Luc L. Dessieux

Spallation Neutron Source, Neutron Scattering Division, Oak Ridge National Laboratory

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Experience

Oak Ridge National Laboratory. *May 2023 -present*
Research and Development [Neutron Instrument Scientist]

- Development of computational tools for data reduction and data analysis
- Develop models of neutron scattering in real material
- Implement new features in Sinpol
- Tools to visualize data in python in python and MATLAB
- Lead developer on Sinpol Simulation tool

Oak Ridge National Laboratory. *December 2019 - April 2023*
Post-Doctoral Research Associate

- Neutron scattering measurements and analysis
- Neutron transmission measurements and analysis
- Modeling neutron transmission spectra on single crystals
- Modeling neutron transmission spectra on polycrystals
- Research on multi-grain problem in neutron transmission and diffraction
- Lead programmer to Sinpol simulation tool

University of Tennessee Knoxville *January 2011 to March 2019*
Graduate Research Assistant

- Neutron Diffraction measurements and analysis.
- Developer for Sinpol: A Neutron Cross Section Library
- Neutron Transmission Simulation with McStas

University of Tennessee Knoxville *August 2009 - December 2010*
Graduate Teaching Assistant

- AST 161: Introduction to Astronomy I
- AST 162: Introduction to Astronomy II
- PHYS 221: Elements of Physics
- PHYS 222: Elements of Physics
- PHYS 231: Fundamentals of Physics: Electricity and Magnetism

Lightcone Interactive *March 2002-May 2003*
Contract Developer & Writer

- Wrote and developed first generation of interactive laboratory and text books for Brooks Cole publishing. Subject matters cover Physic, Biology,Astronomy, and Genetics.

Jewelry Television *May 2003 - January 2009*
Programmer

- Designer and lead developer of production tools to support 24/7 operations including live show broadcast graphic systems.

- Designer and lead developer of Real time stats tools to measure 24/7 real time key performance indicator of company.
- Accurately translate design concepts to web application solution.

University of Tennessee Knoxville *August 2000- May 2002*
Graduate Research Assistant

- Neutron Diffraction measurements and analysis.
- Developer for Sinpol: A Neutron Cross Section Library
- Neutron Transmission Simulation with McStas

Education

PH.D. Physics *University of Tennessee Knoxville*
Department of Physics & Astronomy *August 2019*
Thesis:Single Crystal to Polycrystal Neutron Transmission Simulations

M.S. Astrophysics *University of Tennessee Knoxville*
Department of Physics & Astronomy *December 2002*
*Thesis:*2p or Not 2p: The $O^{14}(\alpha, 2p)O^{16}$ reaction rate and its implications on nova and X-ray burst

B.S. Physics *Central Methodist University*
Department of Physics *May 1997*
Minor:Chemistry

B.S. Mathematics *Central Methodist University*
Department of Mathematics *May 1997*
Minor:Chemistry

Technical skills

Programming Languages	C, Java, Python, Javascript, JSON, MYsql, Unix Shell Scripting,PHP, GNU make, Actionscript 1-3,Ruby
Simuation Codes	McStas, Xnet, McVIne
High-Performance Comuting	Mpi, OpenMP, HDF5
Numerical Analysis	MATLAB, Mathematica, Maple, Maxima
Visualization Software	FFmpeg, gnuplot, MATLAB, Flash, Flex 20, Flex 3.0
Reconstruction Libraries	Astra tomography toolbox, Tomopy, Svmbirr

Synergistic Activities

Neutron Scattering Society of America (NSSA), 2014–present

Material Research Society 2020—present

American Crystallographic Association 2020– present

ASM International 2021— present

Reviewer of Journal of Applied Crystallography - 2022-present

Reviewer of Material Research Letters- 2022-present

Reviewer of Material Today Advances- 2021-present

Reviewer of Journal of Analysis for Engineering Design - 2020-present

Selected Publications

Dessieux, L.L., A.D. Stoica, Frost M.J, dos Santos ,AM, Synthesizing pseudo-Kossel lines from neutron transmission data II: Validation with neutron diffraction data *Journal of Applied Crystallography 2023*.

Dessieux, L.L., A.D. Stoica, Frost M.J, dos Santos ,AM, Synthesizing pseudo-Kossel lines from neutron transmission data : an analytical approach for recovering single crystal orientation. *Journal of Applied Crystallography 2023*

Victor Pacheco, Jithin James Marattukalam, Dennis Karlsson, **Luc Dessieux**, Tran Van Khanh, Premysl Beran, Ingo Manke3 Nikolay Kardjilov, Henning Markötter, Martin Sahlberg, Robin Woracek, How the Laser Scan Strategy Generates Hidden Nucleation Sites for Failure in Metal Additive Manufacturing. *Materiala, 2022* .

Singanallur Venkatakrishnan,Yuxuan Zhang, **Luc Dessieux**, Christina Hoffman, Philip Bigham, Hassina Bilheux, Improved Acqusition and Reconstruction for Wavelength-Resolved Neutron Tomography. *Journal of Imaging*,2021

J.R. Carmicheal, Y. Polsky, K. An, L.M Anovitz, P Bingham, **Luc Dessieux**, K Ekici, M Frost, and S Pemberton. A High-Pressure Flow-Through Test Vessel for Neutron Imaging and Neutron Diffraction-Based Strain Measurementof Geological Materials. *Review of Scientific Instruments*,2020

L.L Dessieux, A.D. Stoica, P.R. Bingham. Neutron transmission simulation of texture in polycrystalline materials. *NIM B*,2019

S. V. Venkatakrishnan,**Luc Dessieux**, Philip Bingham. Wavelength-resolved neutron tomography for crystalline materials. *International Conference on Acoustics, Speech and Signal Processing*,2019

G.M. Stoica, **Luc L Dessieux**, Alexandru Stoica,Sven C. Vogel,Govindarajan Muralidharan, Balasubramaniam Radhakrishnan, Sarma B. Gorti, Ke An, Dong Ma, Xun-Li Wang. Distinct Recrystallization Pathways in Cold-Rolled Alloy, Al-2%Mg, Evidenced by In-situ Neutron Diffraction. *Quantum Beam Science*,2,17(2018)

L.L Dessieux, A.D. Stoica, P.R. Bingham. Single crystal to polycrystal neutron transmission simulation. *Review of Scientific Instruments*,89,025103(2018)

Y. Polsky, L. Anovitz, K. An, **L. Dessieux**. Strain measurement of geological samples subjected to triaxial stresses experienced during hydraulic loading. *39th Workshop on Geothermal Reservoir Engineering Stanford University*, Stanford, CA, 2014.

Polsky, Y., **Dessieux**, L., An, K., Anovitz, L., Bingham, P. and Carmichael, J. Processing of Neutron Diffraction Data for Strain Measurement in Geological Materials. *48th US Rock Mechanics / Geomechanics Symposium*,Minneapolis, MN,, 2014.

Y Polsky, **L. Dessieux**, K An, L Anovitz, P Bingham, J Carmichael. Development of a Neutron Diffraction-Based Strain Measurement Capability for Triaxial Loading Conditions. *38th Workshop on Geothermal Reservoir Engineering Stanford University*, Stanford, CA, 2013.

Yarom Polsky, **Luc Dessieux**, Ke An, Lawrence M. Anovitz, Philip Bingham, Justin Carmichael. Development of a Neutron Diffraction Based Experimental Capability for Investigating Hydraulic Fracturing for EGS-Like Conditions. *47th US Rock Mechanics / Geomechanics Symposium*,San Francisco, Ca, 2013.