Chris M. Fancher

Personal Data

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Education

May 2013	PhD in Materials Science and Engineering, Purdue University Thesis: *"Texture and Anisotropy in the Sodium Bismuth Titanate System"* Advisors: Prof. Keith J. Bowman and John E. Blendell
Aug 2009	BS in Multidisciplinary Engineering, Purdue University

Work Experience

	Postdoctoral Researcher, Oak Ridge National Laboratory
Aug 2016 - Current	Developed an independent research program for quantifying dynamic of domain reorientation in ceramic and molecular ferroelectric materials using neutron diffraction. Identified neutron scattering instruments suitable for quantifying the crystallographic texture of materials. Led works on the development of Bayesian inference analysis methods for single peak and full profile fitting of diffraction data. Supported user operations and maintenance of the residual stress beamline HB2B at the High Flux Isotope Reactor. Developed python routines for data reduction of 2D diffraction data that are needed to facilitate the upgrade of HB2B's detector system.
	Postdoctoral Research Scholar, North Carolina State University
May 2013 - Aug 2016	Quantified electric field and mechanical stress induced lattice distortions and ferroelectric/ferroelastic domain wall motion in films and polycrystalline ferroelectrics using *in situ* diffraction. Designed a loading cell that enabled the measurement of electric field dependent structural information at elevated temperature. Developed software tools for analyzing diffraction data by single peak fitting and whole pattern modeling using least-squares minimization and Bayesian inference. Contributed to research proposals that were awarded $>$300k$ in funding.
	Visiting Scientist, TU Darmstadt, Darmstadt Germany
June - Sept 2012	Used state of the art electronic characterization equipment in Jürgen Rödel's research group at TU Darmstadt to investigate the temperature dependence of the dielectric and electromechanical properties in 100 oriented lead-free bulk ceramics.
	Graduate Researcher, Purdue University
Aug 2009 - May 2013	Processed bulk lead-free ceramics with a 100 crystallographic texture. Used electromechanical and diffraction characterization methods to determine the effect of the crystallographic texture on the piezoelectric and dielectric properties. Developed image analysis modules for identifying grain boundaries and interrupting FEA data.

Teaching Experience

	Purdue University
MSE 235	Introduction to Material Science
MSE 335	Characterization of materials laboratory
	North Carolina State Unveristy
MSE 270	Guest lecture on X-ray scattering
AIF	Short course on line profile analysis of diffraction data
MSE 350	Co-lecture for course on mechanics of materials
MSE 710	Guest lecture on the theory and application of neutron diffraction

AWARDS

2017 Outstanding Reviewer Award (Scripta Materialia)

2015 Best Paper in Material Science Award (Microscopy and Microanalysis)

ACTIVITIES AND LEADERSHIP

CURRENT — **Reviewer**
Advanced Photon Source 11BM rapid access, ANSTO, Applied Physics Letters, Journal of the American Ceramics Society, Journal of Applied Crystallography, Journal of Applied Physics, Scientific Reports, Crystals, Scripta Materialia, Ceramics International, Journal of King Saud University

JAN 2014 - AUG 2014 — **Interim X-ray laboratory manager in the Analytical Instrumentation Facility**
Managed three diffractometers in AIF at NCSU. Responsibilities included training and assisting users, operating instruments for outside clients, and maintaining equipment.

SPRING 2011 — **Purdue's Women and Engineering Innovation to Reality**
Developed sustainability and alternative energy lesson plans and organized a faculty presenter to educate 5th-8th grade students about engineering, and the role of engineers on design teams.

2011 - 2012 — **Purdue Graduate Student Government**
Organized and coordinated the Purdue graduate student appreciation week activities and student networking events.

LIST OF PUBLICATIONS

Book Chapters

1. S.P. Singh, A.R. Paterson, L. Wendelberger, **C.M. Fancher**, B.J. Reich, R.C. Smith, A.G. Wilson and J.L. Jones, Algorithms in Diffraction Profile Analysis (in press)

Peer-reviewed

45. A,T. Jhuang, M. Fuentes, J.L. Jones, G. Esteves, **C.M. Fancher**, M. Furman, and B.J. Reich, Spatial Signal Detection Using Continuous Shrinkage Priors, (in press)

44. M. Palizdar, D. Mallick, T. Maity, S. Roy, **C.M. Fancher***, J. L. Jones, T. P. Comyn, E. Suvaci, and A. J. Bell, Crystallographic and magnetic investigations of textured bismuth ferrite lead titanate layers, (in press)

43. **C.M. Fancher**, C. Hoffmann, V. Sedov, A. Parizzi, W. Zhou, A.J. Schultz, X.P. Wang, and D. Long, Time Filtering of Event Based Neutron Data: A Pathway to Study the Dynamic Structural Responses of Materials, *Review of Scientific Instruments*, 89, 092803 (2018); DOI:10.1063/1.5031798

42. **C.M. Fancher**, C. Hoffmann, M.D. Frontzek, J. Bunn, and E.A. Payzant, Neutron Diffraction Tools to Probe Crystallographic Textures of Materials, *Review of Scientific Instruments*, (in press)

41. P. Cornwell, J. Bunn, **C.M. Fancher***, E.A. Payzant, Current Capabilities of the Residual Stress Diffractometer at the High Flux Isotope Reactor, *Review of Scientific Instruments*, 89, 092804 (2018); DOI:10.1063/1.5037593

40. B. Kemerling, J.C. Lippold, **C.M. Fancher**, J. Bunn, Residual Stress Evaluation of Components Produced via Direct Metal Laser Sintering, *Welding in the World*, May 2018, Volume 62, Issue 3, pp 663674; DOI:10.1007/s40194-018-0572-z

39. I. Veronica Ciuchi, C.C. Chung, **C.M. Fancher**, C. Capiani, J.L. Jones, L. Mitoseriu, and C. Galassi, Field induced metastable ferroelectric phase in PLZT 3/90/10 ceramics, Journal of the European Ceramics Society, 38 (2018); DOI:10.1016/j.jeurceramsoc.2017.11.009

38. I. Veronica Ciuchi, C.C. Chung, **C.M. Fancher**, J. Guerrier, J. Forrester, J.L. Jones, L. Mitoseriu, and C. Galassi, Field-induced antiferroelectric to ferroelectric transition in $(Pb_{1-x}La_x)(Zr_{0.90}Ti_{0.10})_{1-x/4}O_3$ investigated by in situ X-ray diffraction, Journal of the European Ceramics Society, 37 (2017); DOI:10.1016/j.jeurceramsoc.2017.06.018

37. C. Richter, T. Schenk, M. H. Park, F. A. Tscharntke, E. D. Grimley, J. M. LeBeau, C. Zhou, **C.M. Fancher**, J. L. Jones, T. Mikolajick, and U. Schroeder, Si Doped Hafnium OxideA Fragile Ferroelectric System, Advanced Electronic Materials, (2017); DOI:10.1002/aelm.201700131

36. C.C. Chung, **C.M. Fancher***, C. Issac, J. Nikkel, and J.L. Jones, Temperature dependence of field-responsive mechanisms in lead zirconate titanate polycrystalline ceramics during electric field application, Journal of the American Ceramics Society, (2017); DOI:10.1111/jace.14979

35. R. Keech, C. Morandi, M. Wallace, G. Esteves, L. Denis, J. Guerrier, R.L. Johnson-Wilke, **C.M. Fancher**, J.L. Jones, S. Trolier-McKinstry, Thickness dependent domain wall reorientation in 70/30 lead magnesium niobate-lead titanate thin films, Journal of the American Ceramics Society, (2017); DOI:10.1111/jace.14927

34. M. H. Park, T. Schenk, **C.M. Fancher**, E. D. Grimley, C. Zhou, C. Richter, J.M. LeBeau, J.L. Jones, T. Mikolajick, and U. Schroeder, A Comprehensive Study on the Structural Evolution of HfO_2 Thin Films Doped with Various Dopants, *Journal of Materials Chemistry C*, 19 (2017); DOI:10.1039/c7tc01200d

33. G. Esteves, **C.M. Fancher***, S. Roehrig, M. Deluca, and J.L. Jones, Electric-Field-Induced Structural Changes in Multi-Layer Piezoelectric Actuators during Electrical and Mechanical Loading, *Acta Materialia*,132 (2017) 96-105; DOI:10.1016/j.actamat.2017.04.014

32. D.A. Ochoa, R. Levit, **C.M. Fancher***, G. Esteves, J.L. Jones, and J.E. Garca, Low temperature dielectric relaxation in ordinary ferroelectrics: enlightenment from high-resolution X-ray diffraction, *Journal of Physics D: Applied Physics*, 50 (2017) 205305; DOI:10.1088/1361-6463/aa6b9e

31. **C.M. Fancher**, J. E. Blendell, and K.J. Bowman, Decoupling of Superposed Textures in an Electrically Biased Piezoceramic with a 100 Preferred Orientation, *Applied Physics Letters*, 110, 062901 (2017); DOI:10.1063/1.4976009

30. T. Iamsasri, J. Guerrier, G. Esteves, **C. M. Fancher**, A.G. Wilson, R.C. Smith, E. Paisley, R. Johnson-Wilke, J Ihlefeld, N. Bassiri-Gharb, and J. L. Jones, A Bayesian approach to modeling diffraction profiles and application to ferroelectric materials, *Journal of Applied Crystallography*, **50**, 211220 (2017); DOI:10.1107/S1600576716020057

29. D. Hou, E. Aksel, **C.M. Fancher**, T.-M. Usher, T. Hoshina, H. Takeda, T. Tsurumi, and J.L. Jones, Formation of Sodium Bismuth TitanateBarium Titanate during Solid State Synthesis,*Journal of the American Ceramics Society*, 2017; 19;DOI:10.1016/10.1111/jace.14631

28. **C.M. Fancher**, G. Esteves, S. Roehrig, M. Deluca, and J.L. Jones, Quantifying the Extent of 180° Domain Reversal via in situ X-Ray Diffraction, *Acta Materialia*, 126 (2017) 36-43; DOI:10.1016/j.actamat.2016.12.037

27. M.J. Burch, **C.M. Fancher***, S. Patala, E.C. Dickey, Mapping 180° Polar Domains Using Electron Backscatter Diffraction and Dynamical Scattering Simulations, *Ultramicroscopy*, 174, pg 47-51 (2017), DOI:10.1016/j.ultramic.2016.11.013

26. D. K. Khatua, K.V. Lalitha, **C.M. Fancher***, J.L. Jones, and R. Ranjan, Coupled domain wall motion, lattice strain and phase transformation in morphotropic phase boundary composition of $PbTiO_3$-$BiScO_3$ piezoelectric ceramic, *Journal of Applied Physics* **120**, 154104 (2016); DOI:10.1063/1.4964947

25. G. Esteves, **C. M. Fancher***, M. Wallace, R.L. Johnson-Wilke, R.H.T. Wilke, S. Trolier-McKinstry, T.G. Polcawich, and J. L. Jones, *In situ* X-ray Diffraction of Micron-Sized Lead Zirconate Titanate Cantilever During Actuation, *Materials and Design*, [111] pg. 429-434 (2016); DOI:10.1016/j.matdes.2016.09.011

24. J. Boltersdorf, B. Zoellner, **C.M. Fancher**, J.L. Jones, and P.A. Maggard, Solid Solutions with Single and Double-Metal Substitutions: Adjusting the Band Energies Around the Water Redox Couples, *The Journal of Physical Chemistry*, 120 (34) pg. 19175-19188 (2016); DOI:10.1021/acs.jpcc.6b05758

23. **C.M. Fancher**, Z. Han, I. Levin, K. Page, B. Reich, R. Smith, A. Wilson, and J.L. Jones, Use of Bayesian Inference in Crystallographic Structure Refinement via Full Diffraction Profile Analysis, *Scientific Reports*, **6**, 31625, (2016); DOI:10.1038/srep31625

22. G. Tutuncu, J. Chen, L. Fan, **C.M. Fancher**, J. Forrester, J. Zhao, and J.L. Jones, Domain wall and interphase boundary motion in (1-x)$Bi(Mg_{0.5}Ti_{0.5})O_3$ x$PbTiO_3$ near the morphotropic phase boundary, *Journal of Applied Physics*, **120**, 044103 (2016); DOI:10.1063/1.4959820

21. D. K. Khatua, K.V. Lalitha, **C.M. Fancher***, J.L. Jones, and R. Ranjan, Anomalous reduction in domain wall displacement at the morphotropic phase boundary of the piezoelectric alloy system $PbTiO_3$-$BiScO_3$, *Physical Review B* **93**, 104103 (2016); DOI:10.1103/PhysRevB.93.104103

20. G. Esteves, M. Wallace, R.L. Johnson-Wilke, **C. M. Fancher***, R.H.T. Wilke, S. Trolier-McKinstry, and J. L. Jones, "Effect of Mechanical Constraint on Domain Reorientation in Predominantly 111 Textured Lead Zirconate Titanate Films", *Journal of the American Ceramics Society*, (2016)); DOI:10.1111/jace.14159

19. M. Palizdar, **C.M. Fancher***, T.P. Comyn, T. J. Stevenson, S.F. Poterala , G.L. Messing, E. Suvaci, A.P. Kleppe, A.J. Jephcoat and A.J. Bell, "Characterization of thick bismuth ferrite-lead titanate films processed by tape casting and templated grain growth, *Journal of the European Ceramics Society*, 35 44534458 (2015); DOI:10.1016/j.jeurceramsoc.2015.08.037

18. K.V. Lalitha, **C.M. Fancher***, J.L. Jones, and R. Ranjan, High energy synchrotron x-ray diffraction study of electric field induced strain behaviour in the monoclinic composition of $BiScO_3$-$PbTiO_3$, *Applied Physics Letters*, 107, 052901 (2015); DOI:10.1063/1.4927678

17. J.H. Dycus, J.S. Harris, X. Sang, **C.M. Fancher**, S.D. Findlay, A.A. Oni, T.E. Chan, C.C. Koch, J.L. Jones, L.J. Allen, D.L. Irving, and J.M. LeBeau "Accurate nanoscale crystallography in real-space using scanning transmission electron microscopy", *Microscopy and Microanalysis*, 21[4] (2015); DOI:10.1017/S1431927615013732

16. P. Lomenzo, Q. Takmeel, **C.M. Fancher**, C. Zhou, N. Rudawski, S. Moghaddam, J.L. Jones, and T.Nishida, "Ferroelectric Si-Doped HfO_2 on Highly Doped Germanium", *IEEE Electron Device Letters*, 36[8] (2015); DOI:10.1109/LED.2015.2445352

15. L. Zhao, D. Hou, T.M. Usher, T. Iamsasri, **C.M. Fancher***, J.S. Forrester, T. Nishida, S. Moghaddam, and J.L. Jones, "Structure of 3 at.% and 9 at.% Si-doped HfO_2 from combined refinement of X-ray and neutron diffraction patterns", *Journal of Alloy and Compounds*, 646[15] (2015); DOI:10.1016/j.jallcom.2015.06.084

14. D. Hou, **C.M. Fancher***, L. Zhao, G. Esteves, and J.L. Jones, Non-equilibrium Si-doped HfO_2, *Journal of Applied Physics*, 117, 244103 (2015); DOI:10.1063/1.4923023

13. **C.M. Fancher**, L. Zhao, M. Nelson, L. Bai, G. Shen, and J.L. Jones, High Pressure Structures of Si doped HfO_2, *Journal of Applied Physics*, 117, 234102 (2015); DOI:10.1063/1.4922717

12. P. Lomenzo, Q. Takmeel, C. Zhou, **C.M. Fancher**, E. Lambers, N. Rudawski, J.L. Jones, S. Moghaddam, and T.Nishida "TaN Interface Properties and Electric Field Cycling Effects on Ferroelectric Si-Doped HfO_2 Thin Films", *Journal of Applied Physics*. 117, 134105 (2015); DOI:10.1063/1.4916715

11. M. Wallace, R.L. Johnson-Wilke, G. Esteves, **C. M. Fancher**, R.H.T. Wilke, J. L. Jones, and S. Trolier-McKinstry, *In situ* measurement of increased ferroelectric/ferroelastic domain wall motion in declamped tetragonal lead zirconate titanate thin films, *Journal of Applied Physics*, 117, 054103 (2015); DOI:10.1063/1.4907394

10. A. Biancoli, **C.M. Fancher**, J.L. Jones, and D. Damjanovic, Breaking of macroscopic centric symmetry in paraelectric phases of ferroelectric materials and implications for flexoelectricity, *Nature Materials*, 14, 224229 (2015); DOI:10.1038/nmat4139

9. G. Esteves, **C.M. Fancher***, J.L. Jones, *In situ* characterization of polycrystalline ferroelectrics using x-ray and neutron diffraction, *Journal of Materials Research*, 30, 340-356 (2015); DOI:10.1557/jmr.2014.302

8. P.D. Lomenzo, Q. Takmeel, C. Zhou, Y. Liu, **C.M. Fancher**, J.L. Jones, S. Moghaddam, and T. Nishida, The Effects of Layering in Ferroelectric Si-Doped HfO_2 Thin Films, *Applied Physics Letters*, 105, 072906 (2014); DOI:10.1063/1.4893738

7. **C.M. Fancher**, W. Jo, J. Rodell, J. E. Blendell, K.J. Bowman, Effect of Texture on Temperature Dependent Properties of $K_{0.5}Na_{0.5}NbO_3$ modified $Bi_{1/2}Na_{1/2}TiO_3$-x$BaTiO_3$, *Journal of the American Ceramics Society*, 97[8], 25572563 (2014); DOI:10.1111/jace.12986

6. P.D. Lomenzo, P. Zhao, Q. Takmeel, S. Moghaddam, T. Nishida, M. Nelson, **C.M. Fancher**, E.D. Grimley, X. Sang, J.M. LeBeau and J.L. Jones, Ferroelectric phenomena in Si-doped HfO2 thin films with TiN and Ir electrodes, *Journal of Vacuum Science & Technology B*, 32, 03D123 (2014); DOI:10.1116/1.4873323

5. L. Zhao, M. Nelson, H Aldridge, T. Iamsasri, **C.M. Fancher**, J.S. Forrester, T. Nishida, S. Moghaddam, and J.L. Jones, Crystal structure of Si-doped HfO_2, *Journal of Applied Physics*, 115, 034104 (2014); DOI:10.1063/1.4861733

4. **C.M. Fancher**, T . Iamsasri, J. E. Blendell, K.J. Bowman, Effect of Crystallographic Texture on the Field-Induced-Phase Transformation Behavior of $Bi_{0.5}Na_{0.5}TiO3$-7$BaTiO3$-2$K_{0.5}Na_{0.5}NbO_3$, *Materials Research Letters*., 1[3], 156160, (2013); DOI:10.1080/21663831.2013.800606

3. **C.M. Fancher**, J.E. Blendell, and K. J. Bowman, Poling Effect on d_{33} in Textured Bi0.5Na0.5TiO_3-based Materials, *Scripta Materiala* (2013); DOI:10.1016/j.scriptamat.2012.10.047

2. M.E. Rogers, **C.M. Fancher**, and J.E. Blendell, Domain Evolution in Lead-Free Thin Film Piezoelectric Ceramics, *Journal of Applied Physics*, 112, 052014 (2012); DOI:10.1063/1.4746088

1. B. Li, **C.M. Fancher**, J.E. Blendell, R.E. Garcia, K.J. Bowman, Ferroelastic Domains and Anisotropy in Lead Free Piezoelectrics, Materials Science Forum, 702:995-998 (2011); DOI:MSF.702-703.995

Technical Reports

2. D.T. Hoelzer, C.P. Massey, **C.M. Fancher**, W. Tang, Complete Status Report Documenting the Development of Friction Stir Welding for Producing a Butt Joint in Thin Wall Tubing of ODS Alloys, ORNL/TM-2018/929

1. T. Watkins, K. Unocic, P. Maziasz, J.R. Bunn, **C.M. Fancher**, A. Peralta, S. Sundarraj, J. Neumann, Residual Stress Determination of Direct Metal Laser Sintered (DMLS) Inconel Specimens and Parts, ORNL/TM-2017/733

Conference Proceedings

6. E. D. Grimley, S. Frisone, T. Schenk, M.H. Park, **C.M. Fancher**, T. Mikolajick, J.L. Jones, U. Schroeder, and J.M. LeBeau, Insights into Texture and Phase Coexistence in Polycrystalline and Polyphasic Ferroelectric HfO2 Thin Films using 4D-STEM, Microscopy and Microanalysis, 24 (S1) 2018

5. T. Ikeda, J. Bunn, **C.M. Fancher**, A. Seid, T. Motani, H. Matsuda, T. Okayama, Non-Destructive Measurement of Residual Strain in Connecting Rods Using Neutrons," SAE Technical Paper 2018-01-1063, 2018, DOI:10.4271/2018-01-1063

4. M.J. Burch, D.T. Harris, **C.M. Fancher**, J.P. Maria, E.C. Dickey, Domain Structure of Bulk and Thin-Film Ferroelectrics By Transmission Kikuchi Diffraction, Microscopy and Microanalysis, 21 (S3) 2015

3. J.H. Dycus, J.S. Harris, X. Sang, **C.M. Fancher**, S.D. Findlay, A.A. Oni, T.E. Chan, C.C. Koch, J.L. Jones, L.J. Allen, D.L. Irving, and J.M. LeBeau, Highly Accurate Real Space Nanometrology Using Revolving Scanning Transmission Electron Microscopy, Microscopy and Microanalysis, 21 (S3) 2015

2. M. Palizdar, D. Mallick, T. Maity, S. Roy, T.P. Comyn, T.J. Stevenson, **C.M. Fancher**, J.L. Jones, S.F. Poterala, G.L Messing, E. Suvaci, A.P. Kleppe, A.J Jehcoat, A.J Bell, Texture analysis of thick bismuth ferrite lead titanate layers, International Symposium on the Applications of Ferroelectrics Piezoresponse Force Microscopy Workshop, State College (2014); DOI:10.1109/ISAF.2014.6922999

1. **C.M. Fancher**, J.E. Blendell, and K.J. Bowman, Reconstruction of the Field-Induced Transformation Strain in 001 pseudocubic Oriented $Bi_{0.5}Na_{0.5}TiO3$-7$BaTiO3$-2$K_{0.5}Na_{0.5}NbO_3$ Bulk Ceramics, International Symposium on the Applications of Ferroelectrics Piezoresponse Force Microscopy Workshop, Praque (2013); DOI:10.1109/ISAF.2013.6748699

Under Review

1. M.J. Burch, **C.M. Fancher***, S. Patala, E.C. Dickey, Utilizing Gnomonic Distortion for Enhanced Indexing in Electron Backscatter Diffraction and Transmission Kikuchi Diffraction

2. M.H. Park, T. Schenk, S. Starschich, **C.M. Fancher**, H.J. Kim, U. Boettger, C. S. Hwang, and U. Schroeder, Effect of film thickness on the ferroelectric properties of fluorite-type ferroelectric thin films (Book Chapter)

3. B. Johnson, **C.M. Fancher**, D. Hou, J. L. Jones, Structure of HfO2 modified with Y, Gd, and Zr at Ambient Conditions and High Pressures

In preperation

1. **C.M. Fancher**, S. Gorfman, H. Simons, T. Iamsasri, S. Prasertpalichat, D.P. Cann, H. Choe, J.L. Jones, Pathways for polarization inversion in ferroelectric materials"
2. J. Einhorn, **C.M. Fancher**, J. Bunn, M. Tucker, S. Agnew, Comparison of Crystallographic Texture Measured on Various Instruments (working title)
3. D.P. Parekh, M. G. Mohammed, T. Neumann, **C.M. Fancher**, D. Saini, J. Guerrier, C. Ladd, E. Hubbard, J.L. Jones and M.D. Dickey, Patterning of Liquid Metal Alloys using an Imprinting Process at Room Temperature
4. A.J. Schultz, **C.M. Fancher***, C.M. Hoffman, X. Wang, Neutron Diffraction Structure of the Organic Ferroelectric, PhMDA, With and Without and Applied Alternating Field

PRESETATIONS

Invited-presentations

5. Time Filtering of Event Based Neutron Data: a Pathway to Study the Dynamic Structural Responses of Materials, 2018 Spring MRS
4. Quantifying the Extent of 180° Domain Switching using in situ X-Ray Diffraction, 2015 US-Japan Seminar on Dielectrics
3. In-situ X-ray Diffraction for Materials Development and Innovation, AIF workshop on *in-situ* characterization
2. Texture Property relationship in Lead-Free $K_{0.5}Na_{0.5}NbO_3$ modified $Bi_{1/2}Na_{1/2}TiO_3$-x$BaTiO_3$, 2013 US-Japan Seminar on Dielectrics
1. Latex for thesis and dissertation writing, Purdue MSE Colloquium

Oral-presentations

8. Time Resolved Neutron Single Crystal Diffraction: A Technique to Probe Polarization Switching in Organic Ferroelectrics, 2018 Electronic Application of Materials
7. "Quantifying the Extent of 180° Domain Switching using in situ X-Ray Diffraction, 2016 Electronic Materials and Applications
6. "New Approaches for Structural Characterization of Films and Polycrystals: in situ X-ray Diffraction During Field Application" Fall 2015 meeting of Center for Dielectrics and Piezoelectrics
5. "Effect of Dopant on the High-Pressure Structure of HfO_2" 2015 International Conference on Electroceramics
4. "New Approaches for Structural Characterization of Films and Polycrystals: in situ X-ray Diffraction During Field Application" Fall 2014 meeting of Center for Dielectrics and Piezoelectrics
3. Crystallographic Texture Effect on the Electromechanical Response of $K_{0.5}Na_{0.5}NbO_3$ modified $Bi_{0.5}Na_{0.5}TiO_3$-$BaTiO_3$ 2013 Electronic Materials and Applications
2. Texture Enhanced Properties in the lead-free piezoelectric $Na_{0.5}Bi_{0.5}TiO_3$ (NBT) System 2012 Electronic Materials and Applications
1. Domain Wall Motion in lead-free Piezoelectric (NBT) 2011 Electronic Materials and Applications

Conference Posters

8. Progress on the Development of Neutron Texture Analysis Methods at ORNL, 2017 International Conference on Texture of Materials
7. "New Approaches for Structural Characterization of Films and Polycrystals: in situ X-ray Diffraction During Field Application" Spring 2015 meeting of Center for Dielectrics and Piezoelectrics
6. "New Approaches for Structural Characterization of Films and Polycrystals: in situ X-ray Diffraction During Field Application" Fall 2014 meeting of Center for Dielectrics and Piezoelectrics
5. Poling Induced Fatigue in 100 Textured Lead-Free Piezoelectric $Bi_{0.5}Na_{0.5}TiO_3$ 2012 Fundamental Physics of Ferroelectrics

4. Texture and Anisotropy in Novel Lead-Free Piezoelectrics 2012 International Congress on Ceramics 4
3. Texture and Anisotropy in Bi0.5Na0.5TiO-Based Piezoelectrics 2012 Materials Science and Engineering
2. Texture in Lead-Free Ferroelectrics The 2012 European Powder Diffraction Conference
1. Domain Alignment and Phase Stability in Lead Free Piezoelectrics 2011 International Symposium on Piezoresponse Force Microscopy & Nanoscale Phenomena in Polar Materials

List of References

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