

## HARLEY SKORPENSKA

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### WORK EXPERIENCE

#### **SCIENTIFIC ASSOCIATE TEAM LEADER** SPALLATION NEUTRON SOURCE – ORNL

September 2012 - Present  
Oak Ridge, Tennessee

- Provide leadership and strategic direction to a culturally and technically diverse team of 7 staff to meet mission objectives established by the Directorate; most critically ensure effective, reliable, and safe operation of the 8 neutron instruments staffed by the team members, and full-scale support of the Neutron Sciences User Program
- Instill an operational discipline that maintains outstanding safety performance and supports a strong safety culture, modeling Battelle Safe Conduct of Research principles
- Monitor team member performance and work environment for barriers, seek opportunities for development of skill sets, and foster protégé-mentor relationships
- Cultivate relationships with facility users and incorporate their feedback into improvement efforts to enhance instrument operations and workflows
- Incorporate insights and experience to influence organizational decision making in the efficient allocation of personnel and minimizing operational downtime
- Implemented cross-training model to establish depth and backup support for Neutron Scattering experiment operations; this effort widens the perspective of team members, affords opportunities for growth, establishes a community of high performers, and strengthens the reputation of the team throughout the organization
- Undertook a sample can inventory strategy for the facility; the realization of this effort addressed recurrent supply chain issues and inventory shortages, essential to positive control of irradiated samples
- Developed a hardware solution in conjunction with software engineers to provide a generic instrument IO mechanism; this project yielded a resident analog and digital IO interface across the instrument suite that expedites the execution of novel experiment plans, as well as specialized vendor hardware integration
- Asserted a lead role in the EPICS instrument control system upgrade; the upgrade stabilized the performance of the Neutron Instrument data acquisition systems across the facility by dramatically improving code maintainability, depth of support, and system reliability
- Foster collaborative interfaces with Neutron Instrument teams and Support groups
- Hold regular team meetings to discuss challenges and opportunities shared by team members

#### **SCIENTIFIC ASSOCIATE – VULCAN** SPALLATION NEUTRON SOURCE – ORNL

February 2008 – September 2012  
Oak Ridge, Tennessee

- In tandem with the Instrument Engineer, managed project schedule of installation tasks carried out by contractors, vendors, and support staff to facilitate the construction of the \$18 Million Engineering Materials Diffractometer (VULCAN) at the Spallation Neutron Source (SNS)

- Performed commissioning of specialized instrument system hardware including review of specifications & drawings, acceptance testing, and on-site system integration
- Contributed to the design, fabrication, and integration of a variety of sample environments utilized at VULCAN which employ compressed gases, servo hydraulics, furnaces, cryogenics, vacuum systems, RF and high current power supplies
- Managed VULCAN lab space and served as point of contact for all instrument-related issues
- Provided 24/7 support to the general user program and instrument team to ensure robust and reliable operations of VULCAN during periods of neutron production
- Ensured adherence to Battelle Safe Conduct of Research principles and established procedures
- Collaborated with fellow instrument teams and support groups to further the mission of the facility
- Coordinated with instrument support groups to expedite repairs on critical beam line equipment and establish preventive maintenance schedules
- Maintained instrument specific software, documentation, and electronic logbook
- Assisted with SNS and ORNL sponsored events, including the annual neutron scattering school

**SENIOR NEUTRON CHOPPER TECHNICIAN**  
SPALLATION NEUTRON SOURCE - ORNL

April 2006 – February 2008  
Oak Ridge, Tennessee

- Assembled, tested, installed, integrated, commissioned, operated, and maintained  $T_0$ , Bandwidth, and  $E_0$  Choppers for neutron instruments, providing 24/7 troubleshooting as needed
- Interfaced with scientists and engineers to provide Chopper technical support and recommendations, as well as coordination of installation and maintenance schedules for neutron instruments
- Designed and programmed motion control system to expedite  $T_0$  Chopper remote installation system to minimize radiation exposure to personnel

**RESEARCH TECHNICIAN II**  
DEPARTMENT OF PHYSICS – UNIVERSITY OF HOUSTON

September 1998 – April 2006  
Houston, Texas

- Served as acting lab manager of 3 to 6 individuals in absence of supervisor
- Trained and assisted a diverse group of international graduate and undergraduate personnel in the safe production and analysis of High Temperature Superconductors (HTS)
- Sustained radiation safety compliance by way of monthly radiation surveys and strict control of radioactive materials and associated waste
- Maintained laboratory logbooks of sample production runs from preparation through characterization
- Conceptualized, procured, assembled, and automated 3-axis magnetic field mapping apparatus for HTS sample characterization
- Migrated and updated obsolete data analysis software from a 68k Macintosh OS 7 platform to a G4 Macintosh OS 10 platform, consisting of FORTRAN code and LabVIEW software
- Performed maintenance, repair, and upgrades on all laboratory equipment
- Upgraded highly utilized 1.0 Tesla electromagnet power supply and associated cooling system with spare parts yielding a 50% increase in duty cycle and 20% more field
- Conducted XRD measurements and data analysis of unique HTS compounds

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## **EDUCATION**

### **MASTER OF SCIENCE IN INDUSTRIAL ENGINEERING**

2017

UNIVERSITY OF TENNESSEE

Knoxville, Tennessee

### **BACHELOR OF SCIENCE IN ELECTRICAL TECHNOLOGY**

2004

UNIVERSITY OF HOUSTON

Houston, Texas

## **TRAINING & SKILLS**

- ORNL Leader Path
- FARO metrology instruments
- MTS Servo-Hydraulic Load Frame
- Bio-Logic Potentiostat systems
- LabVIEW Associate Developer
- Linux, MacIntosh, and Windows operating systems

## **MEMBERSHIPS**

- Neutron Scattering Society of America
- International Society for Sample Environment

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## **PUBLICATIONS**

F. Ossler, L. J. Santodonato, J. M. Warren, C. E.A. Finney, J. Bilheux, R. A. Mills, H. D. Skorpenske, H. Z. Bilheux, "In situ monitoring of hydrogen loss during pyrolysis of wood by neutron imaging." Proceedings of the Combustion Institute, Volume 37, Issue 2, 1273-1280 (2019).

<https://doi.org/10.1016/j.proci.2018.07.051>

S. E. Nagler, A. D. Stoica, G. M. Stoica, K. An, H. D. Skorpenske, O. Rios, D. B. Hendin, N. W. Bower, "Time-of-Flight Neutron Diffraction (TOF-ND) Analyses of the Composition and Minting of Ancient Judean "Biblical" Coins." Journal of Analytical Methods in Chemistry 2019, 6164058 (2019).

<https://doi.org/10.1155/2019/6164058>

Wu, Wei; Stoica, Alexandru D.; Yu, Dunji; Frost, Matthew J.; Skorpenske, Harley D.; An, Ke. "Bending Behavior of a Wrought Magnesium Alloy Investigated by the In-Situ Pinhole Neutron Diffraction Method." *Crystals* 8, no. 9: 348 (2018).

<https://doi.org/10.3390/cryst8090348>

Granroth, G. E., An, K., Smith, H. L., Whitfield, P., Neufeind, J. C., Lee, J., Zhou, W., Sedov, V. N., Peterson, P. F., Parizzi, A., Skorpenske, H., Hartman, S. M., Huq, A. & Abernathy, D. L. "Event-based processing of neutron scattering data at the Spallation Neutron Source." *Journal of Applied Crystallography* 51, 616-629 (2018).

<http://dx.doi.org/10.1107/S1600576718004727>

Wu, Wei; Stoica, Alexandru D.; Berry, Kevin D.; Frost, Matthew J.; Skorpenske, Harley D.; An, Ke. "PIND: High spatial resolution by pinhole neutron diffraction." *Applied Physics Letters* 253501, Vol 112, Issue 25 (2018).

<https://doi.org/10.1063/1.5026066>

An, Ke; Armitage, Douglas P.; Yu, Zhenzhen; Dickson, Richard W.; Mills, Rebecca A.; Feng, Zhili; Skorpenske, Harley D. "RHEGAL: Resistive heating gas enclosure loadframe for in situ neutron scattering." *Review of Scientific Instruments* 092901, Vol 89, Issue 9 (2018).

<http://dx.doi.org/10.1063/1.5033566>

G. Song, J. Y. Lin, J. Bilheux, Q. Xie, L. Santodonato, J. J. Molaison, H. D. Skorpenske, A. M. dos Santos, C. A. Tulk, K. An, A. D. Stoica, M. M. Kirka, R. R. Dehoff, A. S. Tremsin, J. Bunn, L. M. Sochalski-Kolbus, H. Z. Bilheux, "Characterization of Crystallographic Structures Using Bragg-Edge Neutron Imaging at the Spallation Neutron Source." *Journal of Imaging* 3(4), 65 (2017).

<http://dx.doi.org/10.3390/jimaging3040065>

J. Niedziela, R. A. Mills, M. J. Loguillo, H. D. Skorpenske, D. Armitage, H. L. Smith, J. Y. Lin, M. S. Lucas, M. B. Stone, D. L. Abernathy, "Design and operating characteristic of a vacuum furnace for time-of-flight inelastic neutron scattering measurements." *Review of Scientific Instruments* 88(10), 105116 (2017).

<https://doi.org/10.1063/1.5007089>

O. Benafan, A. Garg, R. D. Noebe, H. D. Skorpenske, K. An, N. Schell, "Deformation characteristics of the intermetallic alloy 60NiTi." *Intermetallics* 82, 40-52 (2017).

<http://dx.doi.org/10.1016/j.intermet.2016.11.003>

Benafan, O. and Padula, S. A. and Skorpenske, H. D. and An, K. and Vaidyanathan, R., "Design and implementation of a multiaxial loading capability during heating on an engineering neutron diffractometer" *Review of Scientific Instruments*, 85, 103901 (2014).

<http://dx.doi.org/10.1063/1.4896042>

H. Sueyoshi, N. Ishikawa, H. Inoue, K. Hiraoka, T. Kasuya, K. An, H. Skorpenske, "Analysis of Retained Austenite and Residual Stress Distribution in Ni-Cr Type High Strength Steel Weld by Neutron Diffraction" *Materials Science Forum*, Vols. 783-786, pp. 2115-2119, (2014).

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Lee S, Skorpenske H, Stoica AD, An K, Wang X, Noyan IC., "Measurement of Interface Thermal Resistance With Neutron Diffraction." *ASME Journal of Heat Transfer*. (2013); 136(3):031302-031302-12.

<http://dx.doi.org/10.1115/1.4025500>

R.C. Bowman Jr., E.A. Payzant, P.R. Wilson, D.P. Pearson, A. Ledovskikh, D. Danilov, P.H.L. Notten, K. An, H.D. Skorpenske, D.L. Wood, "Characterization and analyses of degradation and recovery of LaNi<sub>4.78</sub>Sn<sub>0.22</sub> hydrides following thermal aging" *Journal of Alloys and Compounds*, Volume 580, Supplement 1 (2013), Pages S207-S210.

<http://dx.doi.org/10.1016/j.jallcom.2013.03.129>

Wang, Xun-Li; An, Ke; Cai, Lu; Feng, Zhili; Nagler, Stephen; Daniel, Claus; Rhodes, Kevin; Stoica, Alexandru; Skorpenske, Harley; Liang, Chengdu; Zhang, Wei; Kim, Joon; Qi, Yue; Harris, Stephen. "Visualizing the chemistry and structure dynamics in lithium-ion batteries by in-situ neutron diffraction." *Scientific Reports* 2, 747, (2012).

<http://dx.doi.org/10.1038%2fsrep00747>

Ma, Dong; Stoica, Alexandru; An, Ke; Yang, Ling; Bei, Hongbin; Mills, Rebecca A.; Skorpenske, Harley; Wang, Xun-Li. "Texture Evolution and Phase Transformation in Titanium Investigated by In-Situ Neutron Diffraction." *Metallurgical and Materials Transactions A* 42A, no. 6, 1444, (2011).

<http://dx.doi.org/10.1007%2fs11661-011-0667-2>

An, Ke; Skorpenske, Harley; Stoica, Alexandru; Wang, Xun-Li; Cakmak, Ercan. "First in-situ lattice strains measurements under load at VULCAN." *Metallurgical and Materials Transactions A* 42, no. 1, 95—99, (2011).

<http://dx.doi.org/10.1007%2fs11661-010-0495-9>

Wang, Xun-Li; Holden, T. M.; Stoica, Alexandru; An, Ke; Skorpenske, Harley David; Rennich, George Q.; Iverson, Erik B.; Jones, Amy Black. "First Results from the VULCAN Diffractometer at the SNS." *Materials Science Forum* 652, 105—110, (2010).

<http://dx.doi.org/10.4028%2fwww.scientific.net%2fMSF.652.105>

An, Ke; Clausen, Bjørn; Stoica, Alexandru; Armstrong, Beth; Skorpenske, Harley; Wang, Xun-Li. "In-situ neutron diffraction study of phase stress evolutions in a Ni-based porous anode under uniaxial load." *Applied Physics A* 99, no. 3, 579—584, (2010).

<http://dx.doi.org/10.1007%2fs00339-010-5629-9>

Sawh, Ravi-Persad; Weinstein, Roy; Gandini, Alberto; Skorpenske, Harley; Parks, Drew. "A pinning puzzle: two similar, non-superconducting chemical deposits in YBCO—one pins, the other does not." *Superconducting Science and Technology* 22 095007, (2009).

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