SARA J. CALLORI
Associate Professor
Department of Physics
California State University San Bernardino
San Bernardino, CA, 92354, USA
Phone: 909.537.5317
Email: sara.callori@csusb.edu

EDUCATION

Ph.D., Physics, awarded May 2013
Stony Brook University, Stony Brook, NY, USA
Dissertation: "$PbTiO_3$ Based Ferroelectric Superlattices with Conventional and Novel Dielectric Components"

Masters of Arts, Physics, awarded May 2009
Stony Brook University, Stony Brook, NY, USA

Bachelor of Arts, Physics; Minor: Journalism, graduated May 2007
New York University, New York, NY, USA

POSITIONS

Associate Professor, Department of Physics, California State University San Bernardino
San Bernardino, CA, USA, 2020 – Present

Assistant Professor, Department of Physics, California State University San Bernardino
San Bernardino, CA, USA, 2015 – 2020

Post-doctoral Research Fellow, School of Physics, The University of New South Wales and Bragg Institute, Australian Nuclear Science and Technology Organization (joint position)
Sydney, NSW and Lucas Heights, NSW, Australia, 2013 - 2015

Research Assistant, Ferroelectrics Laboratory, Physics Department, Stony Brook University
Stony Brook, NY, USA, 2008 - 2013

Teaching Assistant, Physics Department, Stony Brook University
Stony Brook, NY, USA, 2007 - 2009

Laboratory Assistant, Physics Department, New York University
New York, NY, USA, 2005 - 2007

Education Department, Bergen County Zoo
Hackensack, NJ, USA, Summers 2004-2006

OTHER RELEVANT EXPERIENCE

NSF-IUSE ISSUES-X Grant – Co-PI
California State University San Bernardino, 2019-Present

Cal-Bridge South - Steering Committee and Mentor
2016 – Present

NSF-CREST Center for Advanced Functional Materials – Senior Personnel
California State University San Bernardino, 2016 – Present

UNL MRSEC Professor/Student Teams Summer Research Program
University of Nebraska-Lincoln, Summer 2016

Workshop Tutor, Croucher Foundation Neutron Scattering Summer School
City University of Hong Kong, August 2014

Optics Research
New York University, September 2006 – May 2007

COURSES TAUGHT

General Physics I (mechanics)
General Physics II (electricity and magnetism)
General Physics III (waves and optics)
Introduction to Electronics
Materials Science and Engineering
Statistical and Thermal Physics
Advanced Laboratory

STUDENTS MENTORED

California State University, San Bernardino
Current: Andres Hernandez, Deisy Morales, Carlos Vargas Ochoa, Tonny Kasih, Robert Tyo, Luis Cruz Ocana (undergraduates)
Past: Nolan White , Gabriel Almeida , Ashraf Dries, Luis Martinez, Erika Sanchez, Taylor Dixon, Kariana Anderson, Adam Workman, Mario Rodriguez (undergraduates)

Australian Nuclear Science and Technology Organisation
Willemijn Uilhoorn (Masters in Applied Physics) – 2014

Stony Brook University
Grace Pan (High School) – Summer 2012, Julie Coraor (High School) – Summer 2011

HONORS AND AWARDS

Brookhaven National Laboratory – Gertrude S. Goldhaber Prize, 2013
Stony Brook University: David Fox Prize, 2009
New York University: Graduated Magna Cum Laude
New York University: Founders Day Awards 2007
New York University Deans List: Fall 2003 to Spring 2007
Sigma Pi Sigma: National Physics Honor Society, Inducted May 2006
College of Arts and Sciences Scholarship: New York University
FM Global Scholarship

PROFESSIONAL ACTIVITIES

Journal Referee: *Physical Review Letters, Physical Review B, Physical Review Materials, The Physics Teacher, Surface & Coating Technologies*
Australian Nuclear Science and Technology Organisation: Organizer for the Young Researchers Club; 2013-2015
Contributing Author: Crystallography365 Blog; 2014
Stony Brook University: Quality of Life Committee; September 2010-December 2012
Adopt-A-Physicist Outreach Program: 2009-2012,2015
Stony Brook University: Women in Physics and Astronomy Committee; 2008-2012
Stony Brook University: Graduate Committee; 2009-2010
Metro Gotham Condensed Matter Meeting: Organization board; 2009-2010
Stony Brook University, Friday Afternoon Physics Seminars: 2007-2008

PUBLICATIONS

JOURNAL ARTICLES

In Operando Study of the Hydrogen-Induced Switching of Magnetic Anisotropy at the Co/Pd Interface for Magnetic Hydrogen Gas Sensing
Grace L. Causer, Mikhail Kostylev, David L. Cortie, Chris Lueng, **Sara J. Callori**, Xiaolin L. Wang, and Frank Klose
ACS Applied Materials & Interfaces 11, 35420-35428 (2019)

High-T_C Interfacial Ferromagnetism in $SrMnO_3$/$LaMnO_3$ Superlattices
Marius Keunecke, Fryeryk Lyzwa. Danny Schwarzbach, Vladimir Roddatis, Nicholas Gauquelin, Knut Mueller-Caspary, Johann Verbeeck, **Sara J. Callori**, Frank Klose, Markus Jungbauer, and Vasily Moshnyaga
Advanced Functional Materials 1808270 (2019)

Fabricating High-Quality Ultra-Thin Croconic Acid Film Using Electric Field Guidance

Paulo S. Costa, Francisco Guzman, Kimberley Cousins, **Sara J. Callori**, Erika Sanchez, Paul K. Dixon, Douglas Smith, Timothy Usher, and Renwu Zhang
Applied Surface Science 427, 541 (2018)

In situ ferromagnetic resonance capability on a polarized neutron reflectometry beamline
Mikhail Kostylev, Grace L. Causer, Charles-Henri Lambert, Thomas Schefer, Charles Weiss, **Sara J. Callori**, Sayeef Salahuddin, Xiaolin L. Wang, and Frank Klose
Journal of Applied Crystallography 51, 9-16 (2018)

Enhanced magnetization of cobalt defect clusters embedded in TiO_2-δ films
D.L. Cortie, Y. Khaydukov, T. Keller, D.J. Sprouster, J.S. Hughes, J.P. Sullivan, X.L. wang, A.P. Le Brun, J. Bertinshaw, S.J. Callori, R. Aughterson, M. James, P.J. Evans, G. Triani, and F. Klose
ACS Applied Materials & Interfaces 9, 8783-8795 (2017)

Thermal fluctuations of ferroelectric nanodomains in a ferroelectric-dielectric $PbTiO_3$/$SrTiO_3$ superlattice
Qingteng Zhang, Eric M. Dufresne, Pice Chen, Joonkyu Park, Margaret P. Cosgriff, Mohammed Yusuf, Yongqi Dong, Dillon D. Fong, Hua Zhou, Zhonghou Cai, Ross J. Harder, **Sara J. Callori**, Matthew Dawber, Paul G. Evans, and Alec R. Sandy
Physical Review Letters 118, 097601 (2017)

Direct evidence for the spin cycloid in strained nanoscale bismuth ferrite thin films
Joel Bertinshaw, Ronald Maran, **Sara J. Callori**, VIdya Ramesh, Jeffrey Chung, Sergey A. Danilkin, Wai Tung Lee, Songbai Hu, Jan Seidel, Nagarajan Valanoor, and Clemens Ulrich
Nature Communications 7, 12664 (2016)

Hydrogen Absorption in Metal Thin Films and Heterostructures Investigated *in Situ* with Neutron and X-ray Scattering
Sara J. Callori, Christine Rehm, Grace L. Causer, Mikhail Kostylev, and Frank Klose
Metals 6, 125 (2016)

Rapid in-situ x-ray diffraction during the growth of ferroelectric superlattices
Benjamin Bein, Hsiang-Chun Hsing, **Sara J. Callori**, John Sinsheimer, Priya V. Chinta, Randall L. Headrick, and Matthew Dawber
Nature Communications 6, 10136 (2015)

Strain-induced magnetic phase transition in $SrCoO_3$ thin films
S.J. Callori, S. Hu, J. Bertinshaw, Z. Yue, S. Danilkin, X. Wang, V. Nagarajan, F. Klose, J. Seidel, and C. Ulrich
Physical Review B (Rapid Communications) 91, 104405(R) (2015)

Growth and Properties of Strained Epitaxial $SrCoO_x$ ($2.5<x<3$) Thin Films on $DyScO_3$
S. Hu, Z. Yue, J.S. Lim, **S.J. Callori**, A. Ikeda-Ohno, T. Ohkochi, C.-H. Yang, X. Wang, V. Nagarajan, C. Ulrich, and J. Seidel
Advanced Materials Interfaces, 1500012 (2015)

90° magnetic coupling in a NiFe/FeMn/biased NiFe multilayer spin valve component investigated by polarized neutron reflectometry
S.J. Callori, J. Bertinshaw, D.L. Cortie, J.W. Cai, A.P. Le Brun, T. Zhu, and F. Klose
Journal of Applied Physics 116, 033909 (2014)

The role of neutron scattering in magnetic storage materials research
Sara J. Callori and Frank Klose
IEEE Transactions on Magnetics 50, 6400107 (2014)

In-situ x-ray diffraction studies of the epitaxial growth of $BaTiO_3$ on $SrTiO_3$
J. Sinsheimer, S.J. Callori, B.Bein, P.V. Chinta, A. Ashrafi, R. Headrick, M. Dawber
Applied Physics Letters 103, 242904 (2013)

Field-Dependent Domain Distortion and Interlayer Polarization Distribution in PbTiO3/SrTiO3 Superlattices
Pice Chen, Margaret P. Cosgriff, Qingteng Zhang, Sara J. Callori, Bernhard W. Adams, Eric M. Dufresne, Matthew Dawber, and Paul G. Evans
Physical Review Letters 110, 047601 (2013)

Transition from laminar to three-dimensional growth mode in pulsed laser deposited $BiFeO_3$ film on (001) $SrTiO_3$
Priya V. Chinta, Sara J. Callori, Matthew Dawber, Almamun Ashrafi, and Randall Headrick
Applied Physics Letters 101, 201602 (2012)

Engineering Polarization Rotation in a Ferroelectric Superlattice
J. Sinsheimer, S. J. Callori, B. Bein, Y. Benkara, J. Daley, J. Coraor, D. Su, P. W. Stephens, and M. Dawber
Physical Review Letters 109, 167601 (2012)

Ferroelectric $PbTiO_3/SrRuO_3$ Superlattices with Broken Inversion Symmetry
S.J. Callori, J. Gabel, Dong Su, J. Sinsheimer, M.V. Fernandez-Serra, and M. Dawber
Physical Review Letters 109, 067601 (2012)

Nanosecond Dynamics of Ferroelectric/Dielectric Superlattices
Ji Young Jo, Pice Chen, Rebecca J. Sichel, Sara J. Callori, John Sinsheimer, Eric M. Dufresne, Matthew Dawber, and Paul G. Evans
Physical Review Letters 107, 055501 (2011)

BOOK CHAPTER

Leveraging NSF-CREST center funding to support undergraduate research at multiple Hispanic Serving/Minority Institutions
Kimberley R. Cousins, Timothy Usher, Douglas C. Smith, Renwu Zhang, Paul K. Dixon, and Sara Callori

ACS Symposium Series: Best Practices for Supporting and Expanding Undergraduate Research in Chemistry, Ch 14, pp. 243-258 (2018)

CONFERENCE PROCEEDINGS

The magnetic interfacial properties of an exchange biased nanocrystalline $Ni_{80}Fe_{20}/\alpha$-Fe_2O_3 bilayer studied by polarized neutron reflectometry and Monte Carlo simulation
Grace L. Causer, David Cortie, **Sara J. Callori**, Palash Manna, Johan van Lierop, Yi-Ju Lee, Xiaolin Wang, Ko-Wei Lin, and Frank Klose
Japanese Journal of Applied Physics 59, SAAC03 (2020)
(iPlasma 2019 conference proceedings)

Materials genome approach to organic ferroelectrics and piezoelectrics
T.D. Usher, K.R. Cousins, D.C. Smith, R. Zhang, E.D. Zurek, S. Ducharme, **S.J. Callori**, D.P. Miller, and P.S. Costa
International Journal of Nanotechnology 15, 784-791 (2018)
(Advanced Materials and Nanotechnology 8 conference proceedings)

Fe/FeO/Fe/FeV Multilayers Characterized by Magnetometry and Polarized Neutron Reflectometry
Sara J. Callori, Kai-Han Chao, Grace L. Causer, Bela Nagy, Laszlo F. Kiss, Attila Sulyok, Laszlo Bottyan, Ko-Wei Lin, and Frank Klose
IEEE Magnetics Letters (2016 ICAUMS Conference Proceedings) 8, 4102205 (2017)

Enhanced Magnetism in Field-Cooled $[Ni_{80}Fe_{20}/Mn]_3$ Multilayers Studied Using Polarized Neutron Reflectometry
W. Uilhoorn, **S.J. Callori**, D.L. Cortie, H.-C. Su, Y. Khaydukov, K.-W. Lin, and F. Klose
Journal of Physics: Conference Series 711, 012005 (2016)

INVITED PRESENTATIONS

American Physical Society March Meeting – March 2019
Designing (and re-designing) realistic research practices for undergraduate Advanced Labs

Conference for Undergraduate Women in Physical Sciences (WoPHYS) - October 2018: Invited Keynote Speaker; Playing with Atomic Legos: Engineering Ferroic Oxide Thin Films with Novel Ferroic Properties

International Conference of the Asian Union of Magnetics Societies 2016 – August 2016
Investigating magnetic and multiferroic oxide thin films with quantum beam techniques

Nebraska Center for Materials and Nanoscience Seminar – October 2015
The search for novel magnetic phases in $SrCoO_{3-\delta}$

Advanced Materials and Nanotechnology 7 – February 2015
Strain-induced magnetic phase transitions in $SrCoO_3$ thin films

CONTRIBUTED PRESENTATIONS

American Association of Physics Teachers Summer Meeting – July 2019: Oral Presentation
Conceptual investigations using PhET simulations in upper division Solid State Physics

American Association of Physics Teachers Summer Meeting – July 2017: Oral Presentation
Supplemental Instructional Laboratory Activities in Introductory Physics

MMM/Intermag 2016 Joint Conference – January 2016: Poster Presentation
Probing magnetization reversal mechanisms of ion-beam deposited $Ni_{80}Fe_{20}/\alpha\text{-}Fe_2O_3$ bilayers by polarized neutron reflectometry

AINSE-ANBUG Neutron Scattering Symposium – November 2014: Oral Presentation
Strain-induced magnetic phase transitions in $SrCoO_3$ thin films

Polarized Neutrons for Condensed Matter Investigations – September 2014: Oral Presentation
90° magnetic coupling in a NiFe/FeMn/biased NiFe multilayer spin valve component investigated by polarized neutron reflectometry

AINSE-ANBUG Neutron Scattering Symposium – December 2013: Oral Presentation
Pinned Magnetization in Permalloy/CoO/Co Trilayers Due to Oxygen Implantation in the Co Layers

American Physical Society March Meeting – March 2013: Oral Presentation
In-situ x-ray diffraction studies of the epitaxial growth of $BaTiO_3$ on $SrTiO_3$

American Physical Society March Meeting – March 2012: Oral Presentation
Ferroelectricity and compositional inversion symmetry breaking in $PbTiO_3/SrRuO_3$ superlattices

Natural Sciences Department Colloquium, Suffolk County Community College – February 2012
Engineering Novel Properties in Ferroelectric Superlattices

Fundamental Physics of Ferroelectrics and Related Materials – January 2012: Poster Presentation
Ferroelectric $PbTiO_3/SrRuO_3$ superlattices with broken inversion symmetry

American Physical Society March Meeting – March 2011: Oral Presentation
Metallic oxides as dielectrics in artificially layered perovskite oxides