NOZOMI SHIRATO

Assistant Physicist

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Education

Ph. D. Materials Science and Engineering, University of Tennessee
B. A. Physics, Washington University in St. Louis

Research interests

- Development of low temperature synchrotron X-ray scanning tunneling microscopy (SX-STM) for studying atomic scale chemical, magnetic and electronic properties.
- Investigating complex oxides, magnetic system and low dimensional materials on surfaces.

Professional Experience

Argonne National Laboratory - Center for Nanoscale Materials (CNM) *2015-present*
Assistant Physicist

- Development of low temperature SX-STM.
- Commissioning the XTIP beam line, a dedicated beam line for SX-STM.

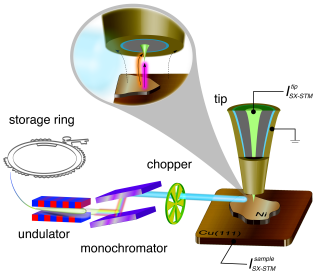
Argonne National Laboratory – X-ray Science Division (XSD) *2012-2015*
Postdoctoral Researcher

- Design and development of low temperature SX-STM including hardware assembly and software developments.
- Investigate chemical and magnetic properties of sub-monolayer metallic islands on single crystal substrates using synchrotron X-ray scanning tunneling microscopy (SX-STM).

Selected Publications

Selected publications:

1. A. DiLullo, **N. Shirato**, M. Cummings, H. Kersell, H. Chang, D. Rosenmann, D. Miller, J. W. Freeland, S-W. Hla and V. Rose, "Local X-ray magnetic circular dichroism study of Fe/Cu(111) using a tunneling smart tip", *J. Synchrotron Rad.* **23**, 574, 2016. [doi:10.1107/S1600577515023383]
2. H. Yan, M. Cummings, F. Camino, W. Xu, M. Lu, X. Tong, **N. Shirato**, D. Rosenmann, V. Rose and E. Nazaretski, "Fabrication and characterization of CNT-based smart tips for synchrotron assisted STM", *Journal of Nanomaterials* 7, 2016. [doi:10.1155/2015/492657]
3. **N. Shirato**, M. Cummings, H. Kersell, Y. Li, D. Miller, D. Rosenmann, S-W. Hla and V. Rose, "Hard X-ray beam damage study of monolayer Ni islands using SX-STM", *MRS Proceedings* 1754, 2015. [doi:10.1557/opl.2015.114]
4. **N. Shirato**, M. Cummings, H. Kersell, Y. Li, B. Stripe, D. Rosenmann, S-W. Hla and V. Rose, "Elemental fingerprinting of materials with sensitivity at the atomic limit", *Nano Letters* **14**, 11, 2014. [doi:10.1021/nl5030613]
5. **N. Shirato**, S. Sherrill, A.K. Gangopadhyay and R. Kalyanaraman, "Shape-dependent magnetic properties of Co nanostructure arrays synthesized by pulsed laser melting", *J. of Magnetism and Magnetic Materials*, **407**, 328, 2016. [doi:10.1016/j.jmmm.2016.02.015]



6. **N. Shirato**, J. Strader, A. Kumar, A. Vincent, P. Zhang, A. Karakoti, P. Nacchimuthu, H.-J. Cho, S. Seal and R. Kalyanaraman, "Thickness dependentself limiting 1-D tin oxide nanowire arrays by nanosecond pulsed laser irradiation", *Nanoscale*, **3**, 1090, 2011. [doi:10.1039/c0nr00689k]
7. **N. Shirato**, H. Krishna and R. Kalyanaraman, "Thermodynamic model for the dewetting instability in ultrathin films", *J. Appl. Phys.*, **108**, 024313, 2010. [doi:10.1063/1.3456062]
8. **N. Shirato**, H. Krishna, A. K. Gangopadhyay and R, Kalyanaraman, "Magnetic measurement of pulsed laser-induced nanomagnetic arrays using Surface Magneto-Optic Kerr effect", Proc., *SPIE*, **7767**, 77670Q, 2010. [doi:10.1117/12.861004]
9. R. McCormack, **N. Shirato**, U. Singh, S. Das, A. Kumar, H.-J. Cho, R. Kalyanaraman and S. Seal, "Improved room temperature hydrogen sensing characteristics by tin oxide nanostructured arrays", *Nanoscale*, **4**, 7256, 2012. [doi: 10.1039/c2nr32217j]
10. H. Krishna, **N. Shirato**, S. Yadavali, R. Sachan, J. Strader, and R. Kalyanaraman, "Self-Organization of Nanoscale Multi layer Liquid Metal Films: Experiment and Theory", *ACS Nano*, **5**, 1, 2011. [doi:10.1021/nn1022632]