials; residual stress; fatigue life prediction of structural materials under complex loading; and scientific instrumentation and scientific software development.

Current research includes residual stress and deformation behavior of structural materials including additively manufactured alloys, high strength steel, lightweight alloys; deformation and structural (phase/twinning) transition magnetic shape memory materials; thermal mechanical integrity of critical engineering materials by high spatial resolution neutron diffraction; synthesis, structure, stability and degradation of energy storage and energy conversion materials.

EDUCATION

- **Ph.D.** in Engineering Mechanics, Department of Engineering Science and Mechanics, Virginia Tech, 2003.
- **M.S.**, in Machinery of Chemical Engineering Processing, Department of Chemical Engineering, Tianjin University, 2000

- **B.S.**, in Chemical Engineering Machinery and Equipment, Department of Chemical Engineering, Tianjin University, 1998
- **B.S.**, in Engineering Economics, Department of Management, Tianjin University, 1998

PROFESSIONAL EXPERINCES

- Science Leader, M&E Initiative, NScD, ORNL, 2017-present.
- Industry Liaison, SWC IAP, ORNL-UTK, 2016- present.
- Lead Scientist, VULCAN, Spallation Neutron Source, ORNL, 2011-present.
- Adjunct Associate Professor, Department of Materials Science, University of Tennessee, Knoxville, 2012, 12-present.
- Staff R&D Scientist / Instrument Scientist, VULCAN, Spallation Neutron Source, ORNL, 2008-2011.
- Research Associate, NRSF2/VULCAN, High Flux Isotope Reactor/Spallation Neutron Source, ORNL, 2005-2008.
- Research Visitor, NRSF2, ORNL Advanced Short Term Research Opportunity, 2004.
- Graduate Research Assistant, Department of Engineering Science and Mechanics, Virginia Tech, 2001-2003.
- Graduate Research Assistant, Department of Chemical Engineering, Tianjin University, China, 1998-2000.

HONORS/AWARDS

1. 2013 Significant Event Award, ORNL.
2. 2011 Siemens Teachers as Researchers Mentor Performance Award
3. Supplemental Performance Award, NSSD, ORNL, 2009
4. Excellence in Science and Technology Research and Development, Ministry of Education, China. 2003. "A Study on Low Cycle Fatigue of Metal Materials under Multiaxial Nonproportional Loading".
5. Excellence in Science and Technology Research and Development, Government of Tianjin City, China. 2002, "Life Prediction of Multiaxial Low Cycle Fatigue for Metal Materials".
6. Excellent students honor (Top 2 %) to start scientific project in junior year, 1996.
7. "Liu Lihua" Scholarship, Tianjin University 1999;
8. Dow Chemical Co. Scholarship, Tianjin University 1996;
9. Ding Hsin International Consult co., Ltd. Scholarship, Tianjin University 1996;
10. Tianjin University Annual scholarships for excellent students, 1995-1999.

PROFESSIONAL AND SYNERGISTIC ACTIVITIES

- **Committee Member** of International Scientific and Technical Advisory Panel for the Materials and Engineering Diffractometer Instrument at CSNS, 2018-
- **Committee Member of** The Minerals, Metals & Materials Society, Structural Materials Division, Mechanical Behaviors of Materials Committee 2013-.
- **International Scientific Committee**, 2017 the 9th MECASENS, International Conference on

- Mechanical Stress Evaluation by Neutron & Synchrotron Radiation, 2016 - present.
- **Committee Member** of The Minerals, Metals & Materials Society, Young Professional Committee 2013-2016.
 - **Committee Member** of Scientific and Technical Advisory Panel (STAP) for the Materials and Engineering Diffractometer Instrument at ESS, 2013-2016.
 - **International Scientific Committee**, 2016 International Symposium on Structural Integrity, Tianjin, China, 2016.
 - **Organizer/chair** of “Symposium of Deformation, Damage, and Fracture of Light Metals and Alloys” in The Minerals, Metals & Materials Society (TMS) annual meetings, 2012-2014,
 - **Co-organizer** of “Nanocomposites: Synthesis, Processing, Characterization, and Modeling” in McMat 2015, June 29-July 1, Seattle, WA.
 - **Session Chair**, Mecasens, Grenoble, France, Sept 28-Oct 2, 2015.
 - **Session Co-organizer** “Neutron Diffraction, Radiography and Computed Tomography: Applications to Industrial Research” in ASNT Annual Conference, Salt Lake City, Utah 2015.
 - **Committee** of ORNL Laboratory Directed Research and Development Fund, 2015.
 - **Chair, High Temperature Sample Environments Steering Group of NScD, 2015-2017**
 - **Co-Chair** of VULCAN workshop, SNS, ORNL, 2010.
 - **Professional Society Affiliation:**
Neutron Scattering Society of America,
American Electrochemistry Society,
The Minerals, Metals & Materials Society.
Material Research Society,
American Society of Mechanical Engineers.
 - **Proposal Reviewer:** of ORNL SEED, LDRD proposals.
 - **Editorial assignment: Editorial board member of Scientific Reports**, Nature Group; **Key reader** of Metallurgical and Materials Transaction A
 - **Journal Reviewer:**
Acta Materialia, Scripta Materialia, Journal of Alloys and Compounds, Journal of Materials Science, Journal of Microelectronics Reliability, International Journal of Fatigue, Materials Letter, Materials Characterizations, Metals, Materials Science Forum, Materials and Design, Journal of Materials Engineering and Performance, Advanced Engineering Materials, Nuclear Engineering and Design, Journal of Applied Crystallography, Journal of Power Sources, Inorganic Chemistry, Journal of the American Chemical Society, Chemistry of Materials, Journal of Electroanalytical Chemistry, ACS Applied Materials & Interfaces, Journal of Physical Chemistry, Electrochimica Acta, Journal of magnetism and magnetic materials, RSC Advances, Solid State Ionics et al.

FUNDED RESEARCH PROPOSALS

- 1. “Thermo-Mechanical Integrity of Critical Engineering Structures by High Spatial Resolution Neutron Diffraction”, ORNL Laboratory Directed Research and Development Fund, FY14-16.
- 2. “Residual Stress Relaxation Determination of Ni-based Superalloys”, Work for others

- proposal FY16-FY17.
- 2. DOE BES: “Ion Transport and Structural Evolution of Solid Electrolytes”, DOE Basic Energy of Science, Co-PI: FY16-FY18. PI on neutron scattering.
 - 3. “Advancing additive manufacturing processes through multi-scale characterization using neutron scattering techniques correlated with mesoscale polycrystal deformation simulations”. FY16-FY18.
 - 4. “High-Resolution Small/Wide Angle Neutron Scattering for Atomic-to-Mesoscale Structure in Complex Soft Materials and Biology (HiRes-SWANS)”, FY15-FY17.
 - 5. “Structural origins of electrochemical and mechanical properties of preformed SEIs”, DOE Basic Energy of Science, Co-PI: FY13-FY15.
 - 6. “Understanding the Performance and Reliability of Large Format Li-Ion Batteries through In-situ Time-resolved Neutron Diffraction 3D Mapping”. U.S.-China Clean Energy Research Center (CERC) funding from DOE and Industries, Co-PI, FY13-14.
 - 7. “Expanding ORNL neutron capabilities by increasing spatial resolution at the HFIR CG-1D neutron imaging prototype beamline and co-registering imaging and diffraction data”, ORNL LDRD Fund, Co-PI: FY13.
 - 8. “Material Degradation Phenomena and Mitigation For Nuclear Reactor Life Extension”. ORNL LDRD Fund, Co-PI: FY11-13.
 - 9. “Asynchronous in-situ neutron scattering measurement of <math><10 \mu\text{s}</math> transient phenomena at SNS”, ORNL LDRD Fund, PI: FY10-FY12.
 - 10. “*In situ* Studies of Solid Electrolyte Interphase on Nanostructured Materials”, DOE Basic Energy of Science, Co-PI: FY10-FY12.
 - 11. “Can Neutrons Do It? Probing Performance of Li-Ion Batteries *in-situ*”, ORNL SEED LDRD Fund Co-PI: FY10-FY12.
 - 12. “Development of Real-Time Optimization Methods for Neutron Scattering Experiments – Where to Measure and When to Stop”, ORNL SEED LDRD Fund, Co-PI: FY10-FY11.

TEACHING EXPERIENCE

- Instructor of Engineering Neutron Diffraction in annual national X-ray and neutron school, 2010 ~ present.
- PhD thesis committee, The University of Utah.
- PhD thesis committee, Materials Science and Engineering, The University of Tennessee, Knoxville.
- PhD thesis committee, Materials Science and Engineering, The University of Utah.
- PhD thesis committee co-chair, Tianjin University, Tianjin, China
- PhD thesis committee co-chair, Northeastern University, Shenyang, China

➤ PhD thesis committee/examiner, the Department of Materials Engineering, The Open University, UK.

➤ Students and postdocs

Current:

1. Ms. Sichao Fu, PhD candidate, Tianjin University/SWC/ORNL, deformation behavior, 2016-2018.
2. Dr. Dunji Yu, postdoc on industrial applications, SWC/ORNL, 2017-
3. Dr. Qingge Xie, postdoc on crystal plasticity modeling by LDRD, 2016-2018.
4. Mr. Tingkun Liu, PhD candidate, University of Tennessee, 2015-2018, co-chair: Yanfei Gao, Hongbin Bei.

Previous:

5. Mr. Bilin Chen, PhD candidate, University of Tennessee, Prof P.K. Liaw. On pipe weld degradation, 2013-2017.
6. Dr. Yan Chen, postdoc on energy storage materials study (BES) and NScD user program, 2013-2017.
7. Mr. Nathan Smith, PhD candidate, fellowship awardee of the SCGSR Program 2015. On battery materials, 2016.
8. Ms. Dongmei Wang, student on stress induced phase transformation in bulk metallic glass, Northeastern University, 2015-2017, co-chair: prof Y. Wang.
9. Dr. Yuming Qi, Mechanical properties, 2015-2016
10. Dr. Wei Wu, postdoc on high spatial resolution diffraction of engineering materials, (LDRD), 2014-2015.
11. Dan Henn, University of Tennessee, part time graduate student on degradation of large format battery, 2014-2015.
12. Jorge Cisneros, PhD candidate, Wayne State University, phase transformation of alloys, summer, 2013, supported by RAMS program of DOE.
13. Dr. Cai Lu, postdoc on energy storage materials study (BES), 2010-2013.
14. Dr. Abhijit Pramanick, postdoc on transient phenomena of material (LDRD), 2010- 2013.
15. Dr. Ling Yang, postdoc on stability of solid oxide fuel cell materials and scientific computing, 2010-2012.
16. Ms. Hui Yang, PhD candidate, Beijing Institute of Technology/UTK, China, 2012-2015. Prof. Y. Wang, Dr. Mandrus, Dr. Yan.
17. Dunji Yu, PhD candidate, ORNL / Tianjin University/, China, 2012-2014, co-chair: Prof. Xu Chen.
18. Wei Wu, PhD candidate, University of Tennessee, co-chair: prof P.K. Liaw. On Mg deformation mechanism, 2011-2014.
19. Tao Zou, PhD candidate, Institute of Physics, Chinese Academy of Science, Aug. 2011-Jan. 2012 sponsored by LDRD.
20. Yan Chen, PhD. candidate, summer, 2012, University of Central Florida, Prof. Nina

Orlovskaya.

21. Ercan Cakmak, PhD candidate University of Tennessee, Prof Hahn Choo, 2010.
22. Dan Jia, summer, 2010, PhD candidate of University of North Carolina, Charlotte, Prof. Aixi Zhou.
23. Patrick Tae, Sam Worley and Sam Snodgrass, Oak Ridge High School thesis program 2010 on LDRD asynchronous neutron measurement.
24. Patrick Tae, DOE Higher Education Research Experience Program, Brown University, mechanical and sans measurement of PEM electrolyte at elevated temperature, summer 2011.
25. Sam Worley, Virginia Tech, summer, 2011.
26. Sam Snodgrass, Georgia Tech, summer, 2011.

VISITORS

- Prof. Dan Jin, Institute of Shenyang Chemical and Engineering 2016 Dec.-2018 June.
Prof. Gang Chen, Tianjin University, 2014 Apr.-Oct.
Prof. Qizhen Li, University of Nevada, Reno, 2013 Aug-Dec.
Prof. Xu Chen, Tianjin University, Jan-Apr, 2011, sponsored by LDRD.
Prof. Hong Gao, Tianjin University, Sept.2011- Aug. 2012.

INVENTION PATENT

1. Lara-Curzio, E., **An, K.**, Dudney, N., Baker, F. S., Armstrong, B., Contescu, C. I., and Kiggans, J, "Lightweight, durable lead-acid batteries" (U.S. Patent No. 8,017,273, Sept, 13, 2011).

LIST OF PUBLICATIONS

News releases and highlights

1. **Researchers Improve Performance of Cathode Material by Controlling Oxygen Activity,** (<https://neutrons.ornl.gov/content/researchers-improve-performance-cathode-material-controlling-oxygen-activity>, http://jacobsschool.ucsd.edu/news/news_releases/release.sfe?id=1975)
2. **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>).
3. **VULCAN Users from Columbia University Study Suspension Bridge Cable Design** <http://neutrons.ornl.gov/news/suspension-bridge-cable-design>
4. **Big Science tools for clean transportation: neutron scattering at ORNL,** <http://www.greencarcongress.com/2013/08/20130821-neutrons.html>
5. **Neutron scattering measures samples too hot to hold,** <http://neutrons.ornl.gov/research/highlights/NESL-levitator.html>
6. **Photo of the week**
DOE office of science site
(<http://energy.gov/articles/photo-week-vulcan-diffractometer>)
7. **DOE secretary Ernest Moniz Visited VULCAN**

- (<http://www.flickr.com/photos/oakridgelab/8939216481/>).
8. **Far beyond cookware - Corning Inc. uses Spallation Neutron Source's VULCAN to test limits of ceramic material for car emission controls, filtration devices, ORNL features**
(http://www.ornl.gov/info/features/get_feature.cfm?FeatureNumber=f20120606-00)
 9. **Neutron scattering charts moves of memory-shape alloys that change structure in response to environmental cues**
in *phys.org*
(<http://phys.org/news/2012-05-neutron-memory-shape-alloys-response-environmental.html#jCp>)
and in *R&D Mag*
(<http://www.rdmag.com/News/2012/05/Materials-Studying-The-Internal-Mechanisms-Of-Shape-Memory-Alloys/>)
 10. **Neutrons Probe Inner Workings of Batteries-Designing long-lasting, reliable batteries is the key to wider acceptance of electric vehicles, REVIEW, Volume 44, Number 3, 2011.**
 11. **New VULCAN tests of Japanese cable for US ITER's central magnet system-Past tests showed cable degradation under cyclic power loading conditions**
SNS site
(<http://neutrons.ornl.gov/research/highlights/VULCAN/an-vulcan-iter-japanese-cable.shtml>)
 12. **Breakthrough: Neutron Science for the Fusion Mission**
ORNL youtube channel
<http://www.youtube.com/watch?v=vQrn-FhBwVI>
 13. **Spallation Neutron Source user finds 'perfect instrument' for materials research**
in *phys.org* and *ORNL feature* homepage
(<http://phys.org/news/2011-03-spallation-neutron-source-user-instrument.html>)
 14. **Neighbor lends a hand: Spallation Neutron Source's tool to probe ITER's superconducting cable**
in *phys.org*
(<http://phys.org/news/2011-01-neighbor-spallation-neutron-source-tool.html>)
 15. **Getting a charge out of batteries**
ORNL youtube channel and WBIR.com
(<http://www.youtube.com/watch?v=IDJAIZN-8Og&feature=plcp>)
 16. **VULCAN Fires Up Research Across a Range of User Problems**
SNS website
(http://neutrons.ornl.gov/research/highlights/VULCAN/startup_capability_VULCAN.shtml).
 17. **Neutrons peer running engine**
In *ORNL Review*, and *Advanced Materials and Processes 2017, etc.*
<https://neutrons.ornl.gov/content/neutrons-peer-running-engine>
 18. **NASA Honeywell users**
<https://neutrons.ornl.gov/content/honeywell-and-nasa-are-studying-residual-stress-using-vulcan>
 19. **Target residual stress measurement**
<https://neutrons.ornl.gov/content/leading-way-ornl-builds-more-reliable-longer-lasting-targets-h>

High-powered-neutron-scattering

Journal publications

1. H. Liu, H. Liu, I. D. Seymour, N. Chernova, K. M. Wiaderek, S. Hy, Y. Chen, **K. An**, M. Zhang, O. J. Borkiewicz, P. J. Chupas, S. H. Lapidus, B. Qiu, Y. Xia, Z. Liu, K. W Chapman, M. S. Whittingham, C. P. Grey, Y. S. Meng, Identifying the chemical and structural irreversibility in $\text{LiNi}_{0.8}\text{Co}_{0.15}\text{Al}_{0.05}\text{O}_2$ - A model compound for classical layered intercalation. *Journal of Materials Chemistry A*, 2018
2. T. Yang, V. F. Mattick, Y. Chen, **K. An**, D. Ma and K. Huang, Crystal Structure and Transport Properties of Oxygen-Deficient Perovskite $\text{Sr}_{0.9}\text{Y}_{0.1}\text{CoO}_3$ as a Cathode for SOFCs, *ACS Applied Energy Materials*, 2018.
3. Q. Xie, G. Song, S. Gorti, A. D. Stoica, B. Radhakrishnan, J. C. Bilheux, M. Kirka, R. Dehoff, H. Z. Bilheux, **K. An***, Applying Neutron Transmission Physics and 3D Statistical Full-field Model to Understand 2D Bragg-edge Imaging, *Journal of Applied Physics*, 2018.
4. S. Huang, **K. An**, Y. Gao, A. Suzuki, Determination of γ and γ' Lattice Misfit in Ni-based Single Crystal Superalloys at High Temperatures by Neutron Diffraction, *Metallurgical and Materials Transactions A*, 2018, **(Industry)**.
5. G. Song, J. Lin, J. Bilheux, Q. Xie, L. Santodonato, J. Molaison, H. Skorpenske, A. M. Dos Santos, C. Tulk, K. An, A.D. Stoica, M. Kirka, R. Dehoff, A. Tremsin, J. Bunn, L. Sochalski-Kolbus, H. Bilheux, Characterization of Crystallographic Structures using Bragg-edge Neutron Imaging at the Spallation Neutron Source, *Journal of Imaging*, 2018
6. Q. Xie, S.Gorti, Y. An, J. Sidor, Y.D. Wang H. Lan, **K. An*** A study on the residual strain in a cold rolled IF steel, *Steel Research International*, 2018. **(Industry) Front Cover**.
7. R. Voothaluru., V. Bedekar, Q. Xie, A.D. Stoica, R.S. Hyde, **K. An**, In-Situ Neutron Diffraction and Crystal Plasticity Finite Element Modeling of the kinematic stability of retained austenite in Bearing Steels, *Materials Science and Engineering A*, 2018. **(Industry)**
8. V Bedekar, R Voothaluru, Q Xie, A Stoica, RS Hyde, **K. An**, In-situ Neutron Diffraction Analysis of Crystal Plasticity of Retained Austenite in Bearing Steel, *Procedia Engineering* 207, 1958-1963, 2017. **(Industry)**
9. **K. An***, L. Yuan, L. Dial, I. Spinelli, A. D. Stoica, Y. Gao, Non-destructive Residual Stress Measurement and Finite Element Simulation in a Curved Thin-Walled Structure by Laser Powder Bed Fusion Additive Manufacturing, *Materials and Design*, 2017. **(Industry)**
10. J. Huang, H. Liu, N. Zhou, **K. An**, Y. Meng, J. Luo, Enhancing the Electrochemical Performance of $\text{LiMn}_{1.5}\text{Ni}_{0.5}\text{O}_4$ through WO_3 Doping and Altering the Particle Wulff Shape via Anisotropic Surface Segregation, *ACS Applied Materials and Interfaces* 2017.
11. T. Yang, J. Wang, Y. Chen, **K. An**, D. Ma, T. Vogt, K. Huang, A Combined Variable Temperature Neutron Diffraction and Thermogravimetric Analysis Study on a Promising Oxygen Electrode $\text{SrCo}_{0.9}\text{Nb}_{0.1}\text{O}_{3-\delta}$ for Reversible Solid Oxide Fuel Cells, *ACS Applied Materials and Interfaces*, 2017.
12. Z.C. Sims, O. Rios, D. Weiss, P. E.A Turchi, A. Perron, J. R.I. Lee, T. Li, J. Hammons, M. Bagge-Hansen, T. M. Willey, **K. An**, Y. Chen, A. H. King, S. McCall, High Performance

- Aluminum-Cerium Alloys for High-Temperature Applications, **Materials Horizons**, Cover 2017.
13. G. Song, C. Lee, S.H. Hong, K.B. Kim, S. Chen, D. Ma, **K An**, P. K. Liaw, Martensitic transformation in a B2-containing CrZr-based BMG composite revealed by in situ neutron diffraction, *Journal of Alloys and Compounds*, 2017
 14. T.K. Liu, Z. Wu, A.D. Stoica, Q. Xie, W. Wu, Y.F. Gao, H. Bei, and **K. An***, Twinning-mediated Work Hardening and Texture Evolution in CrCoFeMnNi High Entropy Alloys at Cryogenic Temperature, *Materials and Design*, 2017.
 15. Q. Xie, J. Liang, A. Stoica, R. Li, P. Yang, Z. Zhao, J. Wang, H. Lan, R. Li, **K. An***, In-situ neutron diffraction study on the tension-compression fatigue behavior of a twinning induced plasticity steel, *Scripta Materialia*, 2017.
 16. H. Huang, Y. Wu, J. He, H. Wang, X. Liu, K. An, W. Wu and Z. Lu, Phase-transformation Ductilization of Brittle High-entropy Alloys via Metastability engineering, *Advanced Materials*, 2017.
 17. J. Lin, **K. An**, A.D. Stoica, B.J. Heuser, Effect of external stress on deuteride (hydride) precipitation in Zr alloy-4 using in situ neutron diffraction, *Journal of Nuclear Materials*, 2017
 18. X. Ma, **K. An**, J. Bai, H. Chen, NaAlTi₃O₈, A Novel Anode Material for Sodium Ion Battery, *Scientific Reports*, 2017
 19. H. Li, Y. V. Aulin, L. Frazer, E. Borguet, R. Kakodkar, J. Feser, Y. Chen, **K. An**, D. A. Dikin, F. Ren, Structure Evolution and Thermoelectric Properties of Carbonized Polydopamine Thin Films, *ACS Applied Materials & Interfaces*, 2017.
 20. X. Zhang, Z. Chen, B. Schwarz, F. Sigel, H. Ehrenberg, **K. An**, Z. Zhang, Q. Zhang, Y. Li, J. Li, Kinetic characteristics up to 4.8 V of layered LiNi_{1/3}Co_{1/3}Mn_{1/3}O₂ cathode materials for high voltage lithium-ion batteries, *Electrochimica Acta*, Vol. 227, 10, Pages 152–161, 2017.
 21. K. Jin, S. Mu, **K. An**, W.D. Porter, G.D. Samolyuk, G.M. Stocks, H. Bei, Thermophysical properties of Ni-containing single-phase concentrated solid solution alloys, *Materials & Design*, 2017.
 22. D. Wang, J. Mu, Y. Chen, Y. Qi, W. Wu, Y. Wang, H. Xu, H. Zhang, **K. An***, A study of stress-induced phase transformation and micromechanical behavior of CuZr-based alloy by in-situ neutron diffraction, *Journal of Alloys and Compounds*, 2017.
 23. Y. Wu, D. Ma, Q.K. Li, A.D. Stoica, W.L. Song, H. Wang, X.J. Liu, G.M. Stoica, G.Y. Wang, **K. An**, X.L. Wang, M. Li, Z.P. Lu, Transformation-induced plasticity in bulk metallic glass composites evidenced by in-situ neutron diffraction, *Acta Materialia*, 2017.
 24. O. Benafan, A. Garg, R.D. Noebe, H.D. Skorpenske, **K. An**, N. Schell, Deformation characteristics of the intermetallic alloy 60NiTi, *Intermetallics*, 2017.
 25. H. Yang, D. Yu, Y. Chen, J. Mu, Y.D. Wang, **K. An***, In-situ TOF neutron diffraction studies of cyclic softening in superelasticity of a NiFeGaCo shape memory alloy, *Materials Science and Engineering: A*, 2017.
 26. Y. Chen, Y.Q. Cheng, J.C. Li, M. Feygenson, W. T. Heller, C. Liang, **K. An***, Lattice-cell orientation disorder in complex spinel oxides, *Advanced Energy Materials*, 2017, **backcover**.
 27. H. Zhou, **K. An**, S. Allu, S. Pannala, J. Li, H. Z. Bilheux, S. K. Martha and J. Nanda,

- Probing multiscale transport and inhomogeneity in a lithium-ion pouch cell using in-situ neutron methods, *ACS Energy Letter*, 2016.
28. H. Z. Bilheux, G. Song, **K. An**, J.-C. Bilheux, A. Stoica, M. Kirka, R. Dehoff, L. Santodonato, S. Gorti, B. Radhakrishnan, Q. Xie, Neutron Characterization of Additively Manufactured Inconel 718, *Advanced Materials and Processes*, 2016
 29. A. Pramanick, A. D. Stoica, and **K. An**, High-resolution 2-D Bragg diffraction reveals heterogeneous domain transformation behavior in a bulk relaxor ferroelectric, *Applied Physics Letter*, 2016.
 30. W. Wu, Y. Gao, N. Li, C. M. Parish, W. Liu, P. K. Liaw, and **K An***, Intragranular Twinning, Detwinning, and Twinning-Like Lattice Reorientation in Magnesium Alloys, *Acta Materialia*, 2016.
 31. F Ren, R. Schmidt, J. K. Keum, B. Qian, E. D. Case, K. C. Littrell and **K. An***, In situ neutron scattering study of nanoscale phase evolution in PbTe-PbS thermoelectric material, *Applied Physics Letter*, 2016.
 32. B. Qiu, M. Zhang, L. Wu, J. Wang, Y. Xia, D. Qian, H. Liu, S. Hy, Y. Chen, **K. An**, Y. Zhu, Z. Liu, Y. S. Meng, Gas-solid interfacial modification of oxygen activity in layered oxide cathodes for lithium-ion batteries, *Nature Communications*, vol 7, 2016.
 33. F. Ren, R. Schimidt, E. D. Case, **K. An***, In-situ neutron scattering study of nanostructured PbTe-PbS bulk thermoelectric material. *Journal of Electronics Materials*, 2017.
 34. Y. Zou, J. Li, H. Wang, **K. An**, M. Zhang, D. Chen, Z. Zhang, Deformation mode transition of Mg 3Li alloy: An in situ neutron diffraction study, *Journal of Alloys and Compounds* 685, 331-336, 2016.
 35. W. Wu, C. P. Chuang, D. Qiao, Y. Ren, **K. An***, Investigation of deformation twinning under complex stress states in a rolled magnesium alloy, *Journal of Alloys and Compounds* 683, 619-633, 2016.
 36. M. A. Steiner, C. A. Calhoun, R. W. Klein, **K. An**, E. Garlea, S. R. Agnew, α -Phase transformation kinetics of U-8 wt% Mo established by in situ neutron diffraction, *Journal of Nuclear Materials* 477, 149-156, 2016.
 37. H. Yang, Y. Chen, H. Bei, C. R. dela Cruz, Y. D. Wang, **K. An***, Annealing effects on the structural and magnetic properties of off-stoichiometric Fe-Mn-Ga ferromagnetic shape memory alloys, *Materials & Design*, 104, 327-332, 2016.
 38. D. K. Kim, W. Woo, J. H. Hwang, **K. An**, S. H. Choi, Stress partitioning behavior of an AlSi10Mg alloy produced by selective laser melting during tensile deformation using in situ neutron diffraction, *Journal of Alloys and Compounds*, 2016.
 39. H. Wang, Y. Chen, Z. D. Hood, G. Sahu, A. S. Pandian, J. K. Keum, **K. An**, C. Liang, An Air-Stable Na₃SbS₄ Superionic Conductor Prepared by a Rapid and Economic Synthetic Procedure, *Angewandte Chemie International Edition*, 2016
 40. Y. Chen, **K. An***, Stress Induced Charge-Ordering Process in LiMn₂O₄, *Materials Research Letter*, 2017.
 41. H. Liu, Y Chen, S. Hy, **K. An**, S. Venkatachalam, D. Qian, M. Zhang, Y.S. Meng. Operando Lithium Dynamics in the Li-Rich Layered Oxide Cathode Material via Neutron Diffraction,

- Advanced Energy Materials*, 2016.
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Conference presentations

- Invited**, S. Fu H. Bei, **K. An**, Deformation mechanism of transformation-induced plasticity-assisted, dual-phase high-entropy alloy by in-situ neutron diffraction, TMS 2018, Phoenix, AZ, March 11-15, 2018.
- Invited**, **K. An**, Deformation Twinning Behaviors by Neutron Diffraction, Plasticity 18, San Juan, Puerto Rico, USA, Jan. 3-6, 2018.
- K. Jin, B. C. Sales, G. M. Stocks, **K. An**, W. D. Porter, Y. Zhang, W. J. Weber, H. Bei, Compositional effects on intrinsic transport properties and irradiation response of single-phase concentrated solid solution alloys, TMS 2018
- Invited**, Ke An, “Industrial application program at SNS/HFIR” ESS industry access workshop, Sitges, Spain, Nov, 2017.
- G. Song, H.Z. Bilheux, J.-C. Bilheux, J. Lin, Q. Xie, **K. An**, A. D. Stoica, L. Santodonato, R. R. Dehoff, M. M. Kirka, S. Gorti, B. Radhakrishnan, A. Tremsin, Dynamic microstructural evolution of additively manufactured Inconel 718 parts using Bragg-edge imaging radiography and neutron diffraction, Neuwave 9 Gatlinburg, 2017
- T. Watkins, **K. An**, A. Shyam, J Haynes, A residual stress study of cast aluminum alloy cylinder heads, SPIE Smart Structures/NDE 2017
- Z. Sims, O. Rios, M. McGuire, R. Ott, S. McCall, **K. An**, Y. Chen, D. Weiss, T. V. Buuren, Rare-Earth Modified Aluminum Alloys for High-Temperature Applications, TMS 2017.
- D. Wang, J. Mu, Y. Chen, H. Xu, Y.D. Wang, **K An**, In situ investigation on the macro

- mechanical properties and micromechanical behavior of the CuZr-based BMGC by neutron diffraction, TMS 2017.
9. Q. Xie, Stoica S. Gorti, B. Radhakrishnan, G. Song, M. Kirka, R. Dehoff, J. Bilheux **K. An**, Effect of the isotropic and anisotropic work hardening on the micromechanics behavior in textured Inconel 718 by electron beam additive manufacturing, TMS 2017
 10. M.A. Steiner, C.A. Calhoun, R.W. Klein, K. An, E. Garlea, and S.R. Agnew, Eutectoid Transformation Kinetics of As-Cast U - 8 wt% Mo established by in situ Neutron Diffraction, TMS 2017.
 11. S. Huang, Y. Gao, A. Suzuki, K. An, Determination of γ/γ' Lattice Misfit in Ni-based Single Crystal Superalloys at High Temperatures by Neutron Diffraction, TMS 2017.
 12. H.Z. Bilheux, G. Song, J.-C. Bilheux, J. Lin, Q. Xie, K. An, M. M. Kirka, R. R. Dehoff, A. D. Stoica, S. Gorti, B. Radhakrishnan, L. Santodonato Wavelength-dependent neutron radiography and diffraction of Inconel 718 made by Additive Manufacturing, American Society for Nondestructive Testing (ASNT), 2017
 13. G. Song, H.-Z. Bilheux, J.-C. Bilheux, J. Lin, Q. Xie, K. An, A. D. Stoica, L. Santodonato, R. R. Dehoff, M. M. Kirka, A. Tremsin, Quantitative characterization of microstructure of additively manufactured Inconel 718 parts using Bragg-edge imaging radiography and validation using neutron diffraction, ICNS, 2017, Jeju, Korea
 14. **Invited, K. An**, Advance materials research by neutrons scattering in applied sciences, GE/ASM Spring Symposium, 2016.
 15. **Invited**, Y. Chen, E. Rangasamy, C. Liang, **K. An**, Dopant effects on the synthesis and structural origin of high Li⁺ conduction of garnet-type fast Li-ion conductor, XXV International Materials Research Congress, Cancun, Mexico, 2016.
 16. **Invited**, Ke An, Mechanical Behaviors and Structural Integrity of Materials by Neutron Scattering, ISSI, 2016 China.
 17. Wei Wu, Chih-Pin Chuang, Yang Ren, Ke An, Investigation of Deformation Twinning under Complex Stress States in a Rolled Magnesium Alloy, TMS 2016.
 18. Yan Chen, Ezhiylmurugan Rangasamy, Chengdu Liang, Ke An, Structural Origin of High Li⁺ Conduction in Doped Li₇La₃Zr₂O₁₂ Garnets, MRS, 2015.
 19. Yan Chen, Lu Cai, Zengcai Liu, Clarina Dela Cruz, Chengdu Liang, Ke An, Anisotropy in β -Li₃PS₄ fast Li⁺ conductor, MRS 2015.
 20. Wei Wu, Alexandru Stoica, Matthew Frost, Rick Allen, Harley Skorpenske, K. An, Pinhole High Spatial Resolution Engineering Diffraction at SNS, BES triennial review
 21. **Invited**, K. An, Understanding Mechanical Behaviors of Materials by Neutron Scattering, Material Characterizations Short Course, University of Tennessee, Knoxville, 2015.
 22. **Invited** K. An, A.D. Stoica, W.Wu, M.J. Frost, HD Skorpenske, R. Allen, Pinhole High Spatial Resolution Engineering Diffraction, MECASENS 2015
 23. N. Douglas, S. Padula, O. Benafan, HD Skorpenske, K. An, A. Payzant, R. Vaidyanathan, Investigation of the R-Phase during Stress- and Temperature-Induced Phase Transformations in NiTi, TMS 2015, Orlando.
 24. W. Zhou, J. Bilheux, K. An, S. Miller, P. Peterson, Developing robust PyQt GUI for scientific

- application, SciPy 2015, July, 2015.
25. D. Yu, K. An, Y. Chen, X. Chen, Real-time in situ neutron diffraction study of the hardening mechanism of a 304L stainless steel under strain cycling, TMS 2015.
 26. W. Wu, P.K. Liaw, K. An, Investigation of Fully-Reversed Low-Cycle Fatigue Behavior in a Wrought Magnesium Alloy by Real-time in-situ Neutron Diffraction, TMS 2015
 27. W. Wu, C.P. Chuang, Y. Ren, K. An, Plastic Deformation in a Wrought Magnesium Alloy under a Biaxial-loading Condition Investigated by in-situ Synchrotron X-ray Diffraction Mapping, TMS 2015.
 28. Soo Yeol Lee, Michael Gharghoury, Huamiao Wang, Ghazal Nayyeri, Wanchuck Woo, E-Wen Huang, Peidong Wu, Warren Poole, Wei Wu, Ke An, Neutron Diffraction Study and EVPSC Modeling of Deformation Mechanisms in Solid-Solution-Strengthened Magnesium Alloys, TMS 2015
 29. Shang-Yi Tu, Huamiao Wang, Dunji Yu, Soo Yeol Lee, Ke An, Jien-Wei Yeh, E-Wen Huang, In-situ neutron diffraction and elastic-viscoplastic self-consistent (EVPSC) modeling study of deformation behavior of a high-entropy alloy, TMS 2015
 30. Jun-li Lin, Brent Heuser, Ke An, Behavior of deutride particle in Zircaloy under thermal cycles and stress investigated by in-situ neutron diffraction, TMS 2015.
 31. Y. Chen, E. Ranganami, C. Liang and K. An, Dopant effects on the synthesis of Garnet-type fast Li-ion conductor by in-situ neutron diffraction, MRS fall, 2014.
 32. Y Chen, L. Yang, F. Ren, K. An, Visualizing the Structural Evolution of LSM/xYSZ Composite Cathodes for SOFC by in-situ Neutron Diffraction, MRS fall, 2014.
 33. **Invited**, K. An, W. Wu. Fatigue Deformation Behavior of HCP Alloys by Real-time in-situ Neutron Diffraction, ESS Science Symposium ?Future Engineering Diffraction Research in Materials Processing and Testing Prague, Czech, 2014, Nov.
 34. Z Tang, ON Senkov, CM Parish, DB Miracle, C Zhang, F Zhang, G Wang, LJ Santodonato, K An, MC Gao, T Egami, CD Lundin, and PK Liaw, Tensile Characterization of Al-Co-Cr-Fe-Ni Alloy, MS&T, 2014.
 35. **Invited**, K. An, Advance materials research by neutrons scattering: from fundamental to applied sciences, Washington State University, Pullman, Wa. 2014
 36. **Invited**, A. D. Stoica, K. An, Pinhole Camera for Neutron Diffraction, Denver x-ray conference, 2014.
 37. Bilin Chen, K. An, P. Liaw, Studying Hydrogen Effects on the Deformation Behavior of Pipeline Steels by Neutron-Diffraction Measurements, ACNS 2014.
 38. **Invited**, E-W. Huang, C. Lee, D. Yu; K. An, P. Liaw, J.-W. Yeh, Environmental-temperature Effect on a Ductile High-entropy Alloy Investigated by In Situ Neutron-diffraction Measurements, TMS 2014.
 39. D. Yu, H. Gao, K. An, X. Chen, Interpretation of Temperature Dependent Tensile Behavior of 304ss by In Situ Neutron Diffraction under Continuous Loading Mode, TMS 2014.
 40. Y. Chen, K. An and C. Liang, Study of Average and Local Structures of Variedly Ordered LiNi_{0.5}Mn_{1.5}O₄ By Neutron Diffraction, ECS 222, 2014
 41. B. Wu, C. Fau, Z Feng, Y Ren, K. An, Non-Uniformity Behaviors of Commercial Large-Format

- Batteries: Performance and Durability, ECS 222, 2014.
42. Zhenzhen Yu, John Vitek , Ke An , Zhili Feng , Stan David and Xun-Li Wang, The Effects of Microstructure and Heating Rate on Phase Transformation Behavior in a Dual Phase AHSS, ACNS 2014
 43. Wei Wu , Hua Qiao , Peidong Wu , Peter K. Liaw and Ke An Investigation of Deformation Dynamics in a Rolled Magnesium Alloy by Real-Time In-Situ Neutron Diffraction, ACNS 2014
 44. Alexandru D. Stoical, Ke An, Harley D. Skorpenske, Rick Allen , Wei Wu and Matthew J. Frost, Development of High Spatial Resolution at Engineering Diffractometer VULCAN, ACNS 2014
 45. Y. Chen, Y. Cheng, M. Feyngenson, C. Liang and K. An, Unraveling Ordering Structures of LiNiO.5Mn1.5O4 Cathode by Neutron Diffraction and Computer Simulation, ACNS 2014
 46. D. Yu, H. Bei, Y. Chen, K. An, The Role of Phase-Specific Deformation Behavior in the Compressive Toughness Enhancement of a NiAl-Cr(Mo) Lamellar Composite. ACNS 2014
 47. L. Cai, Z. Liu, K. An, C. Liang, Unraveling structural evolution of LiNi0.5Mn1.5O4 by in situ neutron diffraction. MRS Fall 2013.
 48. **Invited**, K. An, A. D. Stoica, Dong Ma, H.D. Skorpenske, Understanding phase transformation of materials by in situ high flux neutron diffraction, THERMAC, 2013, Las Vegas, NV, 2013 Dec.
 49. **Invited**, K. An, Instrumentation and application of neutron diffractometer in materials and engineering science, First meeting of CSNS, Beijing, China, 2013, Oct. (Not attend)
 50. **Invited**, K. An. Study material behaviors by neutron scattering in materials science and engineering. Ford Research and Innovation Center, Sept. 2013.
 51. **Invited**, K. An, A. D. Stoica, Harley Skorpenske, Andre Parrizi, Time-resolved measurements of transient behaviors by asynchronous in-situ neutron diffraction at the Spallation Neutron Source, MECA SENS 2013, Sept. 10-12, Sydney, Australia. (Not attend due to VISA.)
 52. **Invited**, K. An, In-situ neutron diffraction studies of electric energy storage materials: from synthesis to application 2013 Neutron and Nano User Meeting, ORNL, 2013, Aug 12-15.
 53. **Invited**, K. An, Understanding Mechanical Behaviors of Materials by Neutron Scattering, 3rd Annual Neutron Scattering for Novices Workshop, 2013, June 17-18, Oak Ridge, TN.
 54. **Invited**, W. Wu, K. An, J. Antonaglia, M. Wraith, K. Dahmen, P. Liaw, Effects of Deformation History on Low-Cycle Fatigue Behavior of a Wrought AZ31B Magnesium Alloy Using Real-Time In-Situ Neutron-Diffraction Measurements, 2013 TMS, Mar 3-7, San Antonio, TX.
 55. W. Wu, C.-P. Chuang, K. An, Y. Gao, P. Liaw, Effects of Initial Texture on Surrounding Plasticity around Fatigue Crack-tip in a Wrought Magnesium Alloy Using In-Situ Synchrotron X-ray Diffraction Measurements, 2013 TMS, Mar 3-7, San Antonio, TX.
 56. K. Dahmen, J. Antonaglia, W. Wu, K. An, M. Wraith, J. Uhl, P. Liaw, Modeling the Statistics of Slip-Avalanches in Slowly Sheared Light Metals and Alloys, 2013 TMS, Mar 3-7, San Antonio, TX.
 57. K. Dahmen, J. Antonaglia, W. Wu, K. An, M. Wraith, J. Uhl, P. Liaw, Statistics of Slip Avalanches in Simple Models for Slowly- Sheared Magnesium Alloys, 2013 TMS, Mar 3-7, San Antonio, TX.
 58. A. Druschitz, S. Banerjee, K. An, D. Ma, A. Stoica, In-Situ Studies of the Deformation

- Characteristics of Intercritically Austempered Ductile Irons Using VULCAN, 2013 TMS, Mar 3-7, San Antonio, TX.
59. Z. Yu, Z. Feng, K. An, L. Yang, W. Zhang, Y. Wang, G. Stoica, A. Stoica, L. Sun, J. Wang, X. Xiong, S. Gayden, B. Carlson, In-situ Neutron Diffraction Study of Microscopic Deformation Processes and the Microstructure Effect in Advanced High-Strength Steels, 2013 TMS, Mar 3-7, San Antonio, TX.
 60. **Invited**, K. An, A. D. Stoica, Harley Skorpenske, and Dong Ma, VULCAN – new scientific opportunities in materials science and engineering. ESS Science symposium: Physical simulations of processes in engineering materials with in-situ neutron diffraction/imaging, Prague, Czech Republic, 2012.
 61. **Invited**, K. An, A. D. Stoica, Dong Ma, Harley Skorpenske, Visualize phase transformation of materials by in situ high flux neutron diffraction, MS&T, 2012.
 62. **Invited**, K. An, A. D. Stoica, Harley Skorpenske, Andre Parrizi, Time-resolved measurements of transient behaviors by asynchronous in-situ neutron diffraction at the Spallation Neutron Source, ACNS, 2012.
 63. **Invited**, K. An, Thermal Stability and Structural Evolution of LSM/YSZ Composite Cathode for SOFC by in-situ Neutron Diffraction, TMS 2012.
 64. L. Cai, Z. Liu, K. An, C. Liang, Investigation of Synthesis of the Cathode Material Nano-LiNi_{0.5}Mn_{1.5}O₄ for Lithium-ion Battery by In-situ Neutron Diffraction. TMS 2012.
 65. Y. Wu, D. Ma, A. D. Stoica, Z. Y. Zhang, W. L. Song, G. Y. Wang, G. M. Stoica, X. L. Wang, K. An, Z. P. Lu, Origins of Tensile Ductility and Work-Hardening in TRIP CuZr- Based Bulk Metallic Glass Composites, TMS 2012.
 66. G. Stoica, G. Muralidharan, B. Radhakrishnan, S. B. Gorti, A. D. Stoica, S. Vogel, H. M. Reiche, K. An, D.E. Fielden, H. Cao, H.D. Skorpenske, R.A. Mills, T. Ungar, B.C. Chakoumakos, X-L. Wang, Influence of Deformation Path and Heating Rate on Recrystallization Kinetics in Al-2%Mg Alloy, TMS 2012.
 67. W. Wu, K. An, P. Liaw, An Investigation of Plastic-Deformation Dynamics on a Wrought AZ31B Magnesium Alloy Using Real-Time In-Situ Neutron- Diffraction Measurements, TMS 2012.
 68. Z. Yu, Z. Feng, W. Zhang, K. An, R. Mills, E. Specht, X. Wang, In-Situ Neutron Study of Phase Transformation Kinetics under Far- From Equilibrium Conditions in Advanced High-Strength Steels, TMS 2012.
 69. E-W. Huang, S.-Y. Wu, W. Wu, K. An, L. Yang, C.-H. Chen, P. K. Liaw, Strain-Rate-Effect on the Lattice-Strain Evolution of a Generation- IV-Reactor-Power-Plant Alloy: TMS 2012.
 70. Z. W. Zhang, C. T. Liu, X.-L. Wang, K. C. Littrell, M. K. Miller, K. An, B. A Chin, Study of Embryos and Nanoscale Precipitates in a Ferritic Steel by Small Angle Neutron Scattering and Atom Probe Tomography, TMS 2012.
 71. L. Cai, K. An, Z. Feng, X Wang, H. D. Skorpenske, C. Liang, and S. J. Harris, Understand Degradation of large format Li-ion Battery by In-situ Neutron Diffraction at SNS, ECS, 221st, 2012, Seattle, WA
 72. L. Cai, K. An, Z. Liu, C. Liang, In-situ Phase Transformation Study of Cathode Material LiNi_{0.5}Mn_{1.5}O₄ by Neutron Diffraction, ECS, 221st, 2012, Seattle, WA

73. A. Pramanick, K. An, A.D. Stoica, L.G. Clonts, A. Parizzi, D. Maierhafer, D. Damjanovic, J. L. Jones, X.-L. Wang, Electric-field-induced structural changes in 111-oriented domain-engineered tetragonal BaTiO₃, *Electronic Materials and Applications* 2012.
74. **Invited**, K. An, New scientific opportunities at the materials science and engineering diffractometer at SNS. University of Tennessee, Knoxville, 2011 Nov.
75. K. An, “In-situ Characterization of State-of-Charge Kinetics of a High-Power Battery by the Neutron Diffraction Technique”, 219th Electrochemical Society Conference, Montreal, Canada, 2011.
76. **Invited**, K An, A.D. Stoica, H.D. Skorpenske, D. Ma, X.-L. Wang, Research Opportunities With the New VULAN Diffractometer at the Spallation Neutron Source, SEM Annual Conference & Exposition on Experimental and Applied Mechanics, 2011
77. **Invited**, K. An, “In-situ Characterization of State-of-Charge Kinetics of a High-Power Battery by the Neutron Diffraction Technique”, Battery Congress 2011, Ann arbor, MI.
78. **Invited**, K. An. “Asynchronous time resolved neutron scattering measurement at SNS”, TMS 2011, March, San Diego, CA
79. L. Cai, Z. Liu, K. An, C. Liang, Probing Li-Ni Cation Disorder in Li_{1-x}Ni_{1+x-y}Al_yO₂ Cathode Materials by Neutron Diffraction, TMS, 2011.
80. S. Y. Lee, P.K. Liaw, H. Choo, R. B. Rogge, K. An, C.R. Hubbard, Fatigue Crack Tip Mechanics Following a Tensile Overload, TMS 2011.
81. L. Yang, K. An, A. Stoica, H. Skorpenske X. Wang, In-Situ Neutron Diffraction Study of Porous NiO-YSZ Composite under Uniaxial Loading: TMS 2011.
82. A. Stoica, S. Cheng, K. An, H. Skorpenske, X.-L. Wang, In-Situ Study of Plastic Deformation in 316LN Stainless Steel by Fast Neutron Diffraction, TMS 2011.
83. D. Ma, A.D. Stoica, K. An, L. Yang, H. Bei, R.A. Mills, H. Skorpenske, X.-L. Wang, Texture Evolution and Phase Transformation in Titanium Investigated by In-Situ Neutron Diffraction, TMS 2011.
84. Z. Yu, H. Choo, Z. Feng, K. An, Influence of Recrystallization Texture on Tensile Behavior of Friction Stir Processed Magnesium Alloy, TMS 2011.
85. Z. Feng, W. Zhang, P. Crooker, H. Rathbun, D. Rudland, R.Iyengar, X. Wang, K. An, C. Hubbard, Eliminating Do in Neutron Diffraction Weld Residual Stress Measurement, TMS 2011.
86. **Invited**, K. An. “Commissioning results and new scientific opportunities at VULCAN”, MS&T 2010, Huston, TX October
87. **Invited**, K An. “Commissioning results and new scientific opportunities at VULCAN – the Materials Science and Engineering diffractometer”, Denver X-ray, 2010, Aug.
88. K. An. A.D. Stoica. L. Yang, H.D. Skorpenske, X.L. Wang, S.N. Nagler, Z. Feng,, C. Daniel, C. Liang, “In-situ Neutron diffraction study of structure evolution in a real battery during charge-discharge cycles”. MRS 2010, Boston.
89. An, K. “In-situ stroboscopic neutron diffraction measurement of Li ion battery under charge and discharge”, IMLB, Montreal, CA, 2010, June. , Ottawa, CA
90. An, K., Hodges, J. Stoica, A.D. Wang, X.-L., “A fast method of event mode neutron diffraction data reduction for spallation neutron sources”, ACNS, 2010, June, Ottawa, CA

91. An, K, Ling Yang, Stoica. A.D., Yang, L. Skorpenske, H.D., Wang, X-L, "In-Situ neutron diffraction study of uniaxial deformation of porous NiO-YSZ", ACNS, 2010, June, Ottawa, CA.
92. An, K. Stoica. A.D., Yang, L. Skorpenske, H.D., Wang, X-L, Holden, T., Liaw, P.K. Choo, H., Hubbard, C. "VULCAN – new scientific opportunities in materials science and engineering", ACNS, 2010, June, Ottawa, CA.
93. An, K., Skorpenske, H.D., Stoica, A.D., Ma, D., Wang, X.L. and Cakmak, E. "First in-situ/ex-situ measurements of strains/stresses at engineering diffractometer VULCAN at SNS", TMS 2010
94. An, K., Clausen, B. Stoica. A.D., Skorpenske, H.D., Armstrong, B., and Wang, X.L. "In-situ neutron diffraction study on uniaxial deformation of anode materials for solid oxide fuel cells", ICNS 2009
95. An, K. Stoica. A.D., Wang, X.L. "VDRIVE- Data Reduction and Interactive Visualization softwarE for SNS Engineering Diffractometer VULCAN", ICNS 2009
96. An, K. Clausen, B. Stoica. A.D., Skorpenske, H.D., Armstrong, B., and Wang, X.L. "In-situ neutron diffraction of mechanical deformation of Ni based anode materials for solid oxide fuel cells", TMS 2009, San Francisco.
97. Wan Chuck Woo, Zhili Feng, Xun-li Wang, Ke An, Camden Hubbard, Stan David, Time-Dependent Variations of Residual Stresses in a Friction Stir Welded 6061-T6 Al Alloy, TMS 2009.
98. An, K., Wang, X.-L., and Stoica, A.D. "Real-time Data Reduction and Interactive Visualization Software for Engineering Diffractometer VULCAN at SNS", American Conference of Neutron Scattering, Santa Fe, NM, May 2008.
99. An, K., Wang, X.-L., Holden, T.M., Stoica, A.D., Liaw, P.K., Choo, H., and Hubbard, C.R., "VULCAN - the Diffractometer for Engineering Mechanics at the SNS", The Eighth International Conference on Residual Stresses, Denver, Colorado, Aug 4-8, 2008.
100. Lee, S.Y., Choo, H., An, K., Rogge, R., Liaw, P.K., Watkins, T.R., Hubbard, C.R., and Klarstrom, D.L., "Studies of Overload and Underload during Fatigue Crack Growth Using Neutron Diffraction", American Conference of Neutron Scattering, Santa Fe, NM, May 11-15, 2008.
101. Lee, S.Y., Choo, H., An, K., Liaw, P.K., Watkins, T.R., and Hubbard, C.R., "In-Situ Probing of Crack Growth Retardation During Cyclic Loading", The Eighth International Conference on Residual Stresses, Denver, Colorado, Aug 4-8, 2008.
102. E. Lara-Curzio, K. An, Beth Armstrong, F. Baker, N. Dudley, G. Kirby, Development of Lightweight Lead Acid Batteries 210th ECS Meeting, October 29-November 3, 2006, Cancun, Mexico.
103. P. K. Liaw, M. L. Benson, Y. Sun, A. D. Stoica, K. An, Y.F. Gao, H. Choo, X.-L. Wang, and C. R. Hubbard, "Combining Neutron Diffraction and Modeling to Describe Material Behavior" US-China Workshop on Neutron Science and Technology, Beijing, China, Nov 12-15, 2006.
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- St Charles, IL, 2006.
105. An, K., Hubbard, C. R., Choo, H., and Bailey, W.B., "In situ neutron measurement of micromechanical behavior of materials under applied load at NRSF2", 2006 TMS Annual Meeting & Exhibition.
 106. Sun, Y., An, K., Tang, F. Hubbard, C. R., Lu, Y. L., Choo, H., Liaw, P. K., "Changes in Lattice Strain Profiles around a Fatigue Crack through the Retardation Period after Overloading", SNS & HFIR User Meeting 2005.
 107. Luo, X., Penumadu, D., An, K., Tang, F., Hubbard, C. R., "Study of Granular Materials in Compression Using NRSF2", SNS & HFIR User Meeting 2005.
 108. Penumadu, D., Luo, X., Dutta, A. X., An, K., Tang, F., Hubbard, C. R., Choo, H., Liaw, P., "Residual Strains Under Torsion Using Hollow Cylinder Steel Specimens and Neutron Diffraction", SNS & HFIR User Meeting 2005.
 109. Woo, W., Feng, Z., An, K., Wang, X-L., David, S. A., Hubbard, C. R., Choo, H., Liaw, P.K., "Comparison between in-situ time-resolved neutron diffraction measurements based on quasi-steady state phenomenon and direct real-time experiment", SNS & HFIR User Meeting 2005.
 110. Chawla, N. Deng, X. Tang, F. Hubbard, C.R. and An, K. "In-situ neutron measurement and modeling of phase stress evolution during deformation and fracture of Al matrix composites", SNS & HFIR User Meeting 2005.
 111. Woo, W., Feng, Z., An, K., Wang, X-L., Choo, H., Hubbard, C. R., David, S. A., "In-situ time resolved neutron diffraction study of materials behavior under thermal induced stresses" 2005 TMS, Pittsburg.
 112. W. Woo, Z. Feng, X-L. Wang, K. An, H. Choo, C. R. Hubbard, and S. A. David, "Feasibility of Thermal Strain Measurements during the Quasi-Steady State Using Neutron Diffraction", 7th European Conference on Residual Stresses (ECRS7), Berlin, Germany, Mater. Sci. Forum (2006)
 113. W. Woo, Z. Feng, X-L. Wang, K. An, H. Choo, B. Clausen, T. A. Sisneros, D. W. Brown, J. Babb and S. A. David, "In-situ Measurements of Temperature and Stresses During Thermo-mechanical Processing", LANSCE Activity Highlight Annual Report (2006)
 114. C. R. Hubbard, W. Woo, Z. Feng, X-L. Wang, H. Choo, K. An, and S. A. David, "In-situ Time-Resolved Neutron Diffraction Study of Materials Behavior under Severe Thermal-Mechanical Deformation", will be presented at the 7th ECRS, Berlin, Germany, September 13-15 (2006)
 115. W. Woo, Z. Feng, X-L. Wang, K. An, C. R. Hubbard, S. A. David, and H. Choo, "In-situ temperature and stress measurements using neutron diffraction", 2006 SEM (Society for Experimental Mechanics), June 4-7 (2006)
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 120. Hubbard, C. R., Stoica, A., Wright, M. C., Hahn C. Craig, S., Bailey, W., Tang, F., and An, K., “The Second Generation ORNL Neutron Residual Stress Mapping Facility - The First Few Months of Measurements”, MECA SENS III The third conference on stress evaluation by neutron and synchrotron radiation, Santa Fe, New Mexico 2005.
 121. Hubbard, C. R., Stoica, A., Wright, M. C., Hahn C. Craig, S., Bailey, W., Tang, F., and An, K., “Instrumentation of the 2nd generation neutron residual stress facility”, TMS 2005 annual meeting, San Francisco, CA.
 122. An, K. and Reifsnider, Ken L., A Multiphysics Modeling Study of $(Pr_{0.7}Sr_{0.3})MnO_{3\pm\delta}/8YSZ$ Composite Cathodes for Solid Oxide Fuel Cells. Fuel Cell Seminar 2004, San Antonio, TX.
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Software

1. VDRIVE, a VULCAN Data Reduction and Interactive Data Visualization software, supported by U.S. Department of Energy
2. NRSF-MAP, NRSF-VIEW, and NRSF-CALIBRATE: Remote instrument control and real-time data processing software package for neutron residual stress mapping facility, supported by U.S. Department of Energy.
3. NRSF2 load frame DAQ and instrument control, supported by U.S. Department of Energy.
4. Triple-axis high temperature load frame DAQ and instrument control, supported by U.S. Department of Energy.
5. SOFCer ver 2.6, a professional fuel cell testing, DAQ and instrument control software.
6. Simulation and Virtual Operation Software of Chemical Engineering Fundamental Experiments.
7. LCF, low cycle fatigue life prediction software, supported by National Science Foundation of China.
8. Database Inquiry and CAD Design of Standard Flange, based on the standard of JB 1401~1407.