

Stephen Jesse, PhD

Distinguished Research Scientist
The Center for Nanophase Materials Sciences
Oak Ridge National Laboratory
865.384.8002
sjesse@ornl.gov

Research Interests:

- Developing and using novel microscopy methods to induce and study nano- and atomic scale transformations
- Building new understanding of material behavior at fundamental length scales
- Fabricate structures at nano and atomic scales for novel devices
- Developing large scale data analytics of high-dimensional, multi-spectral information for functional imaging
- Technique development using advanced data acquisition, feedback, and control for scanning probe and electron and ion microscopies

Education:

Ph.D. 2004	University of Tennessee	Materials Science
M.S. 2000	University of Tennessee	Mechanical Engineering
B.S. 1996	University of Tennessee	Mechanical Engineering

Professional Experience:

2021 – Present	Distinguished Scientist, Section Head of the Nanomaterials Characterization Section at The Center for Nanophase Materials Sciences
2020 – 2022	Group Leader of the Functional Atomic Force Microscopy Group at The Center for Nanophase Materials Sciences, Oak Ridge National Laboratory
2018 – Present	PI of FWP in Quantum Information Sciences, Oak Ridge National Laboratory
2014 – 2018	Senior Scientist, Leader of the Directed Nanoscale Transformations Theme, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory
2008 – 2014	R&D Staff Scientist, Scanning Probe Microscopy Group Center for Nanophase Materials Sciences, Oak Ridge National Laboratory
2004 – 2008	Postdoctoral Research Associate, Scanning Probe Microscopy Group Center for Nanophase Materials Sciences, Oak Ridge National Laboratory
2000 – 2004	Graduate Research Asst., University of Tennessee, Knoxville, Materials Science
1996 – 2000	Graduate Research Asst., University of Tennessee, Knoxville, Mechanical Eng.

Honors, Awards:

2020	UT-Battelle Award: Outstanding Scholarly Output in Science and Technology
2018	R&D100 Award: The Atomic Forge
2016	R&D100 Award: G-mode Microscopy
2016	Microscopy Today Innovation Award: G-Mode

2016 ORNL Significant Event award for BEAM project
 2015 ORNL Significant Event award for Electron Microscopy Control (SENS)
 2014 UT-Battelle Technology Commercialization Award
 2012 American Ceramic Society Ceramographic Competition Awards
 2011 UT-Battelle Scientific Research Team Award: Electrochemical Strain Microscopy
 2011 Microscopy Today Innovation Award: Electrochemical Strain Microscopy
 2010 Roland B. Snow Award, American Ceramics Society: Electrochemical Strain Microscopy
 2010 R&D 100 Award for “Z-therm Modulated Thermal Analysis”
 2010 Microscopy Today Innovation Award: Band Excitation
 2008 Southeast FLC Excellence in Technology Transfer
 2008 Materials Research Society Best Poster Award
 2008 R&D 100, “Band Excitation Method for Scanning Probe Microscopy”
 2008 Cosslett Award, best invited paper, Microscopy & MicroAnalysis Conference
 2006 ORNL Director’s Award, Outstanding Team Achievement in Science and Technology

Patents

1 patent prepared, 1 patent submitted, 14 patents issued:

10,400,351: Bulk nanofabrication with single atomic plane precision via atomic-level sculpting
 9,612,257: Full Information Acquisition in Scanning Probe Microscopy and Spectroscopy
 9,541,576: Electrochemical Force Microscopy
 8,719,961: Real Space Mapping of Ionic Diffusion and Electrochemical Activity in Energy Storage and Conversion Materials
 8,752,211: Real Space Mapping of Oxygen Vacancy Diffusion and Electrochemical Transformations by Hysteretic Current Reversal Curve Measurements
 8,540,542: Transparent Conductive Nano-Composites
 8,484,759: Spatially Resolved Quantitative Mapping of Thermomechanical Properties and Phase Transition Temperatures Using Scanning Probe Microscopy
 8,384,020: Spatially Resolved Thermal Desorption/Ionization Coupled with Mass Spectrometry
 7,775,086: Band Excitation Method Applicable to Scanning Probe Microscopy
 7,491,934: SEM Technique for Imaging and Measuring Electronic Transport in Nanocomposites Based on Electric Field Induced Contrast

Recent Funding (last 6 years)

PI: “Understanding and Controlling Entangled and Correlated Quantum States in Confined Solid-state Systems Created via Atomic Scale Manipulation”. US DOE, Quantum Information Sciences, ERKCK47, renewed, \$1.5M/year, FY21-FY24
 PI: “Enabling Topological Quantum Information Processing”, \$1.6M FY19-FY20
 CoPI: Center Nanophase Materials Sciences, Directed Nanoscale Transformations, Part of: Department of Energy, Office of Basic Energy Sciences Proposal ERKZ99, \$21.3M FY16-FY19.
 PI: “Fabricating Qubits from Low-Dimensional Materials”, FY17 \$850k FY17-18
 PI: “Sculpting Silicon: 3D fabrication of semiconductors on the atomic level”, 158K, FY18
 CoPI: “Hyperspectral Compressive Neutron Lensless Imaging”, 500k, FY18-19
 CoPI: “Operando 4D STEM to Probe Dynamic Chemical Reactivity: Integrated Approach to Understand and Design Functional Interfacial Chemistry”, 900k, FY18-19

PI: Proctor & Gamble: WFO “Dynamic Force Distance Measurements of Colloidal Interactions”, requested \$80k FY17

PI: “Exploring Structure and Functionality of Oxides in Real Space: “Deep Data” in Atomic Resolution Imaging”, \$900k FY15-16

Postdoctoral Advisor/Co-advisor to:

Shiva Raghuraman, 2021 - present

Ondrej Dyck, 2017 – 2019, Currently Staff at ORNL

Liam Collins, 2015 – 2018, Currently Staff at ORNL

Suhas Somnath, 2014 – 2017, Currently Staff at ORNL

Sangmo Yang, 2014-2017, Currently Professor in S. Korea

Alex Belianinov, 2013-2016, Currently Staff at Sandia National Laboratory

Anton Ilev, 2012-2015, Currently Staff at ORNL

Evgheni Strelcov, 2013-2016, Currently Postdoc at NIST, Gaithersburg

Thomas Arruda, 2011-2014, Currently Professor at Salve Regina University

Amit Kumar, 2010-2014, Currently Professor at Queen’s College, IR

Yunseok Kim, 2010-2013, Currently Professor in S. Korea

Professional Activities

President of a start-up company to commercialize technology I develop

Chair of American Physical Society Group on Instrumentation and Measurement Science 2019-2021

Member of: Materials Research Society, AVS, APS

2011, 2012 Lead organizer for two MRS symposia focused on SPM microscopy

Workshops in advanced data analysis: Microscopy and Microanalysis 2017, 2018, Big

Data Analysis workshop at ORNL, 2018, Materials Research Society Fall 2017, MRS

webinar on atomic level manipulation.

PhD Thesis Committee Member

Publications

Author of >300 articles in refereed journals, H-index = 76 (google scholar)

Including: 16 Nature family, 27 ACS Nano, 9 Advanced Materials, 10 Advanced Functional Materials, 10 Nano Letters, 8 PRL, 2 PNAS, 1 Science

Full List: <https://scholar.google.com/citations?user=uiTAx2cAAAAJ&hl=en>

Peer-Reviewed Publications:

1. Schon, N.; Schierholz, R.; **Jesse, S.**; Yu, S. C.; Eichel, R. A.; Balke, N.; Hausen, F., Signal Origin of Electrochemical Strain Microscopy and Link to Local Chemical Distribution in Solid State Electrolytes. *Small Methods* 2021, 5 (5).

2. Maxim, Z.; **Jesse, S.**; Sumpter, B. G.; Kalinin, S. V.; Dyck, O., Tracking atomic structure evolution during directed electron beam induced Si-atom motion in graphene via deep machine learning. *Nanotechnology* 2021, 32 (3).

3. Kalinin, S. V.; Dyck, O.; **Jesse, S.**; Ziatdinov, M., Exploring order parameters and dynamic processes in disordered systems via variational autoencoders. *Science Advances* 2021, 7 (17).

4. Dyck, O.; Ziatdinov, M.; **Jesse, S.**; Bao, F.; Nobakht, A. Y.; Maksov, A.; Sumpter, B. G.; Archibald, R.; Law, K. J. H.; Kalinin, S. V., Probing potential energy landscapes via electron-beam-induced single atom dynamics. *Acta Materialia* 2021, 203.
5. Dyck, O.; Zhang, L. Z.; Yoon, M.; Swett, J. L.; Hensley, D.; Zhang, C.; Rack, P. D.; Fowlkes, J. D.; Lupini, A. R.; **Jesse, S.**, Doping transition-metal atoms in graphene for atomic-scale tailoring of electronic, magnetic, and quantum topological properties. *Carbon* 2021, 173, 205-214.
6. Dyck, O.; Swett, J. L.; Lupini, A. R.; Mol, J. A.; **Jesse, S.**, Imaging Secondary Electron Emission from a Single Atomic Layer. *Small Methods* 2021, 5 (4).
7. Ziatdinov, M.; Kim, D.; Neumayer, S.; Vasudevan, R. K.; Collins, L.; **Jesse, S.**; Ahmadi, M.; Kalinin, S. V., Imaging mechanism for hyperspectral scanning probe microscopy via Gaussian process modelling. *Npj Computational Materials* 2020, 6 (1).
8. Ziatdinov, M.; Kim, D.; Neumayer, S.; Collins, L.; Ahmadi, M.; Vasudevan, R. K.; **Jesse, S.**; Ann, M. H.; Kim, J. H.; Kalinin, S. V., Super-resolution and signal separation in contact Kelvin probe force microscopy of electrochemically active ferroelectric materials. *Journal of Applied Physics* 2020, 128 (5).
9. Zhang, C.; Dyck, O.; Garfinkel, D. A.; Stanford, M. G.; Belianinov, A. A.; Fowlkes, J. D.; **Jesse, S.**; Rack, P. D., Pulsed Laser-Assisted Helium Ion Nanomachining of Monolayer Graphene-Direct-Write Kirigami Patterns (vol 9, 1394, 2019). *Nanomaterials* 2020, 10 (2).
10. Vasudevan, R. K.; Kelley, K. P.; Eliseev, E.; **Jesse, S.**; Funakubo, H.; Morozovska, A.; Kalinin, S. V., Bayesian inference in band excitation scanning probe microscopy for optimal dynamic model selection in imaging. *Journal of Applied Physics* 2020, 128 (5).
11. Ovchinnikov, O. S.; O'Hara, A.; **Jesse, S.**; Hudak, B. M.; Yang, S. Z.; Lupini, A. R.; Chisholm, M. F.; Zhou, W.; Kalinin, S. V.; Borisevich, A. Y.; Pantelides, S. T., Detection of defects in atomic-resolution images of materials using cycle analysis. *Advanced Structural and Chemical Imaging* 2020, 6 (1).
12. Nobakht, A. Y.; Dyck, O.; Lingerfelt, D. B.; Bao, F.; Ziatdinov, M.; Maksov, A.; Sumpter, B. G.; Archibald, R.; **Jesse, S.**; Kalinin, S. V.; Law, K. J. H., Reconstruction of effective potential from statistical analysis of dynamic trajectories. *Aip Advances* 2020, 10 (6).
13. Neumayer, S. M.; Saremi, S.; Martin, L. W.; Collins, L.; Tselev, A.; **Jesse, S.**; Kalinin, S. V.; Balke, N., Piezoresponse amplitude and phase quantified for electromechanical characterization. *Journal of Applied Physics* 2020, 128 (17).
14. Neumayer, S. M.; **Jesse, S.**; Velarde, G.; Kholkin, A. L.; Kravchenko, I.; Martin, L. W.; Balke, N.; Maksymovych, P., To switch or not to switch - a machine learning approach for ferroelectricity. *Nanoscale Advances* 2020, 2 (5), 2063-2072.
15. Neumayer, S. M.; Brehm, J. A.; Tao, L.; O'Hara, A.; Ganesh, P.; **Jesse, S.**; Susner, M. A.; McGuire, M. A.; Pantelides, S. T.; Maksymovych, P.; Balke, N., Local Strain and Polarization Mapping in Ferrielectric Materials. *Acs Applied Materials & Interfaces* 2020, 12 (34), 38546-38553.
16. Lorenz, M.; Wagner, R.; **Jesse, S.**; Marsh, J. M.; Mamak, M.; Proksch, R.; Ovchinnikova, O. S., Nanoscale Mass Spectrometry Multimodal Imaging via Tip-Enhanced Photothermal Desorption. *Acs Nano* 2020, 14 (12), 16791-16802.
17. Liu, Y. T.; Li, M. X.; Wang, M. S.; Collins, L.; Ievlev, A. V.; **Jesse, S.**; Xiao, K.; Hu, B.; Belianinov, A.; Ovchinnikova, O. S., Twin domains modulate light-matter interactions in metal halide perovskites. *Apl Materials* 2020, 8 (1).
18. Liu, Y. T.; Ievlev, A. V.; Collins, L.; Belianinov, A.; Keum, J. K.; Ahmadi, M.; **Jesse, S.**; Retterer, S. T.; Xiao, K.; Huang, J. S.; Sumpter, B. C.; Kalinin, S. V.; Hu, B.; Ovchinnikova, O. S., Strain-Chemical Gradient and Polarization in Metal Halide Perovskites. *Advanced Electronic Materials* 2020, 6 (4).
19. Li, X.; Dyck, O.; Unocic, R. R.; Ievlev, A. V.; **Jesse, S.**; Kalinin, S. V., Statistical learning of governing equations of dynamics from in-situ electron microscopy imaging data. *Materials & Design* 2020, 195.

20. Kelley, K. P.; Ziatdinov, M.; Collins, L.; Susner, M. A.; Vasudevan, R. K.; Balke, N.; Kalinin, S. V.; **Jesse, S.**, Fast Scanning Probe Microscopy via Machine Learning: Non-Rectangular Scans with Compressed Sensing and Gaussian Process Optimization. *Small* 2020, 16 (37).
21. Kelley, K. P.; Ren, Y.; Morozovska, A. N.; Eliseev, E. A.; Ehara, Y.; Funakubo, H.; Giamarchi, T.; Balke, N.; Vasudevan, R. K.; Cao, Y.; **Jesse, S.**; Kalinin, S. V., Dynamic Manipulation in Piezoresponse Force Microscopy: Creating Nonequilibrium Phases with Large Electromechanical Response. *ACS Nano* 2020, 14 (8), 10569-10577.
22. Kelley, K. P.; Li, L. L.; Ren, Y.; Ehara, Y.; Funakubo, H.; Somnath, S.; **Jesse, S.**; Cao, Y.; Kannan, R.; Vasudevan, R. K.; Kalinin, S. V., Tensor factorization for elucidating mechanisms of piezoresponse relaxation via dynamic Piezoresponse Force Spectroscopy. *Npj Computational Materials* 2020, 6 (1).
23. Gao, Q.; Sun, W. W.; Ilani-Kashkoul, P.; Tselev, A.; Kent, P. R. C.; Kabengi, N.; Naguib, M.; Alhabeb, M.; Tsai, W. Y.; Baddorf, A. P.; Huang, J. S.; **Jesse, S.**; Gogotsi, Y.; Balke, N., Tracking ion intercalation into layered Ti₃C₂ MXene films across length scales. *Energy & Environmental Science* 2020, 13 (8), 2549-2558.
24. Dyck, O.; Zhang, C.; Rack, P. D.; Fowlkes, J. D.; Sumpter, B.; Lupini, A. R.; Kalinin, S. V.; **Jesse, S.**, Electron-beam introduction of heteroatomic Pt-Si structures in graphene. *Carbon* 2020, 161, 750-757.
25. Dyck, O.; Yoon, M.; Zhang, L. Z.; Lupini, A. R.; Swett, J. L.; **Jesse, S.**, Doping of Cr in Graphene Using Electron Beam Manipulation for Functional Defect Engineering. *ACS Applied Nano Materials* 2020, 3 (11), 10855-10863.
26. Dyck, O.; Lingerfelt, D.; Kim, S.; **Jesse, S.**; Kalinin, S. V., Direct matter disassembly via electron beam control: electron-beam-mediated catalytic etching of graphene by nanoparticles. *Nanotechnology* 2020, 31 (24).
27. Dyck, O.; **Jesse, S.**; Delby, N.; Kalinin, S. V.; Lupini, A. R., Variable voltage electron microscopy: Toward atom-by-atom fabrication in 2D materials. *Ultramicroscopy* 2020, 211.
28. Chakraborty, M.; Ziatdinov, M.; Dyck, O.; **Jesse, S.**; White, A. D.; Kalinin, S. V., Reconstruction of the interatomic forces from dynamic scanning transmission electron microscopy data. *Journal of Applied Physics* 2020, 127 (22).
29. Celano, U.; Gomez, A.; Piedimonte, P.; Neumayer, S.; Collins, L.; Popovici, M.; Florent, K.; McMitchell, S. R. C.; Favia, P.; Drijbooms, C.; Bender, H.; Paredis, K.; Di Piazza, L.; **Jesse, S.**; Van Houdt, J.; van der Heide, P., Ferroelectricity in Si-Doped Hafnia: Probing Challenges in Absence of Screening Charges. *Nanomaterials* 2020, 10 (8).
30. Brehm, J. A.; Neumayer, S. M.; Tao, L.; O'Hara, A.; Chyasnavichus, M.; Susner, M. A.; McGuire, M. A.; Kalinin, S. V.; **Jesse, S.**; Ganesh, P.; Pantelides, S. T.; Maksymovych, P.; Balke, N., Tunable quadruple-well ferroelectric van der Waals crystals. *Nature Materials* 2020, 19 (1), 43-+.
31. Ziatdinov, M.; Dyck, O.; Li, X.; Sumpter, B. G.; **Jesse, S.**; Vasudevan, R. K.; Kalinin, S. V., Building and exploring libraries of atomic defects in graphene: Scanning transmission electron and scanning tunneling microscopy study. *Science Advances* 2019, 5 (9).
32. Ziatdinov, M.; Dyck, O.; **Jesse, S.**; Kalinin, S. V., Atomic Mechanisms for the Si Atom Dynamics in Graphene: Chemical Transformations at the Edge and in the Bulk. *Advanced Functional Materials* 2019, 29 (52).
33. Zhang, C.; Dyck, O.; Garfinkel, D. A.; Stanford, M. G.; Belianinov, A. A.; Fowlkes, J. D.; **Jesse, S.**; Rack, P. D., Pulsed Laser-Assisted Helium Ion Nanomachining of Monolayer Graphene-Direct-Write Kirigami Patterns. *Nanomaterials* 2019, 9 (10).
34. Veenhuizen, K.; McAnany, S.; Vasudevan, R.; Nolan, D.; Aitken, B.; **Jesse, S.**; Kalinin, S. V.; Jain, H.; Dierolf, V., Ferroelectric domain engineering of lithium niobate single crystal confined in glass. *Mrs Communications* 2019, 9 (1), 334-339.
35. Schaake, J. C.; Pooser, R. C.; **Jesse, S.**; Ieee, Compressive Imaging with a Stochastic Spatial Light Modulator. In *2019 Conference on Lasers and Electro-Optics*, 2019.

36. Neumayer, S. M.; Eliseev, E. A.; Susner, M. A.; Tselev, A.; Rodriguez, B. J.; Brehm, J. A.; Pantelides, S. T.; Panchapakesan, G.; **Jesse, S.**; Kalinin, S. V.; McGuire, M. A.; Morozovska, A. N.; Maksymovych, P.; Balke, N., Giant negative electrostriction and dielectric tunability in a van der Waals layered ferroelectric. *Physical Review Materials* 2019, 3 (2).
37. Merckling, C.; Korytov, M.; Celano, U.; Hsu, M. H. M.; Neumayer, S. M.; **Jesse, S.**; de Gendt, S., Epitaxial growth and strain relaxation studies of BaTiO₃ and BaTiO₃/SrTiO₃ superlattices grown by MBE on SrTiO₃-buffered Si(001) substrate. *Journal of Vacuum Science & Technology A* 2019, 37 (2).
38. Maksov, A.; Dyck, O.; Wang, K.; Xiao, K.; Geohegan, D. B.; Sumpter, B. G.; Vasudevan, R. K.; **Jesse, S.**; Kalinin, S. V.; Ziatdinov, M., Deep learning analysis of defect and phase evolution during electron beam-induced transformations in WS₂. *Npj Computational Materials* 2019, 5.
39. Lopez-Guerra, E. A.; Somnath, S.; Solares, S. D.; **Jesse, S.**; Ferrini, G., Few-cycle Regime Atomic Force Microscopy. *Scientific Reports* 2019, 9.
40. Liu, Y. T.; Levlev, A. V.; Collins, L.; Borodinov, N.; Belianinov, A.; Keum, J. K.; Wang, M. S.; Ahmadi, M.; **Jesse, S.**; Xiao, K.; Sumpter, B. C.; Hu, B.; Kalinin, S. V.; Ovchinnikova, O. S., Light-Ferroic Interaction in Hybrid Organic-Inorganic Perovskites. *Advanced Optical Materials* 2019, 7 (23).
41. Liu, Y. T.; Collins, L.; Proksch, R.; Kim, S.; Watson, B. R.; Doughty, B.; Calhoun, T. R.; Ahmadi, M.; Levlev, A. V.; **Jesse, S.**; Retterer, S. T.; Belianinov, A.; Xiao, K.; Huang, J. S.; Sumpter, B. G.; Kalinin, S. V.; Hu, B.; Ovchinnikova, O. S., Reply to: On the ferroelectricity of CH₃NH₃PbI₃ perovskites. *Nature Materials* 2019, 18 (10), 1051-+.
42. Li, X.; Dyck, O. E.; Oxley, M. P.; Lupini, A. R.; McInnes, L.; Healy, J.; **Jesse, S.**; Kalinin, S. V., Manifold learning of four-dimensional scanning transmission electron microscopy. *Npj Computational Materials* 2019, 5.
43. Li, X.; Dyck, O.; **Jesse, S.**; Lupini, A. R.; Kalinin, S. V.; Oxley, M. P., Structure retrieval from four-dimensional scanning transmission electron microscopy: Statistical analysis of potential pitfalls in high-dimensional data. *Physical Review E* 2019, 100 (2).
44. Kalinin, S. V.; Lupini, A. R.; Dyck, O.; **Jesse, S.**; Ziatdinov, M.; Vasudevan, R. K., Lab on a beam-Big data and artificial intelligence in scanning transmission electron microscopy. *Mrs Bulletin* 2019, 44 (7), 565-575.
45. Giridharagopal, R.; Precht, J. T.; Jariwala, S.; Collins, L.; **Jesse, S.**; Kalinin, S. V.; Ginger, D. S., Time-Resolved Electrical Scanning Probe Microscopy of Layered Perovskites Reveals Spatial Variations in Photoinduced Ionic and Electronic Carrier Motion. *Acs Nano* 2019, 13 (3), 2812-2821.
46. Dyck, O.; Ziatdinov, M.; Lingerfelt, D. B.; Unocic, R. R.; HudaK, B. M.; Lupini, A. R.; **Jesse, S.**; Kalinin, S. V., Atom-by-atom fabrication with electron beams. *Nature Reviews Materials* 2019, 4 (7), 497-507.
47. Dyck, O.; **Jesse, S.**; Kalinin, S. V., A self-driving microscope and the Atomic Forge. *Mrs Bulletin* 2019, 44 (9), 669-670.
48. Borodinov, N.; Neumayer, S.; Kalinin, S. V.; Ovchinnikova, O. S.; Vasudevan, R. K.; **Jesse, S.**, Deep neural networks for understanding noisy data applied to physical property extraction in scanning probe microscopy. *Npj Computational Materials* 2019, 5.
49. Borodinov, N.; Bilkey, N.; Foston, M.; Levlev, A. V.; Belianinov, A.; **Jesse, S.**; Vasudevan, R. K.; Kalinin, S. V.; Ovchinnikova, O. S., Application of pan-sharpening algorithm for correlative multimodal imaging using AFM-IR. *Npj Computational Materials* 2019, 5.
50. Vasudevan, R. K.; Laanait, N.; Ferragut, E. M.; Wang, K.; Geohegan, D. B.; Xiao, K.; Ziatdinov, M.; **Jesse, S.**; Dyck, O.; Kalinin, S. V., Mapping mesoscopic phase evolution during E-beam induced transformations via deep learning of atomically resolved images. *Npj Computational Materials* 2018, 4.
51. Vasudevan, R. K.; Laanait, N.; Ferragut, E. M.; Wang, K.; Geohegan, D. B.; Xiao, K.; Ziatdinov, M.; **Jesse, S.**; Dyck, O.; Kalinin, S. V., Mapping mesoscopic phase evolution during E-beam induced

transformations via deep learning of atomically resolved images (vol 4, 30, 2018). *Npj Computational Materials* 2018, 4.

52. Somnath, S.; Smith, C. R.; Kalinin, S. V.; Chi, M. F.; Borisevich, A.; Cross, N.; Duscher, G.; **Jesse, S.**, Feature extraction via similarity search: application to atom finding and denoising in electron and scanning probe microscopy imaging. *Advanced Structural and Chemical Imaging* 2018, 4.

53. Somnath, S.; Law, K. J. H.; Morozovska, A. N.; Maksymovych, P.; Kim, Y.; Lu, X.; Alexe, M.; Archibald, R.; Kalinin, S. V.; **Jesse, S.**; Vasudevan, R. K., Ultrafast current imaging by Bayesian inversion. *Nature Communications* 2018, 9.

54. Seol, D.; Yang, S. M.; **Jesse, S.**; Choi, M.; Hwang, I.; Choi, T.; Park, B. H.; Kalinin, S. V.; Kim, Y., Dynamic mechanical control of local vacancies in NiO thin films. *Nanotechnology* 2018, 29 (27).

55. Ovchinnikov, O. S.; O'Hara, A.; Nicholl, R. J. T.; Hachtel, J. A.; Bolotin, K.; Lupini, A.; **Jesse, S.**; Baddorf, A. P.; Kalinin, S. V.; Borisevich, A. Y.; Pantelides, S. T., Theory-assisted determination of nano-rippling and impurities in atomic resolution images of angle-mismatched bilayer graphene. *2d Materials* 2018, 5 (4).

56. Neumayer, S. M.; Ilev, A. V.; Collins, L.; Vasudevan, R.; Baghban, M. A.; Ovchinnikova, O.; **Jesse, S.**; Gallo, K.; Rodriguez, B. J.; Kalinin, S. V., Surface Chemistry Controls Anomalous Ferroelectric Behavior in Lithium Niobate. *Acs Applied Materials & Interfaces* 2018, 10 (34), 29153-29160.

57. Neumayer, S. M.; Collins, L.; Vasudevan, R.; Smith, C.; Somnath, S.; Shur, V. Y.; **Jesse, S.**; Khokin, A. L.; Kalinin, S. V.; Rodriguez, B. J., Decoupling Mesoscale Functional Response in PLZT across the Ferroelectric-Relaxor Phase Transition with Contact Kelvin Probe Force Microscopy and Machine Learning. *Acs Applied Materials & Interfaces* 2018, 10 (49), 42674-42680.

58. Liu, Y. T.; Collins, L.; Proksch, R.; Kim, S.; Watson, B. R.; Doughty, B.; Calhoun, T. R.; Ahmadi, M.; Ilev, A. V.; **Jesse, S.**; Retterer, S. T.; Belianinov, A.; Xiao, K.; Huang, J. S.; Sumpter, B. G.; Kalinin, S. V.; Hu, B.; Ovchinnikova, O. S., Chemical nature of ferroelastic twin domains in CH₃NH₃PbI₃ perovskite. *Nature Materials* 2018, 17 (11), 1013-+.

59. Liu, Y. T.; Collins, L.; Belianinov, A.; Neumayer, S. M.; Ilev, A. V.; Ahmadi, M.; Xiao, K.; Retterer, S. T.; **Jesse, S.**; Kalinin, S. V.; Hu, B.; Ovchinnikova, O. S., Dynamic behavior of CH₃NH₃PbI₃ perovskite twin domains. *Applied Physics Letters* 2018, 113 (7).

60. Liu, P.; Dinwiddie, R. B.; Keum, J. K.; Vasudevan, R. K.; **Jesse, S.**; Nguyen, N. A.; Lindahl, J. M.; Kunc, V., Rheology, crystal structure, and nanomechanical properties in large-scale additive manufacturing of polyphenylene sulfide/carbon fiber composites. *Composites Science and Technology* 2018, 168, 263-271.

61. Lindgren, G.; Ilev, A.; **Jesse, S.**; Ovchinnikova, O. S.; Kalinin, S. V.; Vasudevan, R. K.; Canalias, C., Elasticity Modulation Due to Polarization Reversal and Ionic Motion in the Ferroelectric Superionic Conductor KTiOPO₄. *Acs Applied Materials & Interfaces* 2018, 10 (38), 32298-32303.

62. Li, X.; Dyck, O.; Kalinin, S. V.; **Jesse, S.**, Compressed Sensing of Scanning Transmission Electron Microscopy (STEM) With Nonrectangular Scans. *Microscopy and Microanalysis* 2018, 24 (6), 623-633.

63. Li, X.; Collins, L.; Miyazawa, K.; Fukuma, T.; **Jesse, S.**; Kalinin, S. V., High-velocity functional imaging in scanning probe microscopy via Graph-Bootstrapping. *Nature Communications* 2018, 9.

64. Li, X.; Belianinov, A.; Dyck, O.; **Jesse, S.**; Park, C., TWO-LEVEL STRUCTURAL SPARSITY REGULARIZATION FOR IDENTIFYING LATTICES AND DEFECTS IN NOISY IMAGES. *Annals of Applied Statistics* 2018, 12 (1), 348-377.

65. Li, L. L.; Yang, Y. D.; Zhang, D. W.; Ye, Z. G.; **Jesse, S.**; Kalinin, S. V.; Vasudevan, R. K., Machine learning-enabled identification of material phase transitions based on experimental data: Exploring collective dynamics in ferroelectric relaxors. *Science Advances* 2018, 4 (3).

66. Li, L.; Zheng, Q.; Zou, Q.; Rajput, S.; Ijaluola, A. O.; Wu, Z.; Wang, X. P.; Cao, H. B.; Somnath, S.; **Jesse, S.**; Chi, M.; Gai, Z.; Parker, D.; Sefat, A. S., Improving superconductivity in BaFe₂As₂-based crystals by cobalt clustering and electronic uniformity (vol 7, 949, 2017). *Scientific Reports* 2018, 8.

67. Kwon, O.; Seol, D.; Lee, D.; Han, H.; Lindfors-Vrejoiu, I.; Lee, W.; **Jesse, S.**; Lee, H. N.; Kalinin, S. V.; Alexe, M.; Kim, Y., Direct Probing of Polarization Charge at Nanoscale Level. *Advanced Materials* 2018, 30 (1).
68. Kim, S.; Ievlev, A. V.; Jakowski, J.; Vlassiuk, I. V.; Sang, X. H.; Brown, C.; Dyck, O.; Unocic, R. R.; Kalinin, S. V.; Belianinov, A.; Sumpter, B. G.; **Jesse, S.**; Ovchinnikova, O. S., Multi-purposed Ar gas cluster ion beam processing for graphene engineering. *Carbon* 2018, 131, 142-148.
69. Kim, S.; Dyck, O.; Ievlev, A. V.; Vlassiuk, I. V.; Kalinin, S. V.; Belianinov, A.; **Jesse, S.**; Ovchinnikova, O. S., Graphene milling dynamics during helium ion beam irradiation. *Carbon* 2018, 138, 277-282.
70. Kannan, R.; Ievlev, A. V.; Laanait, N.; Ziatdinov, M. A.; Vasudevan, R. K.; **Jesse, S.**; Kalinin, S. V., Deep data analysis via physically constrained linear unmixing: universal framework, domain examples, and a community-wide platform. *Advanced Structural and Chemical Imaging* 2018, 4.
71. **Jesse, S.**; Hudak, B. M.; Zarkadoula, E.; Song, J. M.; Maksov, A.; Fuentes-Cabrera, M.; Ganesh, P.; Kravchenko, I.; Snijders, P. C.; Lupini, A. R.; Borisevich, A. Y.; Kalinin, S. V., Direct atomic fabrication and dopant positioning in Si using electron beams with active real-time image-based feedback. *Nanotechnology* 2018, 29 (25).
72. Dyck, O.; Kim, S.; Kalinin, S. V.; **Jesse, S.**, Mitigating e-beam-induced hydrocarbon deposition on graphene for atomic-scale scanning transmission electron microscopy studies. *Journal of Vacuum Science & Technology B* 2018, 36 (1).
73. Dyck, O.; Kim, S.; Kalinin, S. V.; **Jesse, S.**, E-beam manipulation of Si atoms on graphene edges with an aberration-corrected scanning transmission electron microscope. *Nano Research* 2018, 11 (12), 6217-6226.
74. Dyck, O.; Kim, S.; Jimenez-Izal, E.; Alexandrova, A. N.; Kalinin, S. V.; **Jesse, S.**, Building Structures Atom by Atom via Electron Beam Manipulation. *Small* 2018, 14 (38).
75. Collins, L.; Ahmadi, M.; Qin, J. J.; Liu, Y. T.; Ovchinnikova, O. S.; Hu, B.; **Jesse, S.**; Kalinin, S. V., Time resolved surface photovoltage measurements using a big data capture approach to KPFM. *Nanotechnology* 2018, 29 (44).
76. Balke, N.; Neumayer, S. M.; Brehm, J. A.; Susner, M. A.; Rodriguez, B. J.; **Jesse, S.**; Kalinin, S. V.; Pantelides, S. T.; McGuire, M. A.; Maksymovych, P., Locally Controlled Cu-Ion Transport in Layered Ferroelectric CuInP_2S_6 . *Acs Applied Materials & Interfaces* 2018, 10 (32), 27188-27194.
77. Agar, J. C.; Cao, Y.; Naul, B.; Pandya, S.; van der Walt, S.; Luo, A. I.; Maher, J. T.; Balke, N.; **Jesse, S.**; Kalinin, S. V.; Vasudevan, R. K.; Martin, L. W., Machine Detection of Enhanced Electromechanical Energy Conversion in $\text{PbZr}_{0.2}\text{Ti}_{0.8}\text{O}_3$ Thin Films. *Advanced Materials* 2018, 30 (28).
78. Ziatdinov, M.; Dyck, O.; Maksov, A.; Li, X. F.; San, X. H.; Xiao, K.; Unocic, R. R.; Vasudevan, R.; **Jesse, S.**; Kalinin, S. V., Deep Learning of Atomically Resolved Scanning Transmission Electron Microscopy Images: Chemical Identification and Tracking Local Transformations. *Acs Nano* 2017, 11 (12), 12742-12752.
79. Yang, S. M.; Morozovska, A. N.; Kumar, R.; Eliseev, E. A.; Cao, Y.; Mazet, L.; Balke, N.; **Jesse, S.**; Vasudevan, R. K.; Dubourdieu, C.; Kalinin, S. V., Mixed electrochemical-ferroelectric states in nanoscale ferroelectrics. *Nature Physics* 2017, 13 (8), 812-+.
80. Yang, B.; Brown, C. C.; Huang, J. S.; Collins, L.; Sang, X. H.; Unocic, R. R.; **Jesse, S.**; Kalinin, S. V.; Belianinov, A.; Jakowski, J.; Geohegan, D. B.; Sumpter, B. G.; Xiao, K.; Ovchinnikova, O. S., Enhancing Ion Migration in Grain Boundaries of Hybrid Organic-Inorganic Perovskites by Chlorine. *Advanced Functional Materials* 2017, 27 (26).
81. Wu, T.; Mukherjee, R.; Ovchinnikova, O. S.; Collins, L.; Ahmadi, M.; Lu, W.; Kang, N. G.; Mays, J. W.; **Jesse, S.**; Mandrus, D.; Hu, B., Metal/Ion Interactions Induced p-i-n Junction in Methylammonium Lead Triiodide Perovskite Single Crystals. *Journal of the American Chemical Society* 2017, 139 (48), 17285-17288.

82. Wu, T.; Collins, L.; Zhang, J.; Lin, P. Y.; Ahmadi, M.; **Jesse, S.**; Hu, B., Photoinduced Bulk Polarization and Its Effects on Photovoltaic Actions in Perovskite Solar Cells. *ACS Nano* 2017, 11 (11), 11542-11549.
83. Vlcek, L.; Vasudevan, R. K.; **Jesse, S.**; Kalinin, S. V., Consistent Integration of Experimental and Ab Initio Data into Effective Physical Models. *Journal of Chemical Theory and Computation* 2017, 13 (11), 5179-5194.
84. Vasudevan, R. K.; Balke, N.; Maksymovych, P.; **Jesse, S.**; Kalinin, S. V., Ferroelectric or non-ferroelectric: Why so many materials exhibit "ferroelectricity" on the nanoscale. *Applied Physics Reviews* 2017, 4 (2).
85. Somnath, S.; **Jesse, S.**; Van Berkel, G. J.; Kalinin, S. V.; Ovchinnikova, O. S., Improved spatial resolution for spot sampling in thermal desorption atomic force microscopy - mass spectrometry via rapid heating functions. *Nanoscale* 2017, 9 (17), 5708-5717.
86. Sang, X. H.; Lupini, A. R.; Ding, J. L.; Kalinin, S. V.; **Jesse, S.**; Unocic, R. R., Precision controlled atomic resolution scanning transmission electron microscopy using spiral scan pathways. *Scientific Reports* 2017, 7.
87. Sang, X. H.; Lupini, A. R.; Ding, J. L.; Kalinin, S. V.; **Jesse, S.**; Unocic, R. R., Precision controlled atomic resolution scanning transmission electron microscopy using spiral scan pathways (vol 7, pg 43585, 2017). *Scientific Reports* 2017, 7.
88. Ponath, P.; Posadas, A. B.; Ren, Y.; Wu, X. Y.; Lai, K. J.; Demkov, A.; Schmidt, M.; Duffy, R.; Hurley, P.; Wang, J.; Young, C.; Vasudevan, R. K.; Okatan, M. B.; **Jesse, S.**; Kalinin, S. V.; Ieee, Advances of the development of a ferroelectric field-effect transistor on Ge(001). 2017.
89. Li, L. L.; Cao, Y.; Somnath, S.; Yang, Y. D.; **Jesse, S.**; Ehara, Y.; Funakubo, H.; Chen, L. Q.; Kalinin, S. V.; Vasudevan, R. K., Direct Imaging of the Relaxation of Individual Ferroelectric Interfaces in a Tensile-Strained Film. *Advanced Electronic Materials* 2017, 3 (4).
90. Li, L.; Zheng, Q.; Zou, Q.; Rajput, S.; Ijaduola, A. O.; Wu, Z.; Wang, X. P.; Cao, H. B.; Somnath, S.; **Jesse, S.**; Chi, M.; Gai, Z.; Parker, D.; Sefat, A. S., Improving superconductivity in BaFe₂As₂-based crystals by cobalt clustering and electronic uniformity. *Scientific Reports* 2017, 7.
91. Jiang, N.; Zarkadoula, E.; Narang, P.; Maksov, A.; Kravchenko, I.; Borisevich, A.; **Jesse, S.**; Kalinin, S. V., Atom-by-atom fabrication by electron beam via induced phase transformations. *Mrs Bulletin* 2017, 42 (9), 653-659.
92. Ievlev, A. V.; Belianinov, A.; **Jesse, S.**; Allison, D. P.; Doktycz, M. J.; Retterer, S. T.; Kalinin, S. V.; Ovchinnikova, O. S., Automated Interpretation and Extraction of Topographic Information from Time of Flight Secondary Ion Mass Spectrometry Data. *Scientific Reports* 2017, 7.
93. Gao, Q.; Come, J.; Naguib, M.; **Jesse, S.**; Gogotsi, Y.; Balke, N., Synergetic effects of K⁺ and Mg²⁺ ion intercalation on the electrochemical and actuation properties of the two-dimensional Ti₃C₂ MXene. *Faraday Discussions* 2017, 199, 393-403.
94. Ganeshkumar, R.; Somnath, S.; Cheah, C. W.; **Jesse, S.**; Kalinin, S. V.; Zhao, R., Decoding Apparent Ferroelectricity in Perovskite Nanofibers. *ACS Applied Materials & Interfaces* 2017, 9 (48), 42131-42138.
95. Dyck, O.; Kim, S.; Kalinin, S. V.; **Jesse, S.**, Placing single atoms in graphene with a scanning transmission electron microscope. *Applied Physics Letters* 2017, 111 (11).
96. Damodaran, A. R.; Pandya, S.; Agar, J. C.; Cao, Y.; Vasudevan, R. K.; Xu, R. J.; Saremi, S.; Li, Q.; Kim, J.; McCarter, M. R.; Dedon, L. R.; Angsten, T.; Balke, N.; **Jesse, S.**; Asta, M.; Kalinin, S. V.; Martin, L. W., Three-State Ferroelastic Switching and Large Electromechanical Responses in PbTiO₃ Thin Films. *Advanced Materials* 2017, 29 (37).
97. Collins, L.; Ahmadi, M.; Wu, T.; Hu, B.; Kalinin, S. V.; **Jesse, S.**, Breaking the Time Barrier in Kelvin Probe Force Microscopy: Fast Free Force Reconstruction Using the G-Mode Platform. *ACS Nano* 2017, 11 (9), 8717-8729.

98. Belianinov, A.; Burch, M. J.; Hysmith, H. E.; Ilev, A. V.; Iberi, V.; Susner, M. A.; McGuire, M. A.; Maksymovych, P.; Chyasnavichyus, M.; **Jesse, S.**; Ovchinnikova, O. S., Chemical Changes in Layered Ferroelectric Semiconductors Induced by Helium Ion Beam. *Scientific Reports* 2017, 7.
99. Balke, N.; **Jesse, S.**; Carmichael, B.; Okatan, M. B.; Kravchenko, I.; Kalinin, S. V.; Tselev, A., Quantification of in-contact probe-sample electrostatic forces with dynamic atomic force microscopy. *Nanotechnology* 2017, 28 (6).
100. Ziatdinov, M.; Fujii, S.; Kiguchi, M.; Enoki, T.; **Jesse, S.**; Kalinin, S. V., Data mining graphene: correlative analysis of structure and electronic degrees of freedom in graphenic monolayers with defects. *Nanotechnology* 2016, 27 (49).
101. Yoon, K.; Rahnamoun, A.; Swett, J. L.; Iberi, V.; Cullen, D. A.; Vlassiouk, I. V.; Belianinov, A.; **Jesse, S.**; Sang, X. H.; Ovchinnikova, O. S.; Rondinone, A. J.; Unocic, R. R.; van Duin, A. C. T., Atomistic-Scale Simulations of Defect Formation in Graphene under Noble Gas Ion Irradiation. *Acs Nano* 2016, 10 (9), 8376-8384.
102. Yang, S. M.; Mazet, L.; Okatan, M. B.; **Jesse, S.**; Niu, G.; Schroeder, T.; Schamm-Chardon, S.; Dubourdieu, C.; Baddorf, A. P.; Kalinin, S. V., Decoupling indirect topographic cross-talk in band excitation piezoresponse force microscopy imaging and spectroscopy. *Applied Physics Letters* 2016, 108 (25).
103. Vasudevan, R. K.; Ziatdinov, M.; **Jesse, S.**; Kalinin, S. V., Phases and Interfaces from Real Space Atomically Resolved Data: Physics-Based Deep Data Image Analysis. *Nano Letters* 2016, 16 (9), 5574-5581.
104. Vasudevan, R. K.; Khassaf, H.; Cao, Y.; Zhang, S. J.; Tselev, A.; Carmichael, B.; Okatan, M. B.; **Jesse, S.**; Chen, L. Q.; Alpay, S. P.; Kalinin, S. V.; Bassiri-Gharb, N., Acoustic Detection of Phase Transitions at the Nanoscale. *Advanced Functional Materials* 2016, 26 (4), 478-486.
105. Unocic, R. R.; Lupini, A. R.; Borisevich, A. Y.; Cullen, D. A.; Kalinin, S. V.; **Jesse, S.**, Direct-write liquid phase transformations with a scanning transmission electron microscope. *Nanoscale* 2016, 8 (34), 15581-15588.
106. Strelcov, E.; Yang, S. M.; **Jesse, S.**; Balke, N.; Vasudevan, R. K.; Kalinin, S. V., Solid-state electrochemistry on the nanometer and atomic scales: the scanning probe microscopy approach. *Nanoscale* 2016, 8 (29), 13838-13858.
107. Somnath, S.; Collins, L.; Matheson, M. A.; Sukumar, S. R.; Kalinin, S. V.; **Jesse, S.**, Imaging via complete cantilever dynamic detection: general dynamic mode imaging and spectroscopy in scanning probe microscopy. *Nanotechnology* 2016, 27 (41).
108. Somnath, S.; Belianinov, A.; Kalinin, S. V.; **Jesse, S.**, Rapid mapping of polarization switching through complete information acquisition. *Nature Communications* 2016, 7.
109. Seol, D.; **Jesse, S.**; Park, S. J.; Lee, W.; Kalinin, S. V.; Kim, Y., Nanosculpting of complex oxides by massive ionic transfer. *Nanotechnology* 2016, 27 (50).
110. Sang, X. H.; Lupini, A. R.; Unocic, R. R.; Chi, M. F.; Borisevich, A. Y.; Kalinin, S. V.; Endeve, E.; Archibald, R. K.; **Jesse, S.**, Dynamic scan control in STEM: spiral scans. *Advanced Structural and Chemical Imaging* 2016, 2.
111. Ponath, P.; O'Hara, A.; Cao, H. X.; Posadas, A. B.; Vasudevan, R.; Okatan, M. B.; **Jesse, S.**; Berg, M.; Li, Z. Y.; Zhang, D. S.; Kellock, A. J.; de Lozanne, A.; Zhou, J. S.; Kalinin, S.; Smith, D. J.; Demkov, A. A., Contradictory nature of Co doping in ferroelectric BaTiO₃. *Physical Review B* 2016, 94 (20).
112. Lupini, A. R.; Chi, M.; **Jesse, S.**, Rapid aberration measurement with pixelated detectors. *Journal of Microscopy* 2016, 263 (1), 43-50.
113. Lingerfelt, E. J.; Belianinov, A.; Endeve, E.; Ovchinnikov, O.; Somnath, S.; Borreguero, J. M.; Grodowitz, N.; Park, B.; Archibald, R. K.; Symons, C. T.; Kalinin, S. V.; Messer, O. E. B.; Shankar, M.; **Jesse, S.**, BEAM: A computational workflow system for managing and modeling material characterization data in HPC environments. In *International Conference on Computational Science 2016*, Altintas, I.;

- Norman, M.; Dongarra, J.; Krzhizhanovskaya, V. V.; Lees, M.; Sloom, P. M. A., Eds. 2016; Vol. 80, pp 2276-2280.
114. Li, L. L.; Yang, Y. D.; Liu, Z. C.; **Jesse, S.**; Kalinin, S. V.; Vasudevan, R. K., Correlation between piezoresponse nonlinearity and hysteresis in ferroelectric crystals at the nanoscale. *Applied Physics Letters* 2016, 108 (17).
115. Kuo, C. Y.; Hu, Z.; Yang, J. C.; Liao, S. C.; Huang, Y. L.; Vasudevan, R. K.; Okatan, M. B.; **Jesse, S.**; Kalinin, S. V.; Li, L.; Liu, H. J.; Lai, C. H.; Pi, T. W.; Agrestini, S.; Chen, K.; Ohresser, P.; Tanaka, A.; Tjeng, L. H.; Chu, Y. H., Single-domain multiferroic BiFeO₃ films. *Nature Communications* 2016, 7.
116. Kalinin, S. V.; Strelcov, E.; Belianinov, A.; Somnath, S.; Vasudevan, R. K.; Lingerfelt, E. J.; Archibald, R. K.; Chen, C. M.; Proksch, R.; Laanait, N.; **Jesse, S.**, Big, Deep, and Smart Data in Scanning Probe Microscopy. *ACS Nano* 2016, 10 (10), 9068-9086.
117. Kalinin, S. V.; Borisevich, A.; **Jesse, S.**, Fire up the atom forge. *Nature* 2016, 539 (7630), 485-487.
118. **Jesse, S.**; Chi, M.; Belianinov, A.; Beekman, C.; Kalinin, S. V.; Borisevich, A. Y.; Lupini, A. R., Big Data Analytics for Scanning Transmission Electron Microscopy Ptychography. *Scientific Reports* 2016, 6.
119. **Jesse, S.**; Borisevich, A. Y.; Fowlkes, J. D.; Lupini, A. R.; Rack, P. D.; Unocic, R. R.; Sumpter, B. G.; Kalinin, S. V.; Belianinov, A.; Ovchinnikova, O. S., Directing Matter: Toward Atomic-Scale 3D Nanofabrication. *ACS Nano* 2016, 10 (6), 5600-5618.
120. Iberi, V.; Liang, L. B.; Ievlev, A. V.; Stanford, M. G.; Lin, M. W.; Li, X. F.; Mahjouri-Samani, M.; **Jesse, S.**; Sumpter, B. G.; Kalinin, S. V.; Joy, D. C.; Xiao, K.; Belianinov, A.; Ovchinnikova, O. S., Nanoforging Single Layer MoSe₂ Through Defect Engineering with Focused Helium Ion Beams. *Scientific Reports* 2016, 6.
121. Iberi, V.; Ievlev, A. V.; Vlassiuk, I.; **Jesse, S.**; Kalinin, S. V.; Joy, D. C.; Rondinone, A. J.; Belianinov, A.; Ovchinnikova, O. S., Graphene engineering by neon ion beams. *Nanotechnology* 2016, 27 (12).
122. Gobeljic, D.; Shvartsman, V. V.; Belianinov, A.; Okatan, B.; **Jesse, S.**; Kalinin, S. V.; Groh, C.; Rodel, J.; Lupascu, D. C., Nanoscale mapping of heterogeneity of the polarization reversal in lead-free relaxor-ferroelectric ceramic composites. *Nanoscale* 2016, 8 (4), 2168-2176.
123. Edwards, D.; Brewer, S.; Cao, Y.; **Jesse, S.**; Chen, L. Q.; Kalinin, S. V.; Kumar, A.; Bassiri-Gharb, N., Local Probing of Ferroelectric and Ferroelastic Switching through Stress-Mediated Piezoelectric Spectroscopy. *Advanced Materials Interfaces* 2016, 3 (7).
124. Come, J.; Xie, Y.; Naguib, M.; **Jesse, S.**; Kalinin, S. V.; Gogotsi, Y.; Kent, P. R. C.; Balke, N., Nanoscale Elastic Changes in 2D Ti₃C₂T_x (MXene) Pseudocapacitive Electrodes. *Advanced Energy Materials* 2016, 6 (9).
125. Collins, L.; Belianinov, A.; Somnath, S.; Rodriguez, B. J.; Balke, N.; Kalinin, S. V.; **Jesse, S.**, Multifrequency spectrum analysis using fully digital G Mode-Kelvin probe force microscopy. *Nanotechnology* 2016, 27 (10).
126. Collins, L.; Belianinov, A.; Somnath, S.; Balke, N.; Kalinin, S. V.; **Jesse, S.**, Full data acquisition in Kelvin Probe Force Microscopy: Mapping dynamic electric phenomena in real space. *Scientific Reports* 2016, 6.
127. Collins, L.; Belianinov, A.; Proksch, R.; Zuo, T. T.; Zhang, Y.; Liaw, P. K.; Kalinin, S. V.; **Jesse, S.**, G-mode magnetic force microscopy: Separating magnetic and electrostatic interactions using big data analytics. *Applied Physics Letters* 2016, 108 (19).
128. Cheng, S. W.; Bocharova, V.; Belianinov, A.; Xiong, S. M.; Kisluk, A.; Somnath, S.; Holt, A. P.; Ovchinnikova, O. S.; **Jesse, S.**; Martin, H.; Etampawala, T.; Dadmun, M.; Sokolov, A. P., Unraveling the Mechanism of Nanoscale Mechanical Reinforcement in Glassy Polymer Nanocomposites. *Nano Letters* 2016, 16 (6), 3630-3637.

129. Cao, Y.; Yang, S. Z.; **Jesse, S.**; Kravchenko, I.; Yu, P.; Chen, L. Q.; Kalinin, S. V.; Balke, N.; Li, Q., Exploring Polarization Rotation Instabilities in Super-Tetragonal BiFeO₃ Epitaxial Thin Films and Their Technological Implications. *Advanced Electronic Materials* 2016, 2 (12).
130. Belianinov, A.; Iberi, V.; Tselev, A.; Susner, M. A.; McGuire, M. A.; Joy, D.; **Jesse, S.**; Rondinone, A. J.; Kalinin, S. V.; Ovchinnikova, O. S., Polarization Control via He-Ion Beam Induced Nanofabrication in Layered Ferroelectric Semiconductors. *Acs Applied Materials & Interfaces* 2016, 8 (11), 7349-7355.
131. Balke, N.; **Jesse, S.**; Yu, P.; Carmichael, B.; Kalinin, S. V.; Tselev, A., Quantification of surface displacements and electromechanical phenomena via dynamic atomic force microscopy. *Nanotechnology* 2016, 27 (42).
132. Agar, J. C.; Damodaran, A. R.; Okatan, M. B.; Kacher, J.; Gammer, C.; Vasudevan, R. K.; Pandya, S.; Dedon, L. R.; Mangalam, R. V. K.; Velarde, G. A.; **Jesse, S.**; Balke, N.; Minor, A. M.; Kalinin, S. V.; Martin, L. W., Highly mobile ferroelastic domain walls in compositionally graded ferroelectric thin films. *Nature Materials* 2016, 15 (5), 549-+.
133. Yang, N.; Cantoni, C.; Foglietti, V.; Tebano, A.; Belianinov, A.; Strelcov, E.; **Jesse, S.**; Di Castro, D.; Di Bartolomeo, E.; Licocchia, S.; Kalinin, S. V.; Balestrino, G.; Aruta, C., Defective Interfaces in Yttrium-Doped Barium Zirconate Films and Consequences on Proton Conduction. *Nano Letters* 2015, 15 (4), 2343-2349.
134. Vasudevan, R. K.; Zhang, S. J.; Okatan, M. B.; **Jesse, S.**; Kalinin, S. V.; Bassiri-Gharb, N., Multidimensional dynamic piezoresponse measurements: Unraveling local relaxation behavior in relaxor-ferroelectrics via big data. *Journal of Applied Physics* 2015, 118 (7).
135. Vasudevan, R. K.; Zhang, S. J.; Ding, J. L.; Okatan, M. B.; **Jesse, S.**; Kalinin, S. V.; Bassiri-Gharb, N., Mesoscopic harmonic mapping of electromechanical response in a relaxor ferroelectric. *Applied Physics Letters* 2015, 106 (22).
136. Vasudevan, R. K.; Belianinov, A.; Gianfrancesco, A. G.; Baddorf, A. P.; Tselev, A.; Kalinin, S. V.; **Jesse, S.**, Big data in reciprocal space: Sliding fast Fourier transforms for determining periodicity. *Applied Physics Letters* 2015, 106 (9).
137. Tselev, A.; Klein, A.; Gassmann, J.; **Jesse, S.**; Li, Q.; Kalinin, S. V.; Balke, N., Quantitative Nanometer-Scale Mapping of Dielectric Tunability. *Advanced Materials Interfaces* 2015, 2 (15).
138. Somnath, S.; Belianinov, A.; Kalinin, S. V.; **Jesse, S.**, Full information acquisition in piezoresponse force microscopy. *Applied Physics Letters* 2015, 107 (26).
139. Seol, D.; Seo, H.; **Jesse, S.**; Kim, Y., Nanoscale mapping of electromechanical response in ionic conductive ceramics with piezoelectric inclusions. *Journal of Applied Physics* 2015, 118 (7).
140. Ponath, P.; Fredrickson, K.; Posadas, A. B.; Ren, Y.; Wu, X. Y.; Vasudevan, R. K.; Okatan, M. B.; **Jesse, S.**; Aoki, T.; McCartney, M. R.; Smith, D. J.; Kalinin, S. V.; Lai, K.; Demkov, A. A., Carrier density modulation in a germanium heterostructure by ferroelectric switching. *Nature Communications* 2015, 6.
141. Papandrew, A. B.; Li, Q.; Okatan, M. B.; **Jesse, S.**; Hartnett, C.; Kalinin, S. V.; Vasudevan, R. K., Electrocatalysis-induced elasticity modulation in a superionic proton conductor probed by band-excitation atomic force microscopy. *Nanoscale* 2015, 7 (47), 20089-20094.
142. Ovchinnikova, O. S.; Tai, T. M.; Bocharova, V.; Okatan, M. B.; Belianinov, A.; Kertesz, V.; **Jesse, S.**; Van Berkel, G. J., Co-registered Topographical, Band Excitation Nanomechanical, and Mass Spectral Imaging Using a Combined Atomic Force Microscopy/Mass Spectrometry Platform. *Acs Nano* 2015, 9 (4), 4260-4269.
143. Marincel, D. M.; Zhang, H. R.; **Jesse, S.**; Belianinov, A.; Okatan, M. B.; Kalinin, S. V.; Rainforth, W. M.; Reaney, I. M.; Randall, C. A.; Trolrier-McKinstry, S., Domain Wall Motion Across Various Grain Boundaries in Ferroelectric Thin Films. *Journal of the American Ceramic Society* 2015, 98 (6), 1848-1857.
144. Marincel, D. M.; Zhang, H. R.; Britson, J.; Belianinov, A.; **Jesse, S.**; Kalinin, S. V.; Chen, L. Q.; Rainforth, W. M.; Reaney, I. M.; Randall, C. A.; Trolrier-McKinstry, S., Domain pinning near a single-grain boundary in tetragonal and rhombohedral lead zirconate titanate films. *Physical Review B* 2015, 91 (13).

145. Marincel, D. M.; **Jesse, S.**; Belianinov, A.; Okatan, M. B.; Kalinin, S. V.; Jackson, T. N.; Randall, C. A.; Trolrier-McKinstry, S., A-site stoichiometry and piezoelectric response in thin film $\text{PbZr}_{1-x}\text{TixO}_3$. *Journal of Applied Physics* 2015, 117 (20).
146. Li, Q.; **Jesse, S.**; Tselev, A.; Collins, L.; Yu, P.; Kravchenko, I.; Kalinin, S. V.; Balke, N., Probing Local Bias-Induced Transitions Using Photothermal Excitation Contact Resonance Atomic Force Microscopy and Voltage Spectroscopy. *Acs Nano* 2015, 9 (2), 1848-1857.
147. Lavini, F.; Yang, N.; Vasudevan, R. K.; Strelcov, E.; **Jesse, S.**; Okatan, M. B.; Kravchenko, I.; Di Castro, D.; Kalinin, S. V.; Balestrino, G.; Aruta, C.; Foglietti, V., Bias assisted scanning probe microscopy direct write lithography enables local oxygen enrichment of lanthanum cuprates thin films. *Nanotechnology* 2015, 26 (32).
148. **Jesse, S.**; He, Q.; Lupini, A. R.; Leonard, D. N.; Oxley, M. P.; Ovchinnikov, O.; Unocic, R. R.; Tselev, A.; Fuentes-Cabrera, M.; Sumpter, B. G.; Pennycook, S. J.; Kalinin, S. V.; Borisevich, A. Y., Atomic-Level Sculpting of Crystalline Oxides: Toward Bulk Nanofabrication with Single Atomic Plane Precision. *Small* 2015, 11 (44), 5895-5900.
149. Ievlev, A. V.; **Jesse, S.**; Cochell, T. J.; Unocic, R. R.; Protopopescu, V. A.; Kalinin, S. V., Quantitative Description of Crystal Nucleation and Growth from in Situ Scanning Transmission Electron Microscopy. *Acs Nano* 2015, 9 (12), 11784-11791.
150. Frechero, M. A.; Rocci, M.; Sanchez-Santolino, G.; Kumar, A.; Salafranca, J.; Schmidt, R.; Diaz-Guillen, M. R.; Dura, O. J.; Rivera-Calzada, A.; Mishra, R.; **Jesse, S.**; Pantelides, S. T.; Kalinin, S. V.; Varela, M.; Pennycook, S. J.; Santamaria, J.; Leon, C., Paving the way to nanoionics: atomic origin of barriers for ionic transport through interfaces. *Scientific Reports* 2015, 5.
151. Farrow, T.; Yang, N.; Doria, S.; Belianinov, A.; **Jesse, S.**; Arruda, T. M.; Balestrino, G.; Kalinin, S. V.; Kumar, A., Sub-nA spatially resolved conductivity profiling of surface and interface defects in ceria films. *Apl Materials* 2015, 3 (3).
152. Collins, L.; Okatan, M. B.; Li, Q.; Kravchenko, I.; Lavrik, N. V.; Kalinin, S. V.; Rodriguez, B. J.; **Jesse, S.**, Quantitative 3D-KPFM imaging with simultaneous electrostatic force and force gradient detection. *Nanotechnology* 2015, 26 (17).
153. Collins, L.; **Jesse, S.**; Kilpatrick, J. I.; Tselev, A.; Okatan, M. B.; Kalinin, S. V.; Rodriguez, B. J., Kelvin probe force microscopy in liquid using electrochemical force microscopy. *Beilstein Journal of Nanotechnology* 2015, 6, 201-214.
154. Collins, L.; **Jesse, S.**; Balke, N.; Rodriguez, B. J.; Kalinin, S.; Li, Q., Band excitation Kelvin probe force microscopy utilizing photothermal excitation. *Applied Physics Letters* 2015, 106 (10).
155. Belianinov, A.; Vasudevan, R.; Strelcov, E.; Steed, C.; Yang, S. M.; Tselev, A.; **Jesse, S.**; Biegalski, M.; Shipman, G.; Symons, C.; Borisevich, A.; Archibald, R.; Kalinin, S., Big data and deep data in scanning and electron microscopies: deriving functionality from multidimensional data sets. *Advanced Structural and Chemical Imaging* 2015, 1.
156. Belianinov, A.; Vasudevan, R.; Strelcov, E.; Ievlev, A.; Steed, C.; Yang, S. M.; Tselev, A.; **Jesse, S.**; Biegalski, M.; Shipman, G.; Symons, C.; Borisevich, A.; Archibald, R.; Kalinin, S., Big data and deep data in scanning and electron microscopies: deriving functionality from multidimensional data sets (vol 1, 6, 2015). *Advanced Structural and Chemical Imaging* 2015, 1.
157. Belianinov, A.; Kalinin, S. V.; **Jesse, S.**, Complete information acquisition in dynamic force microscopy. *Nature Communications* 2015, 6.
158. Belianinov, A.; He, Q.; Kravchenko, M.; **Jesse, S.**; Borisevich, A.; Kalinin, S. V., Identification of phases, symmetries and defects through local crystallography. *Nature Communications* 2015, 6.
159. Balke, N.; Maksymovych, P.; **Jesse, S.**; Herklotz, A.; Tselev, A.; Eom, C. B.; Kravchenko, I.; Yu, P.; Kalinin, S. V., Differentiating Ferroelectric and Nonferroelectric Electromechanical Effects with Scanning Probe Microscopy. *Acs Nano* 2015, 9 (6), 6484-6492.

160. Balke, N.; **Jesse, S.**; Li, Q.; Maksymovych, P.; Okatan, M. B.; Strelcov, E.; Tselev, A.; Kalinin, S. V., Current and surface charge modified hysteresis loops in ferroelectric thin films. *Journal of Applied Physics* 2015, 118 (7).
161. Yang, S. M.; Okatan, M. B.; Paranthaman, M. P.; **Jesse, S.**; Noh, T. W.; Kalinin, S. V., Second harmonic detection in the electrochemical strain microscopy of Ag-ion conducting glass. *Applied Physics Letters* 2014, 105 (19).
162. Yang, N.; Doria, S.; Kumar, A.; Jang, J. H.; Arruda, T. M.; Tebano, A.; **Jesse, S.**; Ivanov, I. N.; Baddorf, A. P.; Strelcov, E.; Licoccia, S.; Borisevich, A. Y.; Balestrino, G.; Kalinin, S. V., Water-mediated electrochemical nano-writing on thin ceria films. *Nanotechnology* 2014, 25 (7).
163. Yang, N.; Belianinov, A.; Strelcov, E.; Tebano, A.; Foglietti, V.; Di Castro, D.; Schlueter, C.; Lee, T. L.; Baddorf, A. P.; Balke, N.; **Jesse, S.**; Kalinin, S. V.; Balestrino, G.; Aruta, C., Effect of Doping on Surface Reactivity and Conduction Mechanism in Samarium-Doped Ceria Thin Films. *Acs Nano* 2014, 8 (12), 12494-12501.
164. Vasudevan, R. K.; Matsumoto, Y.; Cheng, X.; Imai, A.; Maruyama, S.; Xin, H. L.; Okatan, M. B.; **Jesse, S.**; Kalinin, S. V.; Nagarajan, V., Deterministic arbitrary switching of polarization in a ferroelectric thin film. *Nature Communications* 2014, 5.
165. Tselev, A.; Ivanov, I. N.; Lavrik, N. V.; Belianinov, A.; **Jesse, S.**; Mathews, J. P.; Mitchell, G. D.; Kalinin, S. V., Mapping internal structure of coal by confocal micro-Raman spectroscopy and scanning microwave microscopy. *Fuel* 2014, 126, 32-37.
166. Sugiyama, I.; Kim, Y.; **Jesse, S.**; Strelcov, E.; Kumar, A.; Tselev, A.; Rahani, E. K.; Shenoy, V. B.; Yamamoto, T.; Shibata, N.; Ikuhara, Y.; Kalinin, S. V., Spatially-resolved mapping of history-dependent coupled electrochemical and electrical behaviors of electroresistive NiO. *Scientific Reports* 2014, 4.
167. Strelcov, E.; Ilevlev, A. V.; **Jesse, S.**; Kravchenko, I.; Shur, V. Y.; Kalinin, S. V., Direct Probing of Charge Injection and Polarization-Controlled Ionic Mobility on Ferroelectric LiNbO₃ Surfaces. *Advanced Materials* 2014, 26 (6), 958-963.
168. Strelcov, E.; Belianinov, A.; Hsieh, Y. H.; **Jesse, S.**; Baddorf, A. P.; Chu, Y. H.; Kalinin, S. V., Deep Data Analysis of Conductive Phenomena on Complex Oxide Interfaces: Physics from Data Mining. *Acs Nano* 2014, 8 (6), 6449-6457.
169. Marincel, D. M.; Zhang, H. R.; Kumar, A.; **Jesse, S.**; Kalinin, S. V.; Rainforth, W. M.; Reaney, I. M.; Randall, C. A.; Trolrier-McKinstry, S., Influence of a Single Grain Boundary on Domain Wall Motion in Ferroelectrics. *Advanced Functional Materials* 2014, 24 (10), 1409-1417.
170. Kumar, A.; **Jesse, S.**; Morozovska, A.; Eliseev, E.; Tebano, A.; Yang, N.; Kalinin, S. V., Variable temperature electrochemical strain microscopy of Sm-doped ceria (vol 24, 145401, 2013). *Nanotechnology* 2014, 25 (8).
171. Kelly, S. J.; Kim, Y.; Eliseev, E.; Morozovska, A.; **Jesse, S.**; Biegalski, M. D.; Mitchell, J. F.; Zheng, H.; Aarts, J.; Hwang, I.; Oh, S.; Choi, J. S.; Choi, T.; Park, B. H.; Kalinin, S. V.; Maksymovych, P., Controlled mechanical modification of manganite surface with nanoscale resolution. *Nanotechnology* 2014, 25 (47).
172. **Jesse, S.**; Vasudevan, R. K.; Collins, L.; Strelcov, E.; Okatan, M. B.; Belianinov, A.; Baddorf, A. P.; Proksch, R.; Kalinin, S. V., Band Excitation in Scanning Probe Microscopy: Recognition and Functional Imaging. In *Annual Review of Physical Chemistry*, Vol 65, Johnson, M. A.; Martinez, T. J., Eds. 2014; Vol. 65, pp 519-536.
173. Ilevlev, A. V.; **Jesse, S.**; Morozovska, A. N.; Strelcov, E.; Eliseev, E. A.; Pershin, Y. V.; Kumar, A.; Shur, V. Y.; Kalinin, S. V., Intermittency, quasiperiodicity and chaos in probe-induced ferroelectric domain switching. *Nature Physics* 2014, 10 (1), 59-66.
174. Gupta, S.; Belianinov, A.; Okatan, M. B.; **Jesse, S.**; Kalinin, S. V.; Priya, S., Fundamental limitation to the magnitude of piezoelectric response of < 001 >(pc) textured K_{0.5}Na_{0.5}NbO₃ ceramic. *Applied Physics Letters* 2014, 104 (17).

175. Gai, Z.; Lin, W. Z.; Burton, J. D.; Fuchigami, K.; Snijders, P. C.; Ward, T. Z.; Tsybal, E. Y.; Shen, J.; **Jesse, S.**; Kalinin, S. V.; Baddorf, A. P., Chemically induced Jahn-Teller ordering on manganite surfaces. *Nature Communications* 2014, 5.
176. Collins, L.; Tselev, A.; **Jesse, S.**; Okatan, M. B.; Proksch, R.; Mathews, J. P.; Mitchell, G. D.; Rodriguez, B. J.; Kalinin, S. V.; Ivanov, I. N., Breaking the limits of structural and mechanical imaging of the heterogeneous structure of coal macerals. *Nanotechnology* 2014, 25 (43).
177. Collins, L.; Kilpatrick, J. I.; Vlassiounk, I. V.; Tselev, A.; Weber, S. A. L.; **Jesse, S.**; Kalinin, S. V.; Rodriguez, B. J., Dual harmonic Kelvin probe force microscopy at the graphene-liquid interface. *Applied Physics Letters* 2014, 104 (13).
178. Collins, L.; **Jesse, S.**; Kilpatrick, J. I.; Tselev, A.; Varenyk, O.; Okatan, M. B.; Weber, S. A. L.; Kumar, A.; Balke, N.; Kalinin, S. V.; Rodriguez, B. J., Probing charge screening dynamics and electrochemical processes at the solid-liquid interface with electrochemical force microscopy. *Nature Communications* 2014, 5.
179. Belianinov, A.; Ganesh, P.; Lin, W. Z.; Sales, B. C.; Sefat, A. S.; **Jesse, S.**; Pan, M. H.; Kalinin, S. V., Research Update: Spatially resolved mapping of electronic structure on atomic level by multivariate statistical analysis. *Apl Materials* 2014, 2 (12).
180. Balke, N.; Maksymovych, P.; **Jesse, S.**; Kravchenko, I.; Li, Q.; Kalinin, S. V., Exploring Local Electrostatic Effects with Scanning Probe Microscopy: Implications for Piezoresponse Force Microscopy and Triboelectricity. *Acs Nano* 2014, 8 (10), 10229-10236.
181. Arruda, T. M.; Lawton, J. S.; Kumar, A.; Unocic, R. R.; Kravchenko, I.; Zawodzinski, T. A.; **Jesse, S.**; Kalinin, S. V.; Balke, N., In Situ Formation of Micron-Scale Li-Metal Anodes with High Cyclability. *Ecs Electrochemistry Letters* 2014, 3 (1), A4-A7.
182. Agar, J. C.; Mangalam, R. V. K.; Damodaran, A. R.; Velarde, G.; Karthik, J.; Okatan, M. B.; Chen, Z. H.; **Jesse, S.**; Balke, N.; Kalinin, S. V.; Martin, L. W., Tuning Susceptibility via Misfit Strain in Relaxed Morphotropic Phase Boundary PbZr_{1-x}Ti_xO₃ Epitaxial Thin Films. *Advanced Materials Interfaces* 2014, 1 (5).
183. Vasudevan, R. K.; Okatan, M. B.; Rajapaksa, I.; Kim, Y.; Marincel, D.; Trolrier-McKinstry, S.; **Jesse, S.**; Valanoor, N.; Kalinin, S. V., Higher order harmonic detection for exploring nonlinear interactions with nanoscale resolution. *Scientific Reports* 2013, 3.
184. Vasudevan, R. K.; Okatan, M. B.; Liu, Y. Y.; **Jesse, S.**; Yang, J. C.; Liang, W. I.; Chu, Y. H.; Li, J. Y.; Kalinin, S. V.; Nagarajan, V., Unraveling the origins of electromechanical response in mixed-phase bismuth ferrite. *Physical Review B* 2013, 88 (2).
185. Vasudevan, R. K.; Okatan, M. B.; Duan, C.; Ehara, Y.; Funakubo, H.; Kumar, A.; **Jesse, S.**; Chen, L. Q.; Kalinin, S. V.; Nagarajan, V., Nanoscale Origins of Nonlinear Behavior in Ferroic Thin Films. *Advanced Functional Materials* 2013, 23 (1), 81-90.
186. Vasudevan, R. K.; Marincel, D.; **Jesse, S.**; Kim, Y.; Kumar, A.; Kalinin, S. V.; Trolrier-McKinstry, S., Polarization Dynamics in Ferroelectric Capacitors: Local Perspective on Emergent Collective Behavior and Memory Effects. *Advanced Functional Materials* 2013, 23 (20), 2490-2508.
187. Strelcov, E.; Kim, Y.; **Jesse, S.**; Cao, Y.; Ivanov, I. N.; Kravchenko, I.; Wang, C. H.; Teng, Y. C.; Chen, L. Q.; Chu, Y. H.; Kalinin, S. V., Probing Local Ionic Dynamics in Functional Oxides at the Nanoscale. *Nano Letters* 2013, 13 (8), 3455-3462.
188. Strelcov, E.; **Jesse, S.**; Huang, Y. L.; Teng, Y. C.; Kravchenko, I.; Chu, Y. H.; Kalinin, S. V., Space- and Time-Resolved Mapping of Ionic Dynamic and Electroresistive Phenomena in Lateral Devices. *Acs Nano* 2013, 7 (8), 6806-6815.
189. Shkabko, A.; Aguirre, M. H.; Kumar, A.; Kim, Y.; **Jesse, S.**; Waser, R.; Kalinin, S. V.; Weidenkaff, A., Surface deformations as a necessary requirement for resistance switching at the surface of SrTiO₃:N. *Nanotechnology* 2013, 24 (47).

190. Lin, W. Z.; Li, Q.; Sales, B. C.; **Jesse, S.**; Sefat, A. S.; Kalinin, S. V.; Pan, M. H., Direct Probe of Interplay between Local Structure and Superconductivity in FeTe_{0.55}Se_{0.45}. *Acs Nano* 2013, 7 (3), 2634-2641.
191. Lin, W. Z.; Li, Q.; Belianinov, A.; Sales, B. C.; Sefat, A.; Gai, Z.; Baddorf, A. P.; Pan, M. H.; **Jesse, S.**; Kalinin, S. V., Local crystallography analysis for atomically resolved scanning tunneling microscopy images. *Nanotechnology* 2013, 24 (41).
192. Leonard, D. N.; Kumar, A.; **Jesse, S.**; Biegalski, M. D.; Christen, H. M.; Mutoro, E.; Crumlin, E. J.; Shao-Horn, Y.; Kalinin, S. V.; Borisevich, A. Y., Nanoscale Probing of Voltage Activated Oxygen Reduction/Evolution Reactions in Nanopatterned (La_xSr_{1-x})CoO₃-Cathodes. *Advanced Energy Materials* 2013, 3 (6), 788-797.
193. Kumar, A.; Leonard, D.; **Jesse, S.**; Ciucci, F.; Eliseev, E. A.; Morozovska, A. N.; Biegalski, M. D.; Christen, H. M.; Tselev, A.; Mutoro, E.; Crumlin, E. J.; Morgan, D.; Shao-Horn, Y.; Borisevich, A.; Kalinin, S. V., Spatially Resolved Mapping of Oxygen Reduction/Evolution Reaction on Solid-Oxide Fuel Cell Cathodes with Sub-10 nm Resolution. *Acs Nano* 2013, 7 (5), 3808-3814.
194. Kumar, A.; **Jesse, S.**; Morozovska, A. N.; Eliseev, E.; Tebano, A.; Yang, N.; Kalinin, S. V., Variable temperature electrochemical strain microscopy of Sm-doped ceria. *Nanotechnology* 2013, 24 (14).
195. Kumar, A.; Ciucci, F.; Leonard, D.; **Jesse, S.**; Biegalski, M.; Christen, H.; Mutoro, E.; Crumlin, E.; Shao-Horn, Y.; Borisevich, A.; Kalinin, S. V., Probing Bias-Dependent Electrochemical Gas-Solid Reactions in (La_xSr_{1-x})CoO₃-delta Cathode Materials. *Advanced Functional Materials* 2013, 23 (40), 5027-5036.
196. Kumar, A.; Chen, C.; Arruda, T. M.; **Jesse, S.**; Ciucci, F.; Kalinin, S. V., Frequency spectroscopy of irreversible electrochemical nucleation kinetics on the nanoscale. *Nanoscale* 2013, 5 (23), 11964-11970.
197. Kumar, A.; Arruda, T. M.; Tselev, A.; Ivanov, I. N.; Lawton, J. S.; Zawodzinski, T. A.; Butyaev, O.; Zayats, S.; **Jesse, S.**; Kalinin, S. V., Nanometer-scale mapping of irreversible electrochemical nucleation processes on solid Li-ion electrolytes. *Scientific Reports* 2013, 3.
198. Kim, Y.; Strelcov, E.; Hwang, I. R.; Choi, T.; Park, B. H.; **Jesse, S.**; Kalinin, S. V., Correlative Multimodal Probing of Ionically-Mediated Electromechanical Phenomena in Simple Oxides. *Scientific Reports* 2013, 3.
199. Kim, Y.; Lu, X. L.; **Jesse, S.**; Hesse, D.; Alexe, M.; Kalinin, S. V., Universality of Polarization Switching Dynamics in Ferroelectric Capacitors Revealed by 5D Piezoresponse Force Microscopy. *Advanced Functional Materials* 2013, 23 (32), 3971-3979.
200. Kim, Y.; Kim, Y.; Han, H.; **Jesse, S.**; Hyun, S.; Lee, W.; Kalinin, S. V.; Kim, J. K., Towards the limit of ferroelectric nanostructures: switchable sub-10 nm nanoisland arrays. *Journal of Materials Chemistry C* 2013, 1 (34), 5299-5302.
201. Kim, Y.; Kelly, S. J.; Morozovska, A.; Rahani, E. K.; Strelcov, E.; Eliseev, E.; **Jesse, S.**; Biegalski, M. D.; Balke, N.; Benedek, N.; Strukov, D.; Aarts, J.; Hwang, I.; Oh, S.; Choi, J. S.; Choi, T.; Park, B. H.; Shenoy, V. B.; Maksymovych, P.; Kalinin, S. V., Mechanical Control of Electroresistive Switching. *Nano Letters* 2013, 13 (9), 4068-4074.
202. Kim, Y.; **Jesse, S.**; Morelli, A.; Kalinin, S. V.; Vrejoiu, I., Influence of the interfacing with an electrically inhomogeneous bottom electrode on the ferroelectric properties of epitaxial PbTiO₃. *Applied Physics Letters* 2013, 103 (19).
203. Kim, Y.; Jang, J. H.; Park, S. J.; **Jesse, S.**; Donovan, L.; Borisevich, A. Y.; Lee, W.; Kalinin, S. V., Local probing of electrochemically induced negative differential resistance in TiO₂ memristive materials. *Nanotechnology* 2013, 24 (8).
204. Doria, S.; Yang, N.; Kumar, A.; **Jesse, S.**; Tebano, A.; Aruta, C.; Di Bartolomeo, E.; Arruda, T. M.; Kalinin, S. V.; Licocchia, S.; Balestrino, G., Nanoscale mapping of oxygen vacancy kinetics in nanocrystalline Samarium doped ceria thin films. *Applied Physics Letters* 2013, 103 (17).

205. Cox, P. A.; Waldow, D. A.; Dupper, T. J.; **Jesse, S.**; Ginger, D. S., Mapping Nanoscale Variations in Photochemical Damage of Polymer/Fullerene Solar Cells with Dissipation Imaging. *ACS Nano* 2013, 7 (11), 10405-10413.
206. Collins, L.; Kilpatrick, J. I.; Weber, S. A. L.; Tselev, A.; Vlassiuk, I. V.; Ivanov, I. N.; **Jesse, S.**; Kalinin, S. V.; Rodriguez, B. J., Open loop Kelvin probe force microscopy with single and multi-frequency excitation. *Nanotechnology* 2013, 24 (47).
207. Arruda, T. M.; Kumar, A.; **Jesse, S.**; Veith, G. M.; Tselev, A.; Baddorf, A. P.; Balke, N.; Kalinin, S. V., Toward Quantitative Electrochemical Measurements on the Nanoscale by Scanning Probe Microscopy: Environmental and Current Spreading Effects. *ACS Nano* 2013, 7 (9), 8175-8182.
208. Wang, K.; **Jesse, S.**; Wang, S. F., Banded Spherulitic Morphology in Blends of Poly(propylene fumarate) and Poly(epsilon-caprolactone) and Interaction with MC3T3-E1 Cells. *Macromolecular Chemistry and Physics* 2012, 213 (12), 1239-1250.
209. Wang, K.; Cai, L.; **Jesse, S.**; Wang, S. F., Poly(epsilon-caprolactone)-Banded Spherulites and Interaction with MC3T3-E1 Cells. *Langmuir* 2012, 28 (9), 4382-4395.
210. Vasudevan, R. K.; **Jesse, S.**; Kim, Y.; Kumar, A.; Kalinin, S. V., Spectroscopic imaging in piezoresponse force microscopy: New opportunities for studying polarization dynamics in ferroelectrics and multiferroics. *Mrs Communications* 2012, 2 (3), 61-73.
211. Thompson, G. L.; Reukov, V. V.; Nikiforov, M. P.; **Jesse, S.**; Kalinin, S. V.; Vertegel, A. A., Electromechanical and elastic probing of bacteria in a cell culture medium. *Nanotechnology* 2012, 23 (24).
212. Strelcov, E.; Kim, Y.; Yang, J. C.; Chu, Y. H.; Yu, P.; Lu, X.; **Jesse, S.**; Kalinin, S. V., Role of measurement voltage on hysteresis loop shape in Piezoresponse Force Microscopy. *Applied Physics Letters* 2012, 101 (19).
213. Shelke, V.; Mazumdar, D.; **Jesse, S.**; Kalinin, S.; Baddorf, A.; Gupta, A., Ferroelectric domain scaling and switching in ultrathin BiFeO₃ films deposited on vicinal substrates. *New Journal of Physics* 2012, 14.
214. Maksymovych, P.; Huijben, M.; Pan, M. H.; **Jesse, S.**; Balke, N.; Chu, Y. H.; Chang, H. J.; Borisevich, A. Y.; Baddorf, A. P.; Rijnders, G.; Blank, D. H. A.; Ramesh, R.; Kalinin, S. V., Ultrathin limit and dead-layer effects in local polarization switching of BiFeO₃. *Physical Review B* 2012, 85 (1).
215. Liu, Y. Y.; Vasudevan, R. K.; Pan, K.; Xie, S. H.; Liang, W. I.; Kumar, A.; **Jesse, S.**; Chen, Y. C.; Chu, Y. H.; Nagarajan, V.; Kalinin, S. V.; Li, J. Y., Controlling magnetoelectric coupling by nanoscale phase transformation in strain engineered bismuth ferrite. *Nanoscale* 2012, 4 (10), 3175-3183.
216. Kumar, A.; Ehara, Y.; Wada, A.; Funakubo, H.; Griggio, F.; Troler-McKinstry, S.; **Jesse, S.**; Kalinin, S. V., Dynamic piezoresponse force microscopy: Spatially resolved probing of polarization dynamics in time and voltage domains. *Journal of Applied Physics* 2012, 112 (5).
217. Kumar, A.; Arruda, T. M.; Kim, Y.; Ivanov, I. N.; **Jesse, S.**; Bark, C. W.; Bristowe, N. C.; Artacho, E.; Littlewood, P. B.; Eom, C. B.; Kalinin, S. V., Probing Surface and Bulk Electrochemical Processes on the LaAlO₃-SrTiO₃ Interface. *ACS Nano* 2012, 6 (5), 3841-3852.
218. Kim, Y.; Morozovska, A. N.; Kumar, A.; **Jesse, S.**; Eliseev, E. A.; Alibart, F.; Strukov, D.; Kalinin, S. V., Ionically-Mediated Electromechanical Hysteresis in Transition Metal Oxides. *ACS Nano* 2012, 6 (8), 7026-7033.
219. Kim, Y.; Kumar, A.; Ovchinnikov, O.; **Jesse, S.**; Han, H.; Pantel, D.; Vrejoiu, I.; Lee, W.; Hesse, D.; Alexe, M.; Kalinin, S. V., First-Order Reversal Curve Probing of Spatially Resolved Polarization Switching Dynamics in Ferroelectric Nanocapacitors. *ACS Nano* 2012, 6 (1), 491-500.
220. **Jesse, S.**; Kumar, A.; Arruda, T. M.; Kim, Y.; Kalinin, S. V.; Ciucci, F., Electrochemical strain microscopy: Probing ionic and electrochemical phenomena in solids at the nanometer level. *Mrs Bulletin* 2012, 37 (7), 651-658.

221. Heredia, A.; Meunier, V.; Bdiqin, I. K.; Gracio, J.; Balke, N.; **Jesse, S.**; Tselev, A.; Agarwal, P. K.; Sumpter, B. G.; Kalinin, S. V.; Kholkin, A. L., Nanoscale Ferroelectricity in Crystalline gamma-Glycine. *Advanced Functional Materials* 2012, 22 (14), 2996-3003.
222. Guo, S. L.; Solares, S. D.; Mochalin, V.; Neitzel, I.; Gogotsi, Y.; Kalinin, S. V.; **Jesse, S.**, Multifrequency Imaging in the Intermittent Contact Mode of Atomic Force Microscopy: Beyond Phase Imaging. *Small* 2012, 8 (8), 1264-1269.
223. Guo, S. L.; Kalinin, S. V.; **Jesse, S.**, Half-harmonic Kelvin probe force microscopy with transfer function correction. *Applied Physics Letters* 2012, 100 (6).
224. Guo, S. L.; Kalinin, S. V.; **Jesse, S.**, Open-loop band excitation Kelvin probe force microscopy. *Nanotechnology* 2012, 23 (12).
225. Griggio, F.; **Jesse, S.**; Kumar, A.; Ovchinnikov, O.; Kim, H.; Jackson, T. N.; Damjanovic, D.; Kalinin, S. V.; Troler-McKinstry, S., Substrate Clamping Effects on Irreversible Domain Wall Dynamics in Lead Zirconate Titanate Thin Films. *Physical Review Letters* 2012, 108 (15).
226. Balke, N.; Winchester, B.; Ren, W.; Chu, Y. H.; Morozovska, A. N.; Eliseev, E. A.; Huijben, M.; Vasudevan, R. K.; Maksymovych, P.; Britson, J.; **Jesse, S.**; Kornev, I.; Ramesh, R.; Bellaiche, L.; Chen, L. Q.; Kalinin, S. V., Enhanced electric conductivity at ferroelectric vortex cores in BiFeO₃. *Nature Physics* 2012, 8 (1), 81-88.
227. Balke, N.; Tselev, A.; Arruda, T. M.; **Jesse, S.**; Chu, Y. H.; Kalinin, S. V., Probing Local Electromechanical Effects in Highly Conductive Electrolytes. *Acs Nano* 2012, 6 (11), 10139-10146.
228. Balke, N.; Kalnaus, S.; Dudney, N. J.; Daniel, C.; **Jesse, S.**; Kalinin, S. V., Local Detection of Activation Energy for Ionic Transport in Lithium Cobalt Oxide. *Nano Letters* 2012, 12 (7), 3399-3403.
229. Balke, N.; **Jesse, S.**; Chu, Y. H.; Kalinin, S. V., High-Frequency Electromechanical Imaging of Ferroelectrics in a Liquid Environment. *Acs Nano* 2012, 6 (6), 5559-5565.
230. Balke, N.; Eliseev, E. A.; **Jesse, S.**; Kalnaus, S.; Daniel, C.; Dudney, N. J.; Morozovska, A. N.; Kalinin, S. V., Three-dimensional vector electrochemical strain microscopy. *Journal of Applied Physics* 2012, 112 (5).
231. Arruda, T. M.; Kumar, A.; Kalinin, S. V.; **Jesse, S.**, The partially reversible formation of Li-metal particles on a solid Li electrolyte: applications toward nanobatteries. *Nanotechnology* 2012, 23 (32).
232. Vasudevan, R. K.; Liu, Y. Y.; Li, J. Y.; Liang, W. I.; Kumar, A.; **Jesse, S.**; Chen, Y. C.; Chu, Y. H.; Nagarajan, V.; Kalinin, S. V., Nanoscale Control of Phase Variants in Strain-Engineered BiFeO₃. *Nano Letters* 2011, 11 (8), 3346-3354.
233. Vasudevan, R. K.; Bogle, K. A.; Kumar, A.; **Jesse, S.**; Magaraggia, R.; Stamps, R.; Ogale, S. B.; Potdar, H. S.; Nagarajan, V., Ferroelectric and electrical characterization of multiferroic BiFeO₃ at the single nanoparticle level. *Applied Physics Letters* 2011, 99 (25).
234. Troler-McKinstry, S.; Griggio, F.; Yaeger, C.; Jousse, P.; Zhao, D. L.; Bharadwaja, S. S. N.; Jackson, T. N.; **Jesse, S.**; Kalinin, S. V.; Wasa, K., Designing Piezoelectric Films for Micro Electromechanical Systems. *Ieee Transactions on Ultrasonics Ferroelectrics and Frequency Control* 2011, 58 (9), 1782-1792.
235. Shin, J.; Goyal, A.; **Jesse, S.**; Heatherly, L., Polarization Manipulation via Orientation Control in Polycrystalline BiFeO₃ Thin Films on Biaxially Textured, Flexible Metallic Tapes. *Applied Physics Express* 2011, 4 (2).
236. Shelke, V.; Mazumdar, D.; Srinivasan, G.; Kumar, A.; **Jesse, S.**; Kalinin, S.; Baddorf, A.; Gupta, A., Reduced Coercive Field in BiFeO₃ Thin Films Through Domain Engineering. *Advanced Materials* 2011, 23 (5), 669-+.
237. Ovchinnikova, O. S.; Nikiforov, M. P.; Bradshaw, J. A.; **Jesse, S.**; Van Berkel, G. J., Combined Atomic Force Microscope-Based Topographical Imaging and Nanometer-Scale Resolved Proximal Probe Thermal Desorption/Electrospray Ionization-Mass Spectrometry. *Acs Nano* 2011, 5 (7), 5526-5531.

238. Nikiforov, M. P.; Hohlbauch, S.; King, W. P.; Voitchofsky, K.; Contera, S. A.; **Jesse, S.**; Kalinin, S. V.; Proksch, R., Temperature-dependent phase transitions in zeptoliter volumes of a complex biological membrane. *Nanotechnology* 2011, 22 (5).
239. McLachlan, M. A.; McComb, D. W.; Ryan, M. P.; Morozovska, A. N.; Eliseev, E. A.; Payzant, E. A.; **Jesse, S.**; Seal, K.; Baddorf, A. P.; Kalinin, S. V., Probing Local and Global Ferroelectric Phase Stability and Polarization Switching in Ordered Macroporous PZT. *Advanced Functional Materials* 2011, 21 (5), 941-947.
240. Kumar, A.; Ovchinnikov, O. S.; Funakubo, H.; **Jesse, S.**; Kalinin, S. V., Real-space mapping of dynamic phenomena during hysteresis loop measurements: Dynamic switching spectroscopy piezoresponse force microscopy. *Applied Physics Letters* 2011, 98 (20).
241. Kumar, A.; Ovchinnikov, O.; Guo, S.; Griggio, F.; **Jesse, S.**; Trolier-McKinstry, S.; Kalinin, S. V., Spatially resolved mapping of disorder type and distribution in random systems using artificial neural network recognition. *Physical Review B* 2011, 84 (2).
242. Kumar, A.; Ciucci, F.; Morozovska, A. N.; Kalinin, S. V.; **Jesse, S.**, Measuring oxygen reduction/evolution reactions on the nanoscale. *Nature Chemistry* 2011, 3 (9), 707-713.
243. Kalinin, S. V.; **Jesse, S.**; Tselev, A.; Baddorf, A. P.; Balke, N., The Role of Electrochemical Phenomena in Scanning Probe Microscopy of Ferroelectric Thin Films. *ACS Nano* 2011, 5 (7), 5683-5691.
244. Kalinin, S.; Kumar, A.; Balke, N.; McCorkle, M.; Guo, S. L.; Arruda, T.; **Jesse, S.**, ESM of Ionic and Electrochemical Phenomena on the Nanoscale. *Advanced Materials & Processes* 2011, 169 (11), 30-34.
245. Kalinin, S.; Balke, N.; **Jesse, S.**; Tselev, A.; Kumar, A.; Arruda, T. M.; Guo, S. L.; Proksch, R., Li-ion dynamics and reactivity on the nanoscale. *Materials Today* 2011, 14 (11), 548-558.
246. **Jesse, S.**; Kalinin, S. V., Band excitation in scanning probe microscopy: sines of change. *Journal of Physics D-Applied Physics* 2011, 44 (46).
247. **Jesse, S.**; Balke, N.; Eliseev, E.; Tselev, A.; Dudney, N. J.; Morozovska, A. N.; Kalinin, S. V., Direct Mapping of Ionic Transport in a Si Anode on the Nanoscale: Time Domain Electrochemical Strain Spectroscopy Study. *ACS Nano* 2011, 5 (12), 9682-9695.
248. Harmon, M. E.; Nikiforov, M. P.; Sahagian, K.; **Jesse, S.**; Kalinin, S. B., Mapping of glass transition temperatures in carbon fiber polymer matrix composites. *Abstracts of Papers of the American Chemical Society* 2011, 242.
249. Guo, S.; **Jesse, S.**; Kalnaus, S.; Balke, N.; Daniel, C.; Kalinin, S. V., Direct Mapping of Ion Diffusion Times on LiCoO₂ Surfaces with Nanometer Resolution. *Journal of the Electrochemical Society* 2011, 158 (8), A982-A990.
250. Griggio, F.; **Jesse, S.**; Qu, W.; Kumar, A.; Ovchinnikov, O.; Tinberg, D. S.; Kalinin, S. V.; Trolier-McKinstry, S., Composition dependence of local piezoelectric nonlinearity in (0.3)Pb(Ni_{0.33}Nb_{0.67})O-3-(0.7)Pb(ZrxTi_{1-x})O-3 films. *Journal of Applied Physics* 2011, 110 (4).
251. Griggio, F.; **Jesse, S.**; Kumar, A.; Marincel, D. M.; Tinberg, D. S.; Kalinin, S. V.; Trolier-McKinstry, S., Mapping piezoelectric nonlinearity in the Rayleigh regime using band excitation piezoresponse force microscopy. *Applied Physics Letters* 2011, 98 (21).
252. Chang, H. J.; Kalinin, S. V.; Yang, S.; Yu, P.; Bhattacharya, S.; Wu, P. P.; Balke, N.; **Jesse, S.**; Chen, L. Q.; Ramesh, R.; Pennycook, S. J.; Borisevich, A. Y., Watching domains grow: In-situ studies of polarization switching by combined scanning probe and scanning transmission electron microscopy. *Journal of Applied Physics* 2011, 110 (5).
253. Bokov, A. A.; Rodriguez, B. J.; Zhao, X. H.; Ko, J. H.; **Jesse, S.**; Long, X. F.; Qu, W. G.; Kim, T. H.; Budai, J. D.; Morozovska, A. N.; Kojima, S.; Tan, X. L.; Kalinin, S. V.; Ye, Z. G., Compositional disorder, polar nanoregions and dipole dynamics in Pb(Mg_{1/3}Nb_{2/3})O-3-based relaxor ferroelectrics. *Zeitschrift Fur Kristallographie-Crystalline Materials* 2011, 226 (2), 99-107.

254. Arruda, T. M.; Kumar, A.; Kalinin, S. V.; **Jesse, S.**, Mapping Irreversible Electrochemical Processes on the Nanoscale: Ionic Phenomena in Li Ion Conductive Glass Ceramics. *Nano Letters* 2011, 11 (10), 4161-4167.
255. Wicks, S.; Seal, K.; **Jesse, S.**; Anbusathaiah, V.; Leach, S.; Garcia, R. E.; Kalinin, S. V.; Nagarajan, V., Collective dynamics in nanostructured polycrystalline ferroelectric thin films using local time-resolved measurements and switching spectroscopy. *Acta Materialia* 2010, 58 (1), 67-75.
256. Rodriguez, B. J.; **Jesse, S.**; Morozovska, A. N.; Svechnikov, S. V.; Kiselev, D. A.; Kholkin, A. L.; Bokov, A. A.; Ye, Z. G.; Kalinin, S. V., Real space mapping of polarization dynamics and hysteresis loop formation in relaxor-ferroelectric $\text{PbMg}_{1/3}\text{Nb}_{2/3}\text{O}_3\text{-PbTiO}_3$ solid solutions. *Journal of Applied Physics* 2010, 108 (4).
257. Ovchinnikov, O.; **Jesse, S.**; Guo, S.; Seal, K.; Bintachitt, P.; Fujii, I.; Troler-McKinstry, S.; Kalinin, S. V., Local measurements of Preisach density in polycrystalline ferroelectric capacitors using piezoresponse force spectroscopy. *Applied Physics Letters* 2010, 96 (11).
258. Nikiforov, M. P.; Thompson, G. L.; Reukov, V. V.; **Jesse, S.**; Guo, S.; Rodriguez, B. J.; Seal, K.; Vertegel, A. A.; Kalinin, S. V., Double-Layer Mediated Electromechanical Response of Amyloid Fibrils in Liquid Environment. *Acs Nano* 2010, 4 (2), 689-698.
259. Nikiforov, M. P.; Gam, S.; **Jesse, S.**; Composto, R. J.; Kalinin, S. V., Morphology Mapping of Phase-Separated Polymer Films Using Nanothermal Analysis. *Macromolecules* 2010, 43 (16), 6724-6730.
260. Mazumdar, D.; Shelke, V.; Iliev, M.; **Jesse, S.**; Kumar, A.; Kalinin, S. V.; Baddorf, A. P.; Gupta, A., Nanoscale Switching Characteristics of Nearly Tetragonal BiFeO_3 Thin Films. *Nano Letters* 2010, 10 (7), 2555-2561.
261. Kholkin, A. L.; Kiselev, D. A.; Bdikin, I. K.; Sternberg, A.; Dkhil, B.; **Jesse, S.**; Ovchinnikov, O.; Kalinin, S. V., Mapping Disorder in Polycrystalline Relaxors: A Piezoresponse Force Microscopy Approach. *Materials* 2010, 3 (11), 4860-4870.
262. Kalinin, S. V.; Rodriguez, B. J.; Budai, J. D.; **Jesse, S.**; Morozovska, A. N.; Bokov, A. A.; Ye, Z. G., Direct evidence of mesoscopic dynamic heterogeneities at the surfaces of ergodic ferroelectric relaxors. *Physical Review B* 2010, 81 (6).
263. Kalinin, S. V.; Rodriguez, B. J.; Borisevich, A. Y.; Baddorf, A. P.; Balke, N.; Chang, H. J.; Chen, L. Q.; Choudhury, S.; **Jesse, S.**; Maksymovych, P.; Nikiforov, M. P.; Pennycook, S. J., Defect-Mediated Polarization Switching in Ferroelectrics and Related Materials: From Mesoscopic Mechanisms to Atomistic Control. *Advanced Materials* 2010, 22 (3), 314-322.
264. **Jesse, S.**; Guo, S.; Kumar, A.; Rodriguez, B. J.; Proksch, R.; Kalinin, S. V., Resolution theory, and static and frequency-dependent cross-talk in piezoresponse force microscopy. *Nanotechnology* 2010, 21 (40).
265. Guo, S.; Ovchinnikov, O. S.; Curtis, M. E.; Johnson, M. B.; **Jesse, S.**; Kalinin, S. V., Spatially resolved probing of Preisach density in polycrystalline ferroelectric thin films. *Journal of Applied Physics* 2010, 108 (8).
266. Bintachitt, P.; **Jesse, S.**; Damjanovic, D.; Han, Y.; Reaney, I. M.; Troler-McKinstry, S.; Kalinin, S. V., Collective dynamics underpins Rayleigh behavior in disordered polycrystalline ferroelectrics. *Proceedings of the National Academy of Sciences of the United States of America* 2010, 107 (16), 7219-7224.
267. Balke, N.; **Jesse, S.**; Morozovska, A. N.; Eliseev, E.; Chung, D. W.; Kim, Y.; Adamczyk, L.; Garcia, R. E.; Dudney, N.; Kalinin, S. V., Nanoscale mapping of ion diffusion in a lithium-ion battery cathode. *Nature Nanotechnology* 2010, 5 (10), 749-754.
268. Balke, N.; **Jesse, S.**; Kim, Y.; Adamczyk, L.; Tselev, A.; Ivanov, I. N.; Dudney, N. J.; Kalinin, S. V., Real Space Mapping of Li-Ion Transport in Amorphous Si Anodes with Nanometer Resolution. *Nano Letters* 2010, 10 (9), 3420-3425.

269. Balke, N.; **Jesse, S.**; Kim, Y.; Adamczyk, L.; Ivanov, I. N.; Dudney, N. J.; Kalinin, S. V., Decoupling Electrochemical Reaction and Diffusion Processes in Ionically-Conductive Solids on the Nanometer Scale. *ACS Nano* 2010, 4 (12), 7349-7357.
270. Aravind, V. R.; Morozovska, A. N.; Bhattacharyya, S.; Lee, D.; **Jesse, S.**; Grinberg, I.; Li, Y. L.; Choudhury, S.; Wu, P.; Seal, K.; Rappe, A. M.; Svechnikov, S. V.; Eliseev, E. A.; Phillpot, S. R.; Chen, L. Q.; Gopalan, V.; Kalinin, S. V., Correlated polarization switching in the proximity of a 180 degrees domain wall. *Physical Review B* 2010, 82 (2).
271. Anbusathaiah, V.; **Jesse, S.**; Arredondo, M. A.; Kartawidjaja, F. C.; Ovchinnikov, O. S.; Wang, J.; Kalinin, S. V.; Nagarajan, V., Ferroelastic domain wall dynamics in ferroelectric bilayers. *Acta Materialia* 2010, 58 (16), 5316-5325.
272. Ward, T. Z.; Zhang, X. G.; Yin, L. F.; Zhang, X. Q.; Liu, M.; Snijders, P. C.; **Jesse, S.**; Plummer, E. W.; Cheng, Z. H.; Dagotto, E.; Shen, J., Time-Resolved Electronic Phase Transitions in Manganites. *Physical Review Letters* 2009, 102 (8).
273. Shin, J.; Goyal, A.; **Jesse, S.**; Kim, D. H., Single-crystal-like, c-axis oriented BaTiO₃ thin films with high-performance on flexible metal templates for ferroelectric applications. *Applied Physics Letters* 2009, 94 (25).
274. Seal, K.; **Jesse, S.**; Nikiforov, M. P.; Kalinin, S. V.; Fujii, I.; Bintachitt, P.; Troler-McKinstry, S., Spatially Resolved Spectroscopic Mapping of Polarization Reversal in Polycrystalline Ferroelectric Films: Crossing the Resolution Barrier. *Physical Review Letters* 2009, 103 (5).
275. Rodriguez, B. J.; **Jesse, S.**; Habelitz, S.; Proksch, R.; Kalinin, S. V., Intermittent contact mode piezoresponse force microscopy in a liquid environment. *Nanotechnology* 2009, 20 (19).
276. Rodriguez, B. J.; **Jesse, S.**; Bokov, A. A.; Ye, Z. G.; Kalinin, S. V., Mapping bias-induced phase stability and random fields in relaxor ferroelectrics. *Applied Physics Letters* 2009, 95 (9).
277. Rodriguez, B. J.; Choudhury, S.; Chu, Y. H.; Bhattacharyya, A.; **Jesse, S.**; Seal, K.; Baddorf, A. P.; Ramesh, R.; Chen, L. Q.; Kalinin, S. V., Unraveling Deterministic Mesoscopic Polarization Switching Mechanisms: Spatially Resolved Studies of a Tilt Grain Boundary in Bismuth Ferrite. *Advanced Functional Materials* 2009, 19 (13), 2053-2063.
278. Ovchinnikov, O. S.; **Jesse, S.**; Kalinin, S. V., Adaptive probe trajectory scanning probe microscopy for multiresolution measurements of interface geometry. *Nanotechnology* 2009, 20 (25).
279. Ovchinnikov, O. S.; **Jesse, S.**; Bintacchit, P.; Troler-McKinstry, S.; Kalinin, S. V., Disorder Identification in Hysteresis Data: Recognition Analysis of the Random-Bond-Random-Field Ising Model. *Physical Review Letters* 2009, 103 (15).
280. Nikiforov, M. P.; Reukov, V. V.; Thompson, G. L.; Vertegel, A. A.; Guo, S.; Kalinin, S. V.; **Jesse, S.**, Functional recognition imaging using artificial neural networks: applications to rapid cellular identification via broadband electromechanical response. *Nanotechnology* 2009, 20 (40).
281. Nikiforov, M. P.; **Jesse, S.**; Morozovska, A. N.; Eliseev, E. A.; Germinario, L. T.; Kalinin, S. V., Probing the temperature dependence of the mechanical properties of polymers at the nanoscale with band excitation thermal scanning probe microscopy. *Nanotechnology* 2009, 20 (39).
282. Maksymovych, P.; **Jesse, S.**; Yu, P.; Ramesh, R.; Baddorf, A. P.; Kalinin, S. V., Polarization Control of Electron Tunneling into Ferroelectric Surfaces. *Science* 2009, 324 (5933), 1421-1425.
283. Maksymovych, P.; **Jesse, S.**; Huijben, M.; Ramesh, R.; Morozovska, A.; Choudhury, S.; Chen, L. Q.; Baddorf, A. P.; Kalinin, S. V., Intrinsic Nucleation Mechanism and Disorder Effects in Polarization Switching on Ferroelectric Surfaces. *Physical Review Letters* 2009, 102 (1).
284. Maksymovych, P.; Balke, N.; **Jesse, S.**; Huijben, M.; Ramesh, R.; Baddorf, A. P.; Kalinin, S. V., Defect-induced asymmetry of local hysteresis loops on BiFeO₃ surfaces. *Journal of Materials Science* 2009, 44 (19), 5095-5101.

285. Kalinin, S. V.; Rodriguez, B. J.; **Jesse, S.**; Morozovska, A. N.; Bokov, A. A.; Ye, Z. G., Spatial distribution of relaxation behavior on the surface of a ferroelectric relaxor in the ergodic phase. *Applied Physics Letters* 2009, 95 (14).
286. **Jesse, S.**; Kalinin, S. V., Principal component and spatial correlation analysis of spectroscopic-imaging data in scanning probe microscopy. *Nanotechnology* 2009, 20 (8).
287. Borisevich, A. Y.; Kalinin, S. V.; Lupini, A. R.; **Jesse, S.**; Chang, H. J.; Huijben, M.; Ramesh, R.; Pennycook, S. J., Using Neural Network Algorithms for Compositional Mapping in STEM EELS. *Microscopy and Microanalysis* 2009, 15, 450-451.
288. Bintachitt, P.; Trolrier-McKinstry, S.; Seal, K.; **Jesse, S.**; Kalinin, S. V., Switching spectroscopy piezoresponse force microscopy of polycrystalline capacitor structures. *Applied Physics Letters* 2009, 94 (4).
289. Balke, N.; Choudhury, S.; **Jesse, S.**; Huijben, M.; Chu, Y. H.; Baddorf, A. P.; Chen, L. Q.; Ramesh, R.; Kalinin, S. V., Deterministic control of ferroelastic switching in multiferroic materials. *Nature Nanotechnology* 2009, 4 (12), 868-875.
290. Tan, Z. P.; Roytburd, A. L.; Levin, I.; Seal, K.; Rodriguez, B. J.; **Jesse, S.**; Kalinin, S.; Baddorf, A., Piezoelectric response of nanoscale PbTiO₃ in composite PbTiO₃-CoFe₂O₄ epitaxial films. *Applied Physics Letters* 2008, 93 (7).
291. Seal, K.; Bintachitt, P.; **Jesse, S.**; Morozovska, A.; Baddorf, A. P.; Trolrier-McKinstry, S.; Kalinin, S. V.; Ieee, Local Polarization Dynamics in Chemical Solution Deposited PZT Capacitors by Switching Spectroscopy PFM. In 2008 17th Ieee International Symposium on the Applications of Ferroelectrics, 2008; pp 65-+.
292. Rodriguez, B. J.; **Jesse, S.**; Seal, K.; Baddorf, A. P.; Kalinin, S. V., Direct measurement of periodic electric forces in liquids. *Journal of Applied Physics* 2008, 103 (1).
293. Rodriguez, B. J.; **Jesse, S.**; Kim, J.; Ducharme, S.; Kalinin, S. V., Local probing of relaxation time distributions in ferroelectric polymer nanomesas: Time-resolved piezoresponse force spectroscopy and spectroscopic imaging. *Applied Physics Letters* 2008, 92 (23).
294. Rodriguez, B. J.; **Jesse, S.**; Alexe, M.; Kalinin, S. V., Spatially resolved mapping of polarization switching behavior in nanoscale ferroelectrics. *Advanced Materials* 2008, 20 (1), 109-+.
295. Morozovska, A. N.; Svechnikov, S. V.; Eliseev, E. A.; Rodriguez, B. J.; **Jesse, S.**; Kalinin, S. V., Local polarization switching in the presence of surface-charged defects: Microscopic mechanisms and piezoresponse force spectroscopy observations. *Physical Review B* 2008, 78 (5).
296. Kalinin, S. V.; Rodriguez, B. J.; **Jesse, S.**; Maksymovych, P.; Seal, K.; Nikiforov, M.; Baddorf, A. P.; Kholkin, A. L.; Proksch, R., Local bias-induced phase transitions. *Materials Today* 2008, 11 (11), 16-27.
297. Kalinin, S. V.; **Jesse, S.**; Rodriguez, B. J.; Chu, Y. H.; Ramesh, R.; Eliseev, E. A.; Morozovska, A. N., Probing the role of single defects on the thermodynamics of electric-field induced phase transitions. *Physical Review Letters* 2008, 100 (15).
298. Kalinin, S.; **Jesse, S.**; Proksch, R., Information acquisition & processing in scanning probe microscopy. *R&D Magazine* 2008, 50 (4), 20-+.
299. **Jesse, S.**; Rodriguez, B. J.; Choudhury, S.; Baddorf, A. P.; Vrejoiu, I.; Hesse, D.; Alexe, M.; Eliseev, E. A.; Morozovska, A. N.; Zhang, J.; Chen, L. Q.; Kalinin, S. V., Direct imaging of the spatial and energy distribution of nucleation centres in ferroelectric materials. *Nature Materials* 2008, 7 (3), 209-215.
300. **Jesse, S.**; Nikiforov, M. P.; Germinario, L. T.; Kalinin, S. V., Local thermomechanical characterization of phase transitions using band excitation atomic force acoustic microscopy with heated probe. *Applied Physics Letters* 2008, 93 (7).
301. **Jesse, S.**; Maksymovych, P.; Kalinin, S. V., Rapid multidimensional data acquisition in scanning probe microscopy applied to local polarization dynamics and voltage dependent contact mechanics. *Applied Physics Letters* 2008, 93 (11).

302. Cohen, S. R.; Apter, N.; **Jesse, S.**; Kalinin, S.; Barlam, D.; Peretz, A. I.; Ziskind, D.; Wagner, H. D., AFM Investigation of Mechanical Properties of Dentin. *Israel Journal of Chemistry* 2008, 48 (2), 65-72.
303. Seal, K.; **Jesse, S.**; Rodriguez, B. J.; Baddorf, A. P.; Kalinin, S. V., High frequency piezoresponse force microscopy in the 1-10 MHz regime. *Applied Physics Letters* 2007, 91 (23).
304. Rodriguez, B. J.; **Jesse, S.**; Seal, K.; Baddorf, A. P.; Kalinin, S. V.; Rack, P. D., Fabrication, dynamics, and electrical properties of insulated scanning probe microscopy probes for electrical and electromechanical imaging in liquids. *Applied Physics Letters* 2007, 91 (9).
305. Rodriguez, B. J.; **Jesse, S.**; Kalinin, S. V.; Kim, J.; Ducharme, S.; Fridkin, V. M., Nanoscale polarization manipulation and imaging of ferroelectric Langmuir-Blodgett polymer films. *Applied Physics Letters* 2007, 90 (12).
306. Rodriguez, B. J.; **Jesse, S.**; Baddorf, A. P.; Zhao, T.; Chu, Y. H.; Ramesh, R.; Eliseev, E. A.; Morozovska, A. N.; Kalinin, S. V., Spatially resolved mapping of ferroelectric switching behavior in self-assembled multiferroic nanostructures: strain, size, and interface effects. *Nanotechnology* 2007, 18 (40).
307. Rodriguez, B. J.; **Jesse, S.**; Baddorf, A. P.; Kim, S. H.; Kalinin, S. V., Controlling polarization dynamics in a liquid environment: From localized to macroscopic switching in ferroelectrics. *Physical Review Letters* 2007, 98 (24).
308. Morozovska, A. N.; Svechnikov, S. V.; Eliseev, E. A.; **Jesse, S.**; Rodriguez, B. J.; Kalinin, S. V., Piezoresponse force spectroscopy of ferroelectric-semiconductor materials. *Journal of Applied Physics* 2007, 102 (11).
309. Kalinin, S. V.; Rodriguez, B. J.; **Jesse, S.**; Seal, K.; Proksch, R.; Hohlbauch, S.; Revenko, I.; Thompson, G. L.; Vertegel, A. A., Towards local electromechanical probing of cellular and biomolecular systems in a liquid environment. *Nanotechnology* 2007, 18 (42).
310. Kalinin, S. V.; Rodriguez, B. J.; **Jesse, S.**; Proksch, R., A biased view of the nanoworld: Electromechanical imaging. *R&D Magazine* 2007, 49 (10), 34-36.
311. Kalinin, S. V.; Rodriguez, B. J.; **Jesse, S.**; Karapetian, E.; Mirman, B.; Eliseev, E. A.; Morozovska, A. N., Nanoscale electromechanics of ferroelectric and biological systems: A new dimension in scanning probe microscopy. *Annual Review of Materials Research* 2007, 37, 189-238.
312. Kalinin, S. V.; Rodriguez, B. J.; **Jesse, S.**; Chu, Y. H.; Zhao, T.; Ramesh, R.; Choudhury, S.; Chen, L. Q.; Eliseev, E. A.; Morozovska, A. N., Intrinsic single-domain switching in ferroelectric materials on a nearly ideal surface. *Proceedings of the National Academy of Sciences of the United States of America* 2007, 104 (51), 20204-20209.
313. Kalinin, S. V.; **Jesse, S.**; Rodriguez, B. J.; Seal, K.; Baddorf, A. P.; Zhao, T.; Chu, Y. H.; Ramesh, R.; Eliseev, E. A.; Morozovska, A. N.; Mirman, B.; Karapetian, E., Recent advances in electromechanical Imaging on the nanometer scale: Polarization dynamics in ferroelectrics, biopolymers, and liquid Imaging. *Japanese Journal of Applied Physics Part 1-Regular Papers Brief Communications & Review Papers* 2007, 46 (9A), 5674-5685.
314. Kalinin, S. V.; **Jesse, S.**; Rodriguez, B. J.; Eliseev, E. A.; Gopalan, V.; Morozovska, A. N., Quantitative determination of tip parameters in piezoresponse force microscopy. *Applied Physics Letters* 2007, 90 (21).
315. **Jesse, S.**; Kalinin, S. V.; Proksch, R.; Baddorf, A. P.; Rodriguez, B. J., The band excitation method in scanning probe microscopy for rapid mapping of energy dissipation on the nanoscale. *Nanotechnology* 2007, 18 (43).
316. Eliseev, E. A.; Kalinin, S. V.; **Jesse, S.**; Bravina, S. L.; Morozovska, A. N., Electromechanical detection in scanning probe microscopy: Tip models and materials contrast. *Journal of Applied Physics* 2007, 102 (1).
317. Tiruvalam, R.; Kundu, A.; Soukhojak, A.; **Jesse, S.**; Kalinin, S. V., Observing the superparaelectric limit of relaxor $(\text{Na}_{1/2}\text{Bi}_{1/2})(0.9)\text{Ba}_{0.1}\text{TiO}_3$ nanocrystals. *Applied Physics Letters* 2006, 89 (11).

318. Rodriguez, B. J.; Kalinin, S. V.; Shin, J.; **Jesse, S.**; Grichko, V.; Thundat, T.; Baddorf, A. P.; Gruverman, A., Electromechanical imaging of biomaterials by scanning probe microscopy. *Journal of Structural Biology* 2006, 153 (2), 151-159.
319. Rodriguez, B. J.; **Jesse, S.**; Meunier, V.; Kalinin, S. V., Scanning frequency mixing microscopy of high-frequency transport behavior at electroactive interfaces. *Applied Physics Letters* 2006, 88 (14).
320. Rodriguez, B. J.; **Jesse, S.**; Baddorf, A. P.; Kalinin, S. V., High resolution electromechanical imaging of ferroelectric materials in a liquid environment by piezoresponse force microscopy. *Physical Review Letters* 2006, 96 (23).
321. Kolmakov, A.; Lanke, U.; Karam, R.; Shin, J.; **Jesse, S.**; Kalinin, S. V., Application of spectromicroscopy tools to explore local origins of sensor activity in quasi-1D oxide nanostructures. *Nanotechnology* 2006, 17 (16), 4014-4018.
322. Kalinin, S. V.; Rodriguez, B. J.; Shin, J.; **Jesse, S.**; Grichko, V.; Thundat, T.; Baddorf, A. P.; Gruverman, A., Bioelectromechanical imaging by scanning probe microscopy: Galvani's experiment at the nanoscale. *Ultramicroscopy* 2006, 106 (4-5), 334-340.
323. Kalinin, S. V.; Rodriguez, B. J.; **Jesse, S.**; Shin, J.; Baddorf, A. P.; Gupta, P.; Jain, H.; Williams, D. B.; Gruverman, A., Vector piezoresponse force microscopy. *Microscopy and Microanalysis* 2006, 12 (3), 206-220.
324. Kalinin, S. V.; Rar, A.; **Jesse, S.**, A decade of piezoresponse force microscopy: Progress, challenges, and opportunities. *Ieee Transactions on Ultrasonics Ferroelectrics and Frequency Control* 2006, 53 (12), 2226-2252.
325. Kalinin, S. V.; **Jesse, S.**; Rodriguez, B. J.; Shin, J.; Baddorf, A. P.; Lee, H. N.; Borisevich, A.; Pennycook, S. J., Spatial resolution, information limit, and contrast transfer in piezoresponse force microscopy. *Nanotechnology* 2006, 17 (14), 3400-3411.
326. Kalinin, S. V.; **Jesse, S.**; Liu, W. L.; Balandin, A. A., Evidence for possible flexoelectricity in tobacco mosaic viruses used as nanotemplates. *Applied Physics Letters* 2006, 88 (15).
327. **Jesse, S.**; Mirman, B.; Kalinin, S. V., Resonance enhancement in piezoresponse force microscopy: Mapping electromechanical activity, contact stiffness, and Q factor. *Applied Physics Letters* 2006, 89 (2).
328. **Jesse, S.**; Lee, H. N.; Kalinin, S. V., Quantitative mapping of switching behavior in piezoresponse force microscopy. *Review of Scientific Instruments* 2006, 77 (7).
329. **Jesse, S.**; Guillorn, M. A.; Ivanov, I. N.; Poretzky, A. A.; Howe, J. Y.; Britt, P. F.; Geohegan, D. B., In situ electric-field-induced contrast imaging of electronic transport pathways in nanotube-polymer composites. *Applied Physics Letters* 2006, 89 (1).
330. **Jesse, S.**; Baddorf, A. P.; Kalinin, S. V., Switching spectroscopy piezoresponse force microscopy of ferroelectric materials. *Applied Physics Letters* 2006, 88 (6).
331. **Jesse, S.**; Baddorf, A. P.; Kalinin, S. V., Dynamic behaviour in piezoresponse force microscopy. *Nanotechnology* 2006, 17 (6), 1615-1628.
332. Geohegan, D. B.; Poretzky, A.; Ivanov, I.; Eres, G.; Liu, Z. Q.; Styers-Barnett, D.; Hu, H.; Zhao, B.; Cui, H. T.; Rouleau, C.; **Jesse, S.**; Britt, P. F.; Christen, H.; Xiao, K.; Fleming, P.; Meldrum, A., LASER-BASED SYNTHESIS, DIAGNOSTICS, AND CONTROL OF SINGLE-WALLED CARBON NANOTUBES AND NANOHORNS FOR COMPOSITES AND BIOLOGICAL NANOVECTORS. In *Photon-Based Nanoscience and Nanobiotechnology*, Dubowski, J. J., Ed. 2006; Vol. 239, pp 205-223.
333. Poretzky, A. A.; Geohegan, D. B.; **Jesse, S.**; Ivanov, I. N.; Eres, G., In situ measurements and modeling of carbon nanotube array growth kinetics during chemical vapor deposition. *Applied Physics a-Materials Science & Processing* 2005, 81 (2), 223-240.
334. Kalinin, S. V.; Shin, J.; **Jesse, S.**; Geohegan, D.; Baddorf, A. P.; Lilach, Y.; Moskovits, M.; Kolmakov, A., Electronic transport imaging in a multiwire SnO₂ chemical field-effect transistor device. *Journal of Applied Physics* 2005, 98 (4).

335. Kalinin, S. V.; Rodriguez, B. J.; **Jesse, S.**; Thundat, T.; Gruverman, A., Electromechanical imaging of biological systems with sub-10 nm resolution. *Applied Physics Letters* 2005, 87 (5).
336. Gupta, P.; Jain, H.; Williams, D. B.; Kalinin, S. V.; Shin, J.; **Jesse, S.**; Baddorf, A. P., Observation of ferroelectricity in a confined crystallite using electron-backscattered diffraction and piezoresponse force microscopy. *Applied Physics Letters* 2005, 87 (17).
337. Kalinin, S. V.; **Jesse, S.**; Shin, J.; Baddorf, A. P.; Guillorn, M. A.; Geohegan, D. B., Scanning probe microscopy imaging of frequency dependent electrical transport through carbon nanotube networks in polymers. *Nanotechnology* 2004, 15 (8), 907-912.
338. Hirshman, S. P.; Berry, L. A.; **Jesse, S.**, Dynamic database generation for efficient calculation of stellarator plasma equilibria. *Siam Journal on Scientific Computing* 2004, 25 (6), 1880-1895.
339. Geohegan, D. B.; Poretzky, A. A.; Ivanov, I. N.; **Jesse, S.**; Eres, G.; Howe, J. Y., In situ growth rate measurements and length control during chemical vapor deposition of vertically aligned multiwall carbon nanotubes. *Applied Physics Letters* 2003, 83 (9), 1851-1853.
340. **Jesse, S.**; Pedraza, A. J.; Fowlkes, J. D.; Budai, J. D., Etching-enhanced ablation and the formation of a microstructure in silicon by laser irradiation in an SF₆ atmosphere. *Journal of Materials Research* 2002, 17 (5), 1002-1013.
341. Pedraza, A. J.; Fowlkes, J. D.; **Jesse, S.**; Mao, C.; Lowndes, D. H., Surface micro-structuring of silicon by excimer-laser irradiation in reactive atmospheres. *Applied Surface Science* 2000, 168 (1-4), 251-257.