

DR. CHRISTINA HOFFMANN **Neutron Scattering Scientist & Initiative Coordinator**

Chemistry, Geochemistry and Environmental Chemistry Science Initiative

Single Crystal Diffraction Group / Diffraction Section / Neutron Scattering Division / Neutron Sciences Directorate

Oak Ridge National Laboratory

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Curriculum Vitae

Summary:

- Designing, building and commissioning of a now thriving first-generation neutron scattering instrument, the TOPAZ time-of-flight Laue single crystal neutron diffractometer at the Spallation Neutron Source, at the Oak Ridge National Laboratory.
- Strong national and international reputation for understanding and excellence in single crystal science using neutron diffraction for functional, ferroelectric, multiferroic, materials; high pressure rock-forming phases, catalytic materials.
- Serve on relevant advisory panels and committees for technical development and professional scientific associations
- Secure funding for major equipment, new development and software from internal, national and international funding agencies and compute time at flagship research computing facilities.
- Mentor and co-mentor internally and externally funded students, graduate students, post-doctoral researchers and collaborative research appointments

Experience:

- Developing a successful science program for single crystal neutron diffraction
- Organizing over 25 national and international conferences, meetings and workshops or sessions and tutorials for topical and general neutron science and instrument development efforts and user community development
- Publishing scientific results in over 70 articles, over 90 presentations (40 invited, 50 contributed)
- Chairing of and participating in ORNL, national and international committees on neutron scattering analysis and development
- Championing diversity and inclusion and science community engagement
- Holding a fully funded and supported full time permanent research position and securing additional funding for research and development (total more than \$ Mio14)
- Securing neutron beam time at neutron user facilities and compute time on high performance computing resources.

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Education/Training:

Ph.D. in Earth Sciences, University of Berne, Switzerland

M.S. in Mineralogy & Crystallography, University of Vienna, Austria

Research and Professional Experience:

2018 – present Neutron Scattering Scientist (Senior R&D Staff), TOPAZ and CORELLI instruments: excellence in science and user support, coordination and development of diffuse scattering within the Diffraction Group, Division representation on committees, Neutron Sciences, Oak Ridge National Laboratory (ORNL), Oak Ridge, TN, USA.

2001 – 2018 Lead Instrument Scientist, TOPAZ single crystal neutron diffractometer: instrument upgrades, improvements and excellence in scientific user program, Neutron Sciences, Oak Ridge National Laboratory (ORNL), Oak Ridge, TN, USA.

Significant Awards and Honors:

- ORNL supplemental performance award 2022, 2021, 2019, 2018, 2010
- Fellow of the Neutron Scattering Society of America, 2020.
- ORNL significant event award 2013, 2009.
- Student Development and Mentoring Award, ORNL – ORISE, 2006.

Member of Professional Societies:

- AAAS, ACA, ACS, IUCr, NSSA

Selected Products:

- Dronova M.G., Ye F., Cooper S.E., Krishnadas A., Hoffmann C., Fujisawa Y., Okada Y., Khomskii D., Feng Y., "Controlling inversion disorder in a stoichiometric spinel magnet", *Proceedings of the National Academy of Sciences*, **119**, e2208748119 (2022), doi.org/10.1073/pnas.2208748119.
- Limbach M.N., Antevska A., Oluwatoba D.S., Gray A.L., Carroll X.B., **Hoffmann C.**, Wang X.P., Voehler M.W., Steren C.A., Do T.D., "Atomic View of Aqueous Cyclosporine A: Unpacking a Decades-Old Mystery", *Journal of the American Chemical Society*, **144**, 12602-12607 (2022), doi.org/10.1021/jacs.2c01743.
- Gaudet J., Yang H.Y., Baidya S., Lu B.Z., Xu G.Y., Zhao Y., Rodriguez-Rivera J.A., **Hoffmann C.M.**, Graf D.E., Torchinsky D.H., Nikolic P., Vanderbilt D., Tafti F., Broholm C.L., "Weyl-mediated helical magnetism in NdAlSi", *Nature Materials* (2021), doi.org/10.1038/s41563-021-01062-8.
- Bruhwiler K.C., Bruhwiler D.L., Nagler R., Moeller P., **Hoffmann C.**, Savici A.T., Morgan Z., Tucker M.G., Kuhn A., Mensmann J., Messmer P., Nienhaus M., Roemer S., Tatulea D., "Rapid Browser-Based Visualization of Large Neutron Scattering Datasets", 12th International Particle Accelerator Conference (IPAC 2021), (2021), doi.org/10.18429/JACoW-IPAC2021-TUPAB413.

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- Rahn M.C., Gallagher A., Orlandi F., Khalyavin D.D., **Hoffmann C.**, Manuel P., Baumbach R., Janoschek M., "Collinear antiferromagnetic order in URu₂Si₂-xPx revealed by neutron diffraction", *Physical Review B* 103, 21 (2021)
- Venkatakrisnan S., Zhang Y.X., Dessieux L., **Hoffmann C.**, Bingham P., Bilheux H., "Improved Acquisition and Reconstruction for Wavelength-Resolved Neutron Imaging", *Tomography, Journal of Imaging* 7, 1 (2021).
- Yang H.Y., Singh B., Gaudet J., Lu B.Z., Huang C.Y., Chiu W.C., Huang S.M., Wang B.K., Bahrami F., Xu B.C., Franklin J., Sochnikov I., Graf D.E., Xu G.Y., Zhao Y., Hoffman C.M., Lin H., Torchinsky D.H., Broholm C.L., Bansil A., Tafti F., "Noncollinear ferromagnetic Weyl semimetal with anisotropic anomalous Hall effect", *Physical Review B* 103, 11 (2021)
- Fancher C.M., **Hoffmann C.**, Wang X.P., Daemen L.L., Schultz A.J., "Operando single crystal neutron diffraction reveals insight into the field response mechanisms in the hydrogen-bonded KH₂PO₄ ferroelectric", *APL Materials*, 9, 021111 (2021).
- Prisk T.R., **Hoffmann C.**, Kolesnikov A.I., Mamontov E., Podlesnyak A.A., Wang X.P., Kent P.R., Anovitz L.M. (2018): Fast Rotational Diffusion of Water Molecules in a 2D Hydrogen Bond Network at Cryogenic Temperatures, *Physical Review Letters*, **120**, 196001.
- Purevjav N., Okuchi T., Wang X.P., **Hoffmann C.**, Tomioka N. (2018): Determination of hydrogen site and occupancy in hydrous Mg₂SiO₄ spinel by single-crystal neutron diffraction, *Acta Crystallographica Section B*, **74**, 1, 115-120.